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STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
Ka 'Oihana 'Āina Ho'opulapula Hawai'i
P. O. BOX 1879
HONOLULU, HAWAII 96805

March 16, 2026

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

Subject: HO'OLEHUA SCATTERED LOTS; HO'OLEHUA, MOLOKA'I; PUBLICATION OF THE FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

Dear Ms. Evans:

The Hawaiian Homes Commission hereby submits the Final Environmental Assessment and Finding of No Significant Impact (FEA-FONSI) for the Ho'olehua Scattered Lots project for publication in the next available edition of *The Environmental Notice*. The proposed project involves Tax Map Keys (TMKs) (2)5-2-005:031, (2)5-2-026:003, :014, :016 and :017 as well as portions of the roadways of Pu'u Kapele Avenue, Farrington Avenue and Mo'omomi Avenue.

In addition to this letter, we have also submitted the electronic version of the Environmental Review Program Publication Form and a searchable PDF-formatted copy of the FEA-FONSI through the online submission platform.

If you have any questions, please contact Patrick McCormic of Munekiyo Hiraga, project consultant, at (808) 244-2015 or via email at planning@munekiyohiraga.com.

Mahalo,

Kali Watson

Kali Watson, Chairperson
Hawaiian Homes Commission

cc: Robert Ing, DHHL Land Development Division
Patrick McCormic, Munekiyo Hiraga

From: dbedt.opsd.erp@hawaii.gov
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice
Date: Wednesday, March 25, 2026 9:47:07 AM

Action Name

HOʻOLEHUA SCATTERED LOTS SUBDIVISION AND RELATED IMPROVEMENTS

Type of Document/Determination

Final environmental assessment and finding of no significant impact (FEA-FONSI)

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

Molokaʻi, Maui

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

(2)5-2-005:031;(2)5-2-026:003;(2)5-2-026:014;(2)5-2-026:016; (2)5-2-026:017; portions of Puʻu Kapele Avenue, Farrington Avenue and Moʻomomi Avenue

Action type

Agency

Other required permits and approvals

County of Maui Subdivision approval, construction permits (building/grading permit) NPDES permit, Community Noise Permit (as applicable).

Proposing/determining agency

State of Hawai'i, Department of Hawaiian Home Lands

Agency jurisdiction

State of Hawaiʻi

Agency contact name

Robert Ing

Agency contact email (for info about the action)

robert.m.ing@hawaii.gov

Agency contact phone

(808) 730-7328

Agency address

91-5420 Kapolei Parkway
Kapolei, Hawaii 96707
United States
Map It

Is there a consultant for this action?

Yes

Consultant

Munekiyo Hiraga

Consultant contact name

Patrick McCormic

Consultant contact email

planning@munekiyohiraga.com

Consultant contact phone

(808) 244-2015

Consultant address

305 High Street
Suite 104
Wailuku, Hawaii 96793
United States
Map It

Action summary

The State of Hawai‘i Department of Hawaiian Home Lands (DHHL) proposes to subdivide five (5) parcels, totaling approximately 51.7 acres, into twelve (12) subsistence agricultural lots for its beneficiaries. The proposed project will be implemented on land identified by Tax Map Key Nos. (TMK) (2)5-2-005:031 (Parcel 31), TMK (2)5-2-026:003) (Parcel 3), (2)5-2-026:014 (Parcel 14), (2)5-2-026:016 (Parcel 16) and (2)5-2-026:017 (Parcel 17) and owned by the DHHL in Ho‘olehua, Moloka‘i, Hawai‘i. The lots are currently vacant, with the exception of several abandoned structures, and surrounded by other DHHL lands including developed homesteads and vacant agricultural lands.

Improvements needed to make the subdivided lots suitable for lease include the construction of access driveways from Mo‘omomi Avenue and Farrington Avenue and access driveways from Pu‘u Kapele Avenue. Roadway improvements include minimal grading and a 20-foot-wide paved road to provide access to the sites. Lot improvements include paved driveways and an assumed area for dwelling construction of 5,000 square feet per lot. Additional improvements include the construction of waterlines to provide irrigation and domestic water to the homestead lots.

Reasons supporting determination

Please refer to the Significance Criteria discussion (Chapter VIII) in the Final EA document.

Attached documents (signed agency letter & EA/EIS)

- DHHL_Hoolehua_Scattered_Lots_Final_EA_Volume_II_of_II_March_2026.pdf
- DHHL_Hoolehua_Scattered_Lots_Final_EA_Volume_I_of_II_March_2026.pdf
- DHHL_Hoolehua_Scattered_Lots_FONSI_March_2026.pdf

Shapefile

- The location map for this Final EA is the same as the location map for the associated Draft EA.

Action location map

- DHHL_Hoolehua_Scattered_Lots_Project-Site_Shapefile.zip

Compliance certification (HRS §368-1.5):

The authorized individual listed below certifies that documents submitted are unlocked, searchable, and compliant with the Hawaii Electronic Information Technology Disability Access Standards (including, but not limited to transcripts, captions, and other descriptions accompanying audio/video files). The individual acknowledges that the submitter retains the responsibility for compliance after documents have been published and any compliance queries will be directed back to the agency and/or applicant.

Authorized individual

Patrick McCormic

Authorized individual email

planning@munekiyohiraga.com

Authorized individual phone

(808) 244-2015

Authorization

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

VOLUME I OF II

(Including Appendices A to B2)

Final Environmental Assessment

HOʻOLEHUA SCATTERED LOTS SUBDIVISION AND RELATED IMPROVEMENTS

(TMK NOS. (2)5-2-005:031, (2)5-2-026:003, 014, 016 and 017; PUʻU KAPELE AVE. (POR.), FARRINGTON AVE. (POR.) AND MOʻOMOMI AVE. (POR.))

Prepared for:
State of Hawaiʻi
Department of Hawaiian Home Lands

Approving Agency:
Hawaiian Homes Commission

March 2026

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VOLUME I OF II

(Including Appendices A to B2)

Final Environmental Assessment

HOʻOLEHUA SCATTERED LOTS SUBDIVISION AND RELATED IMPROVEMENTS

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Prepared for:
State of Hawaiʻi
Department of Hawaiian Home Lands

Approving Agency:
Hawaiian Homes Commission

March 2026

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Executive Summary

Project Name:	Hoʻolehua Scattered Lots Subdivision And Related Improvements
Type of Document:	Final Environmental Assessment
Legal Authority:	Chapter 343, Hawaiʻi Revised Statutes Title 11, Chapter 200.1, Hawaiʻi Administrative Rules
Anticipated Determination:	Finding of No Significant Impact (FONSI)
Applicable Environmental Assessment "Trigger":	Use of State Lands; Use of State Funds
Location:	Molokaʻi Island Hoʻolehua TMK Nos. (2)5-2-005:031, (2)5-2-026:003, 014, 016, 017; Puʻu Kapele Ave. (por.), Farrington Ave. (por.), and Moʻomomi Ave. (por.)
Landowner:	State of Hawaiʻi, Department of Hawaiian Home Lands
Applicant:	State of Hawaiʻi Department of Hawaiian Home Lands Contact: Robert Ing Land Development Division 91-5420 Kapolei Parkway Kapolei, Hawaiʻi 96707 Phone No.: (808) 620-9500
Approving Agency:	State of Hawaiʻi Department of Hawaiian Home Lands Hawaiian Homes Commission Contact: Kali Watson, Chairperson 91-5420 Kapolei Parkway Kapolei, Hawaiʻi 96707 Phone No.: (808) 620-9500
Consultant:	Munekiyo Hiraga 305 High Street, Suite 104 Wailuku, Hawaiʻi 96793 Contact: Patrick McCormic, Associate Phone No.: (808) 244-2015

Project Summary:

The State of Hawai‘i, Department of Hawaiian Home Lands (DHHL) proposes to subdivide five (5) parcels, totaling approximately 51.7 acres, into twelve (12) subsistence agricultural lots for its beneficiaries. The proposed project will be implemented on land identified by Tax Map Key Nos. (TMK) (2)5-2-005:031 (Parcel 31), TMK (2)5-2-026:003) (Parcel 3), (2)5-2-026:014 (Parcel 14), (2)5-2-026:016 (Parcel 16) and (2)5-2-026:017 (Parcel 17) owned by the DHHL in Ho‘olehua, Moloka‘i, Hawai‘i. The lots are currently vacant, with the exception of several abandoned structures, and surrounded by other DHHL lands including developed homesteads and vacant agricultural lands.

Improvements needed to make the subdivided lots suitable for lease include the construction of access driveways from Mo‘omomi Avenue, Farrington Avenue, and Pu‘u Kapele Avenue. Roadway improvements include paving, driveway access to the sites, and drainage improvements. Additional improvements include the construction of waterlines to provide irrigation and domestic water to the homestead lots, as well as electrical and telecommunications line extensions.

The subject properties have been designated for “Agricultural” use by the State Land Use Commission and are designated “Agriculture” by both Maui County Zoning and the Moloka‘i Community Plan. The proposed project will be implemented under the jurisdiction of the DHHL. The mission of the DHHL is to effectively manage the Hawaiian Home Lands trust and to develop and deliver land to native Hawaiians. The Hawaiian Homes Commission Act (HHCA) vests onto the DHHL, the authority to use its lands at its discretion. Specifically, HHCA Section 204 states, *“all available lands shall immediately assume the status of Hawaiian home lands and be under the control of the department to be used and disposed of in accordance with the provisions of this Act”.* As DHHL owns the subject properties, the above-noted provision grants DHHL the authority to proceed with the project without the lands being fully entitled for residential use.

As previously mentioned, the subject parcels are owned by the DHHL. The use of State lands and State funds trigger compliance with the environmental review requirements of the Hawai‘i Revised Statutes (HRS), Chapter 343. As such, this Environmental Assessment (EA) has been prepared pursuant to Chapter 343, HRS and Chapter 200.1 of Title 11, Hawai‘i Administrative

Rules (HAR). Accordingly, this document addresses the technical characteristics and potential environmental impacts of the proposed project, as well as advances findings and mitigative measures relative to the project. The Hawaiian Homes Commission will serve as the approving agency for the EA.

List of Acronyms

ALISH	Agricultural Lands of Importance to the State of Hawai‘i
ACM	Asbestos Containing Materials
AFNSI	Anticipated Finding of No Significant Impact
amsl	above mean sea level
BMPs	Best Management Practices
Calpac	California Packing Corporation
CFL	Compact Florescent Light
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIA	Cultural Impact Assessment
CO2 EQ	carbon dioxide equivalent
CSH	Cultural Surveys Hawai‘i
CTAHR	College of Tropical Agriculture and Human Resources
CWPP	Community Wildfire Protection Plan
CWRM	Commission on Water Resource Management
DHHL	Department of Hawaiian Home Lands
DLNR	Department of Land and Natural Resources
DOA	Department of Agriculture
DOE	Department of Education
DOFAW	Division of Forestry and Wildlife
DOH	State Department of Health
EA	Environmental Assessment
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GHG	Greenhouse gases
GIS	Geographic Information System
HAR	Hawai‘i Administrative Rules
HCZMP	Hawai‘i Coastal Zone Management Program
HECO	Hawaiian Electric Company
HHC	Hawaiian Homes Commission
HHCA	Hawaiian Homes Commission Act
HIOSH	Hawai‘i Occupational Safety and Health
HRS	Hawai‘i Revised Statutes
HUD	U.S. Department of Housing and Urban Development
HWMO	Hawai‘i Wildfire Management Organization
IPaC	Information for Planning and Consultation
IWS	Individual Wastewater System
KPA	Ka Pa‘akai Analysis
LBP	Lead-based paint
LCP	Lead-containing paint
LRFI	Literature Review and Field Inspection
LSB	Land Study Bureau
MGD	Million Gallons per Day
MIP	Moloka‘i Island Plan
MIS	Moloka‘i Irrigation System
MuA	Molokai silty clay loam, 0 to 3 percent slopes
MuB	Molokai silty clay loam, 3 to 7 percent slopes

MuC3	Molokai silty clay loam, 7 to 15 percent slopes
MvD3	Molokai silty clay loam, 15 to 25 percent slopes
NHO	Native Hawaiian Organizations
NAGPRA	Native American Graves Protection and Repatriation Act
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PcBs	Polychlorinated biophenyls
POA	Plan of Action
SHPD	State Historic Preservation Division
SIHP	State Inventory of Historic Places
SLRVA	Sea Level Rise Vulnerability and Adaption Report
TMK	Tax Map Key
TSCA	Toxic Substances Control Act
U.S.	United States
US EPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WSS	Water System Standards
WUPA	Water Use Permit application

I. PROJECT OVERVIEW

I. PROJECT OVERVIEW

A. PROPERTY BACKGROUND, EXISTING USE, AND LAND OWNERSHIP

The State of Hawai‘i, Department of Hawaiian Home Lands (DHHL) proposes the Ho‘olehua Scattered Lots Subdivision and Related Improvements project (“project”) in Ho‘olehua, Moloka‘i, Hawai‘i. See **Figure 1**. The project entails subdividing five (5) parcels within the Ho‘olehua area on Moloka‘i into twelve (12) lots to be designated for agricultural use and improving them for lease to DHHL beneficiaries. The affected properties are owned by DHHL and identified in **Table 1** below. See **Figure 2**.

Table 1. Proposed Subdivided Lots by TMK

TMK	Existing Acreage
(2)5-2-005:031 (Parcel 31)	31.69 Acres
(2)5-2-026:003 (Parcel 3)	4.72 Acres
(2)5-2-026:014 (Parcel 14)	4.73 Acres
(2)5-2-026:016 (Parcel 16)	4.73 Acres
(2)5-2-026:017 (Parcel 17)	5.83 Acres

The proposed action will subdivide five (5) parcels in the Ho‘olehua area of Moloka‘i into a total of 12 lots. Refer to **Table 1** for the affected parcels.

Unpaved portions of Pu‘u Kapele Avenue, Farrington Avenue, and Mo‘omomi Avenue adjacent to the subdivided properties, and owned by the DHHL will be paved. Access driveways and infrastructure connections will also be constructed from the existing roadways to the subdivided lots.

In addition, DHHL proposes to demolish a dilapidated house and greenhouse located on Parcels 14 and 16, and would close the wastewater facilities on Parcels 14 and 16 in accordance with Department of Health regulations. The newer, abandoned home on Parcel 16 is being inspected to determine whether it should be torn down or appraised and offered in “as-is” condition.

The subject properties have been designated for “Agricultural” use by the State Land Use Commission (SLUC) and are designated “Agriculture” by both Maui County Zoning and the County’s Moloka‘i Community Plan. The subject properties are currently vacant and surrounded by other DHHL-owned agricultural homesteads or vacant lots. The adjacent roadways are designated as “Agricultural” by the SLUC and County Zoning, and designated as “Road” by the County’s Moloka‘i Community Plan. The subject properties have been given the DHHL land use designations of Subsistence Agricultural and Supplemental Agricultural in the DHHL Moloka‘i Island Plan (2005).

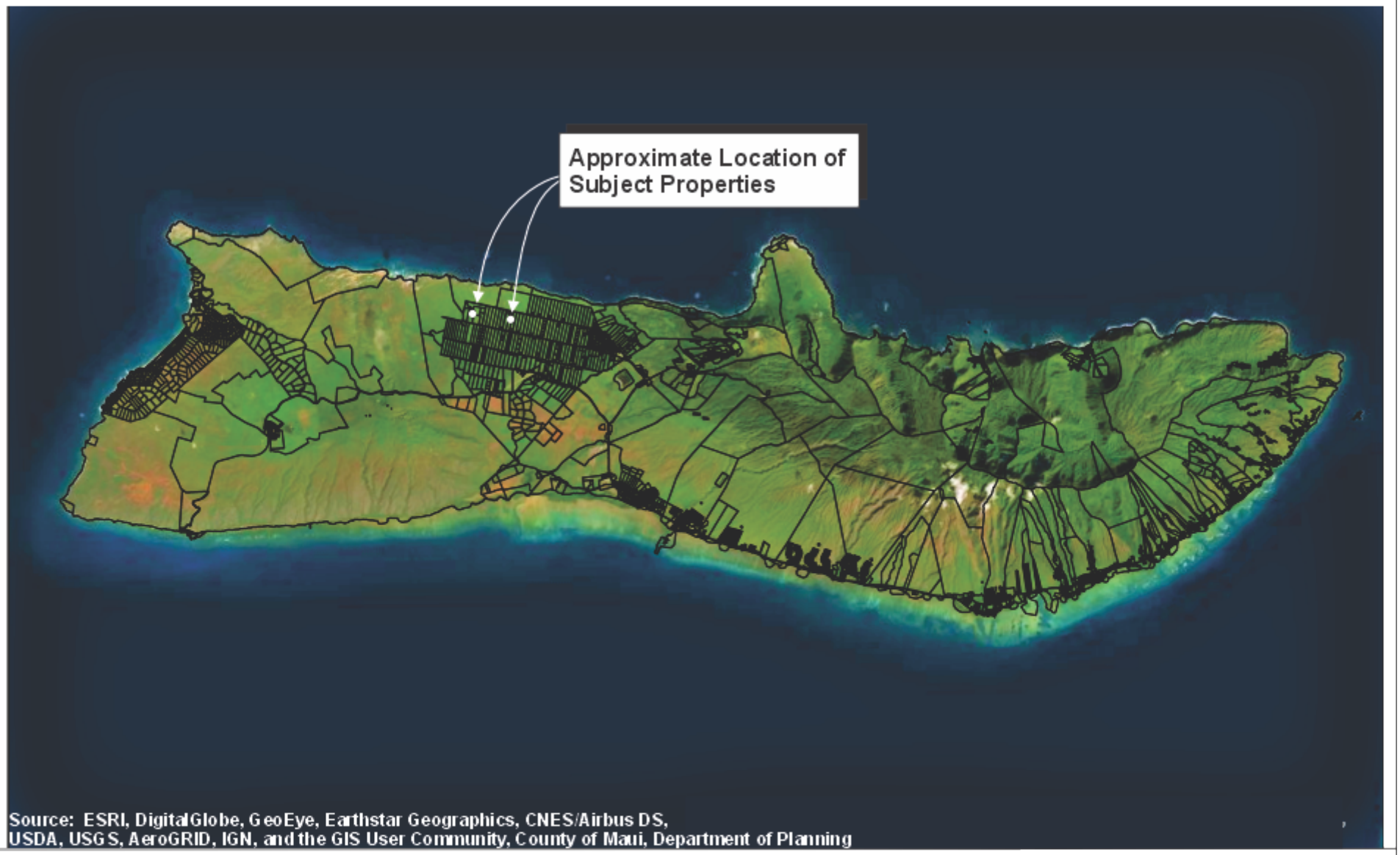


Figure 1

DHHL Hoʻolehua Scattered Lots Subdivision and Improvements

Regional Location Map

0 11,250 Feet
5,625 22,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\Regional Location Map

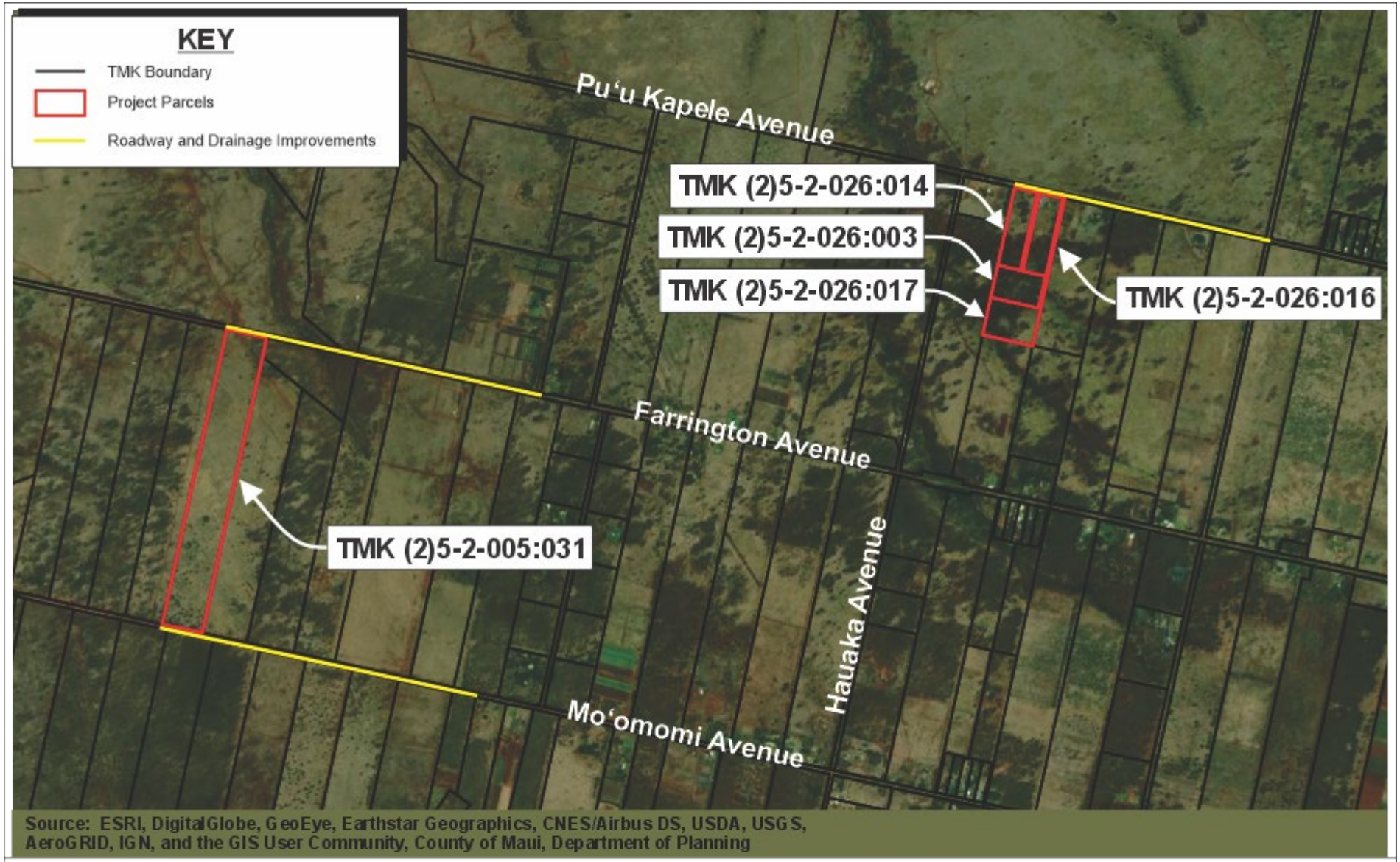


Figure 2

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

Property Location Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\PropLoc_FEA

B. PROJECT NEED

The mission of the DHHL is to effectively manage the Hawaiian Home Lands trust and to develop and deliver land to Native Hawaiians. The Hawaiian Homes Commission Act (HHCA), codified within the constitution of the State of Hawai'i, states as its purpose[1]:

> *(a) The Congress of the United States and the State of Hawaii declare that the policy of this Act is to enable native Hawaiians to return to their lands in order to fully support self-sufficiency for native Hawaiians and the self-determination of native Hawaiians in the administration of this Act, and the preservation of the values, traditions, and culture of native Hawaiians.*
>
> *(b) The principal purposes of this Act include but are not limited to:*
>
> *(1) Establishing a permanent land base for the benefit and use of native Hawaiians, upon which they may live, farm, ranch, and otherwise engage in commercial or industrial or any other activities as authorized in this Act;*
>
> *(2) Placing native Hawaiians on the lands set aside under this Act in a prompt and efficient manner and assuring long-term tenancy to beneficiaries of this Act and their successors;*
>
> *(3) Preventing alienation of the fee title to the lands set aside under this Act so that these lands will always be held in trust for continued use by native Hawaiians in perpetuity;*

DHHL beneficiary demand for homesteading opportunities is very high; DHHL maintains a waitlist comprised of thousands of beneficiary applicants awaiting an opportunity to be awarded a homestead lease. As of March 1, 2026, the Moloka'i Agricultural Waiting List stands at approximately 1,123. The proposed project aims to award leases and provide homesteading and subsistence agricultural opportunities to beneficiaries, thereby, fulfilling the above stated purposes of the HHCA. Further, based on a 2004 beneficiary survey conducted for the 2005 DHHL Moloka'i Regional Plan, agricultural and pastoral applicants expressed an overwhelming preference to live on their homesteads. Most agricultural applicants also expressed a preference for smaller agricultural lots between three (3) to five (5) acres. The beneficiary survey also sought to determine award location preferences; although most applicants did not have a preference for location, the majority of applicants that did indicate a preference in location favored homesteads in the

[1] *Passed by State Leg in 1990 (Act 349), but has not yet been enacted by Congress. Congressional approval is required per Department of Interior to amend the HHCA in some, but not all, cases.*

Ho‘olehua area. The proposed project responds to the demand for homesteading and subsistence agricultural opportunities and preferences of DHHL beneficiaries. In addition, it is noted that pursuant to the proposed Subsistence Agriculture use as designated by DHHL, lessees of the subdivided lots will be able to reside on the properties in addition to undertaking small-scale agricultural activities.

C. PROPOSED ACTION

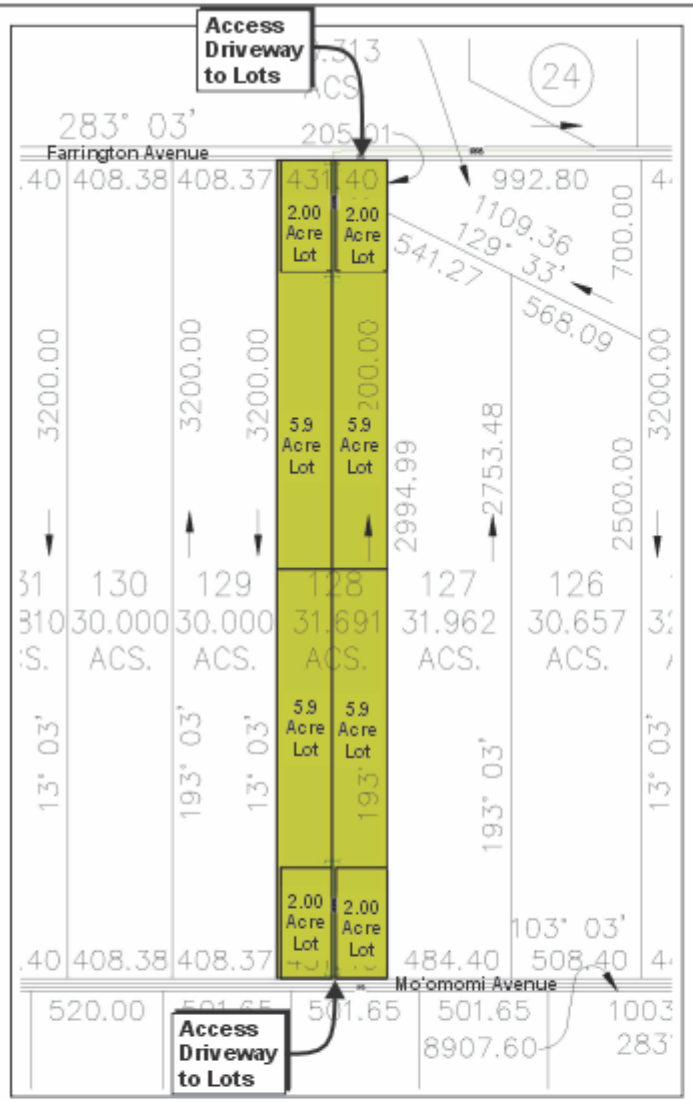
DHHL proposes to subdivide five (5) lots into 12 lots for lease to beneficiaries on Moloka‘i. Seven (7) of the lots, which are three (3) acres or less, will be leased as Subsistence Agriculture lots. As described in the DHHL General Plan, Subsistence Agriculture Homesteads provide opportunities for beneficiaries to live on and farm their lots on a smaller scale. The five (5) subdivided lots larger than three (3) acres will be designated and leased for Supplemental Agriculture use which are intended to provide opportunities for agricultural production for supplemental income and home use. An agricultural plan is required for these larger lots. It is noted that there are several existing structures on Parcels 14 and 16. There is an existing dilapidated, abandoned home on Parcel 14 that records indicate was constructed in the 1970’s, in addition to a wastewater facility. There is also an abandoned greenhouse on Parcel 16 that was constructed in the early 2000’s. It is further noted that there is a third structure, an abandoned home that records indicate was built in the early 2000’s, that is located on Parcel 16. The existing homes and structures were previously in use by DHHL beneficiaries, but have all since been abandoned. DHHL plans to demolish the dilapidated house and greenhouse, and would close the wastewater facilities in accordance with Hawai‘i State Department of Health regulations. The newer, abandoned home on Parcel 16 is being inspected to determine whether it should be torn down or appraised and offered in “as-is” condition.

Offsite improvements to be undertaken include creating access driveways to each of the newly created lots with infrastructure connections for potable water, irrigation water, electrical and telecommunications services for each lot, provided within the access driveways from existing systems in the neighboring roadways. Beneficiaries are not required to reside on the lots, but have the ability to construct a home on the lot if they choose. Individual wastewater systems would be installed for any residential homes. See **Figure 3** and **Appendix “A”**, Preliminary Development Plans.

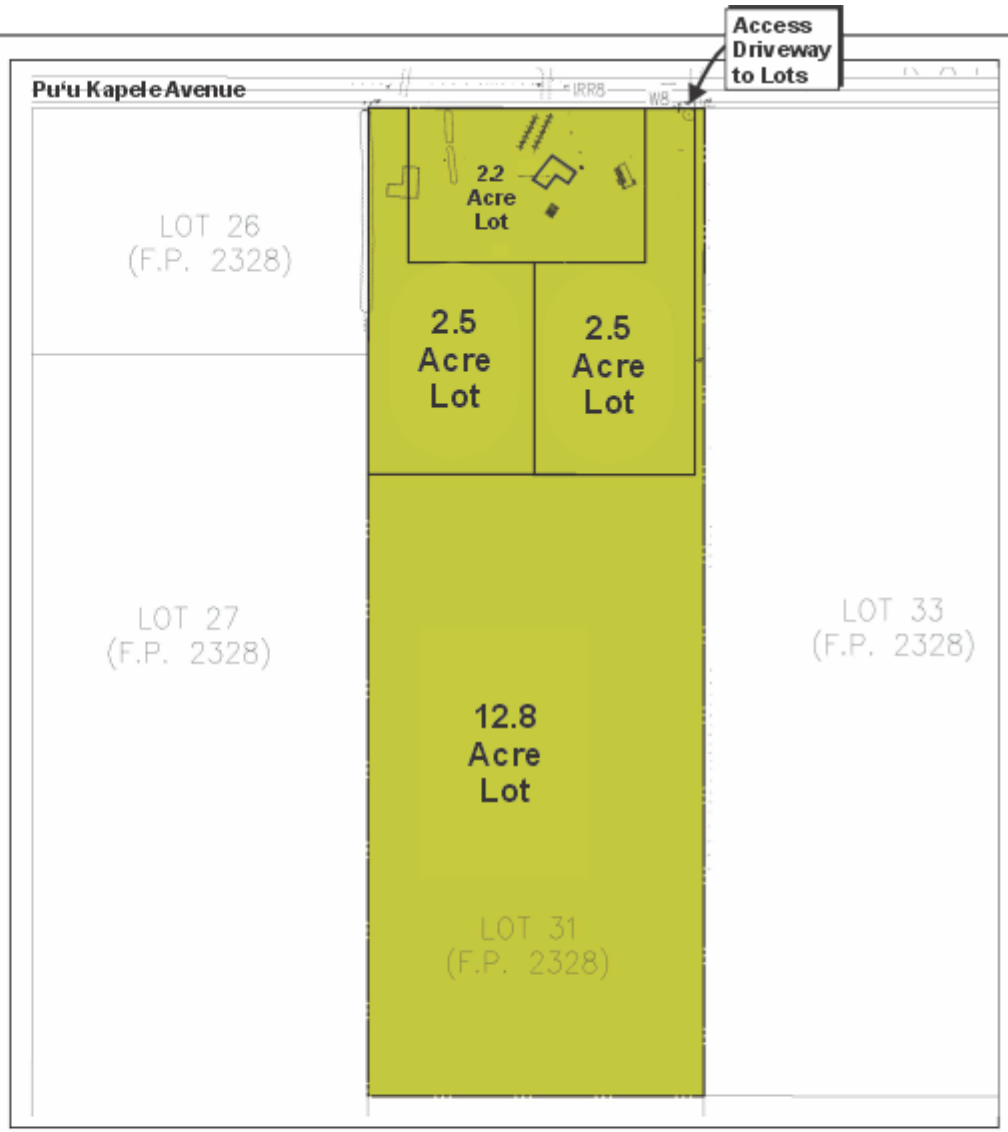
D. LAND USE REGULATORY CONSIDERATIONS

The subject properties have been designated for “Agricultural” use by the State Land Use Commission and are designated “Agriculture” by both Maui County Zoning and the Moloka‘i Island Community Plan. See **Figure 4** and **Figure 5**.

As previously stated, the proposed project will be implemented under the jurisdiction of the DHHL. The mission of the DHHL is to effectively manage the Hawaiian Home Lands



TMK (2)5-2-005:031



TMK (2)5-2-026:003, 014, 016, and 017

Source: R.M. Towill Corporation

Figure 3

DHHL Hoʻolehua Scattered Lots Subdivision and Improvements

Conceptual Lot Site Plans

NOT TO SCALE

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\Rev Conceptual Lot Site Plans.FEA

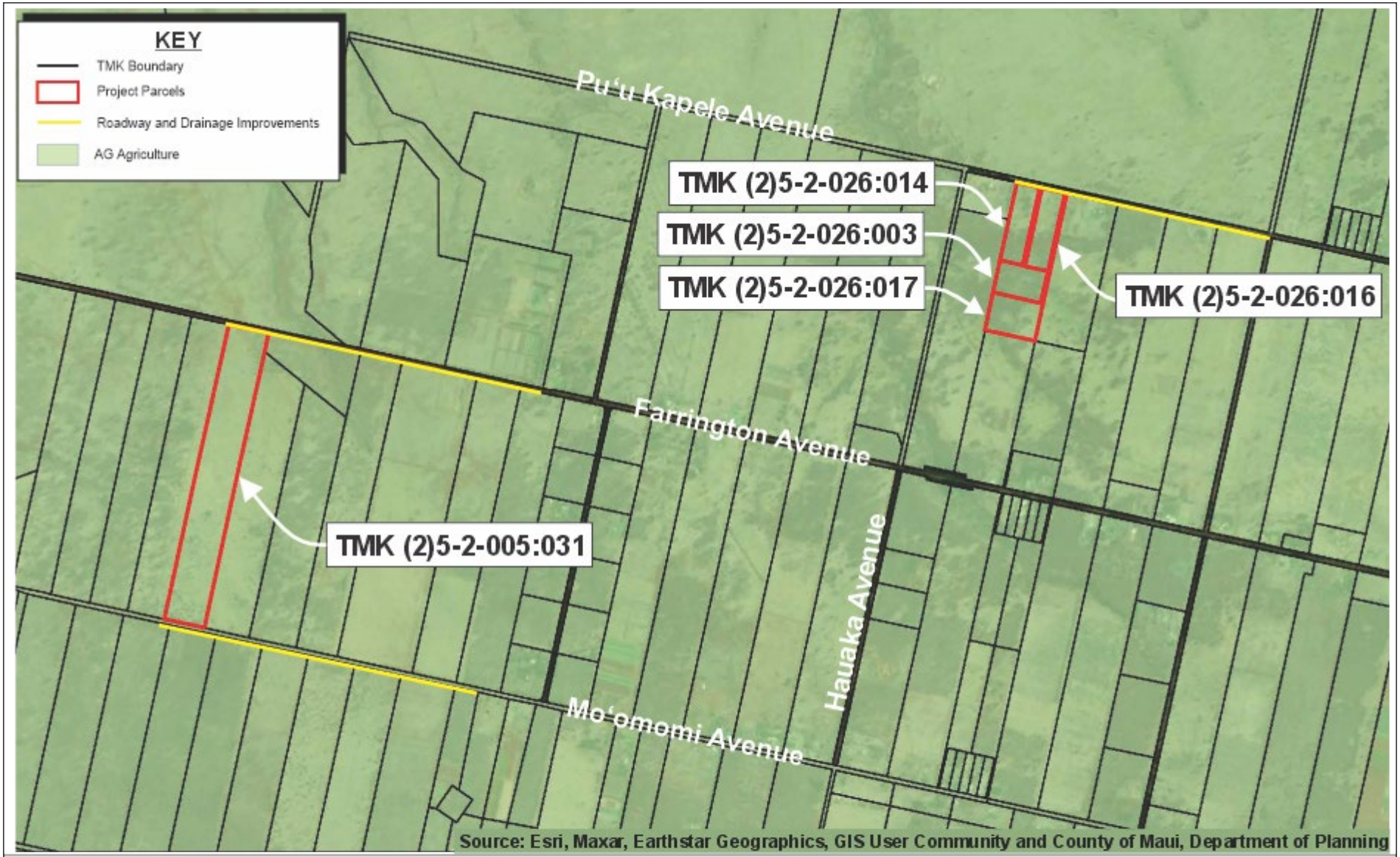


Figure 4

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

Maui County Zoning Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

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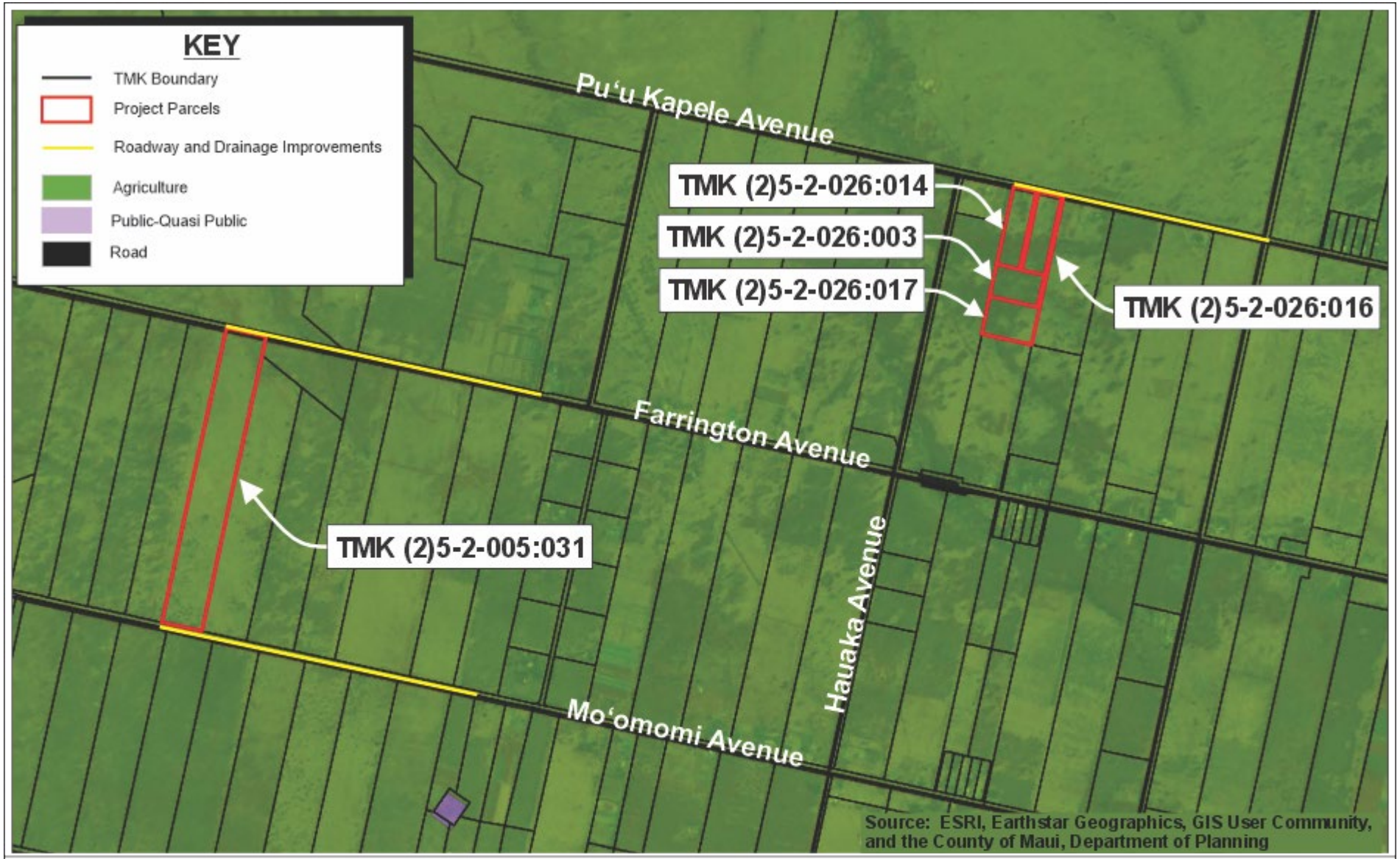


Figure 5

DHHL Hoʻolehua Scattered Lots
Subdivision and Improvements
Maui County Molokaʻi Island Community Plan Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\MICP

trust and to develop and deliver land to native Hawaiians. The HHCA vests onto the DHHL the authority to use its lands at its discretion. Specifically, HHCA Section 204 states, "*all available lands shall immediately assume the status of Hawaiian home lands and be under the control of the department to be used and disposed of in accordance with the provisions of this Act*". As DHHL owns the subject properties, the above-noted provision grants DHHL the authority to proceed with the project without the lands being fully entitled for residential use.

As such, the DHHL has implemented its own planning system consisting of a General Plan, Island Plans, community-specific Regional Plans statewide, subject-specific Program Plans, and Special Area Plans. The DHHL Molokaʻi Island Plan (MIP), adopted in 2005, serves as a comprehensive resource for planning and managing the Molokaʻi island lands and establishes land use designations to encourage orderly social, physical, and economic development. Most of the land in the Hoʻolehua area is designated for agricultural use. The DHHL MIP further classifies Agricultural land as "General Agriculture", "Supplemental Agriculture", and "Subsistence Agriculture". The subdivided lots will be awarded as Subsistence Agriculture homesteads, allowing lessees to reside on the properties in addition to agricultural activity.

E. CHAPTER 343 HAWAIʻI REVISED STATUTES, ENVIRONMENTAL ASSESSMENT

As previously mentioned, the subject parcels are owned by the DHHL. The use of State lands and State funds trigger compliance with the environmental review requirements of HRS, Chapter 343. As such, this Environmental Assessment (EA) has been prepared pursuant to Chapter 343, HRS and Chapter 200.1 of Title 11, Hawaiʻi Administrative Rules (HAR). Accordingly, this document addresses the technical characteristics and potential environmental impacts of the proposed project, as well as advances findings and mitigative measures relative to the project.

The Hawaiian Homes Commission is the approving agency for the EA.

F. ESTIMATED CONSTRUCTION SCHEDULE AND COSTS

The project will have an anticipated development timeframe of approximately one (1) year. The total estimated construction cost for the proposed project is approximately $7.7 million dollars.

II. DESCRIPTION OF EXISTING CONDITIONS, POTENTIAL IMPACTS, AND PROPOSED MITIGATION MEASURES

II. DESCRIPTION OF THE EXISTING CONDITIONS, POTENTIAL IMPACTS, AND PROPOSED MITIGATION MEASURES

A. PHYSICAL SETTING

1. Surrounding Land Use

a. Existing Conditions

The five (5) project parcels encompass approximately 51.7 acres in the Hoʻolehua area located in the northern central plateau of Molokaʻi. Hoʻolehua is a rural agricultural and residential community situated primarily on prime agricultural land. Much of the land in Hoʻolehua is owned by the Department of Hawaiian Homes Lands (DHHL) and is home to the second-oldest DHHL homestead community. South of Hoʻolehua is Maunaloa Highway and the Molokaʻi Airport. The southern Molokaʻi coast and Kaunakakai, the island's town center, are located south and southeast of the project site, respectively. The slopes of Maunaloa or the West Molokaʻi Volcano are located to the west and Wailau, and Kamakou, or the East Molokai Volcano, is east of the project site. To the north of Hoʻolehua is the northern Molokaʻi coast and Moʻomomi Bay. DHHL designates most of the land in Hoʻolehua for subsistence, supplemental, or general agricultural use with approximately 55 acres of land designated for residential use within its Molokaʻi Island Plan. It is noted that many homesteaders that reside in the residential areas also have larger, unattached lots for agricultural use. Other smaller portions of Hoʻolehua are designated for pastoral, conservation, or community use.

b. Potential Impacts and Mitigation Measures

The project sites are located in an appropriate location adjacent to agricultural and residential homesteads and vacant agricultural land. The proposed project is compatible with the surrounding existing uses of the area. In the context of surrounding land uses, the proposed project is not anticipated to have a significant adverse effect on the surrounding landscape. The proposed project will provide much needed homesteading opportunities for Department of Hawaiian Home Lands' (DHHL) beneficiaries through the provision of twelve (12) lots available for lease.

2. Climate

a. Existing Conditions

Molokaʻi's climate is relatively consistent throughout the year. The island's climate varies as the terrain changes. Characteristic of Molokaʻi'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 Molokaʻi Airport) range from the mid-60s to mid-80s (Fahrenheit). September is historically the warmest month, while January is the coolest. The annual rainfall average in 2022 was approximately 14.96 inches (Maui County Data Book, 2022). Winds blow predominantly from a northeasterly direction.

b. Potential Impacts and Mitigation Measures

The proposed action will occur on DHHL lands reserved for agricultural homesteads and is adjacent to other homesteads and agricultural land. The proposed project is not anticipated to have an adverse effect on climate.

3. Topography and Soil Conditions

a. Existing Conditions

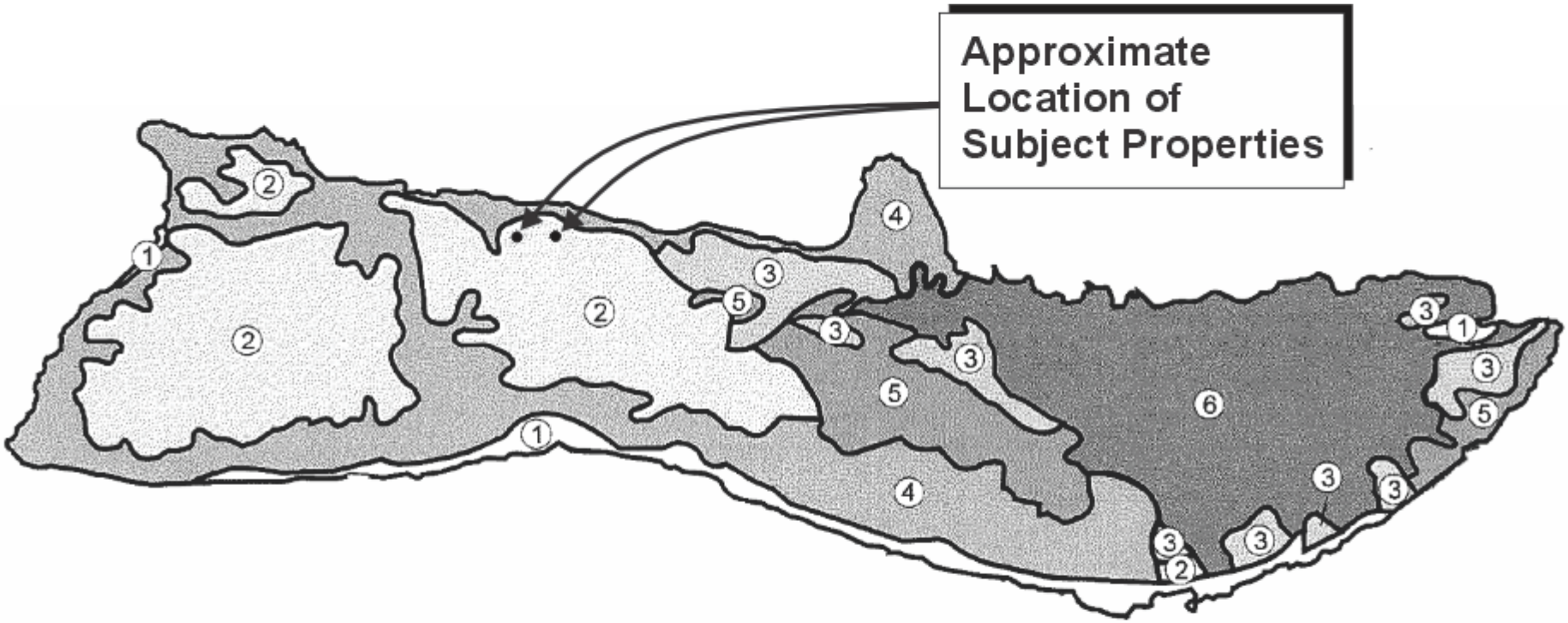
The existing elevation at the eastern project parcels is approximately 420 feet above mean sea level (amsl) and slopes toward Nānēhānaupō stream, which lies southwest of the project site, at approximately 5 percent. The existing elevation at Parcel 31 is approximately 360 feet amsl and is relatively level. Anahaki Gulch is located to the east and crosses Farrington Avenue. See **Appendix "B"**, Preliminary Engineering Report.

Underlying the project site and surrounding area are soils belonging to the Molokai-Lahaina association. According to the Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, prepared by the United States Department of Agriculture Soil Conservation Service, these soils are characterized as well-drained, fine textured and moderately fine textured soils. These soils are suitable for agricultural cultivation, pasture and wildlife (Foote et al, 1972). See **Figure 6**.

The project area is located on soils identified as Molokaʻi silty clay loam, 0 to 3 percent slopes (MuA), Molokai silty clay loam, 3 to 7 percent slopes (MuB), Molokai silty clay loam, 7 to 15 percent slopes (MuC3), and Molokai

LEGEND

① Jaucas-Mala-Pulehu Association
② Molokai-Lahaina Association
③ Kahanui-Kalae-Kanepuu Association
④ Very stony land-Rock land Association
⑤ Rough broken land-Oli Association
⑥ Rough mountainous land-Amalu-Olokui Association



Source: U.S. Department of Agriculture, Soil Conservation Service

Figure 6

DHHL Ho'olehua Scattered Lots
Subdivision and Improvements
Soil Association Map

NOT TO SCALE

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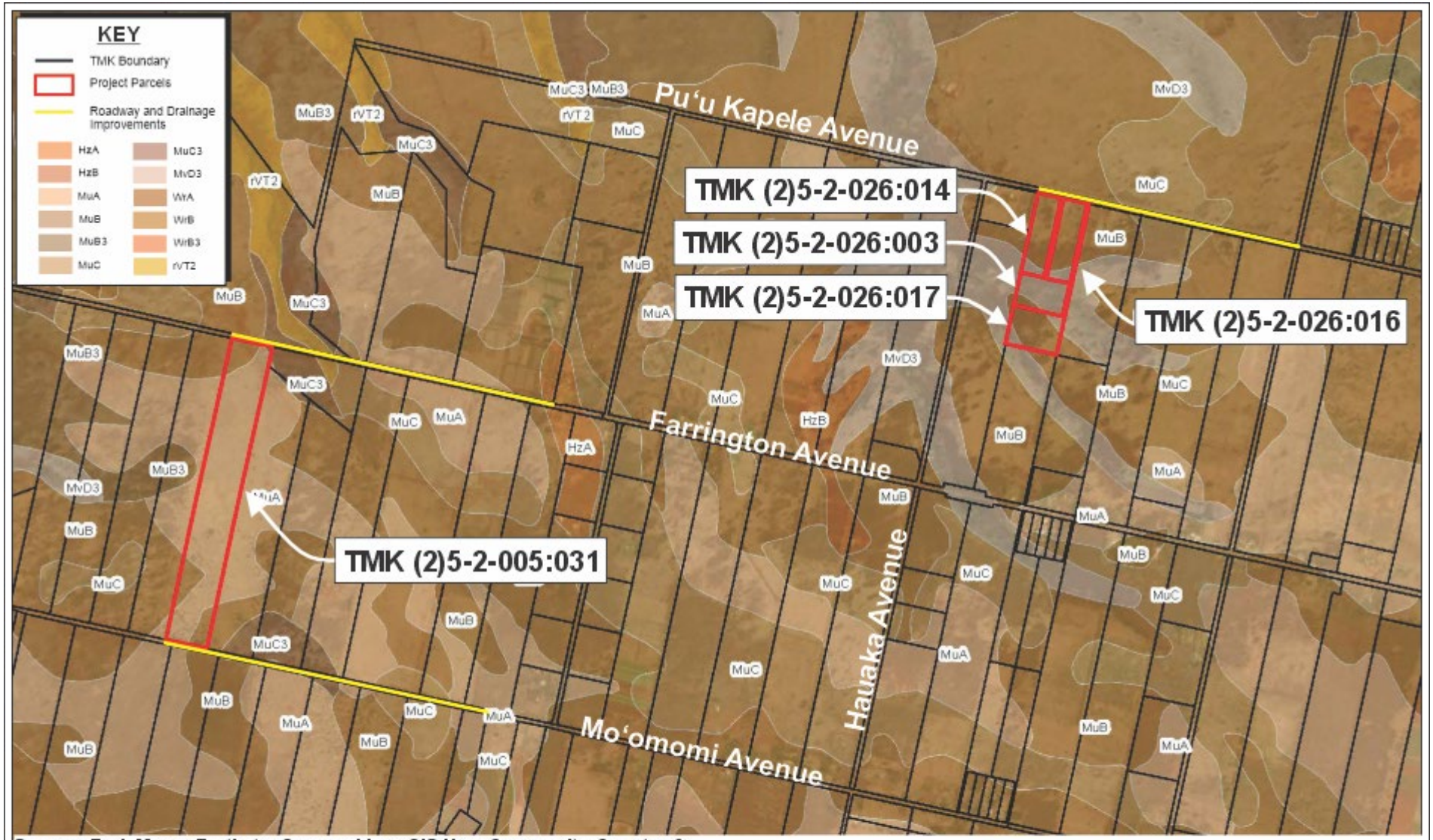
silty clay loam 15 to 25 percent slopes (MvD3). MuA is classified as having slow runoff and a slight erosion hazard. MuB is classified as having slow to medium runoff and a slight to moderate erosion hazard. MuC3 is classified as having medium and medium to rapid runoff. MvD3 is reported to produce a low to medium amount of runoff and have a severe erosion hazard. See **Figure 7**.

b. Potential Impacts and Mitigation Measures

Onsite drainage areas will be maintained in the proposed condition. It is assumed that existing drainage patterns will not change and grading will be minimal. Improvements that affect drainage are grading and installation of impervious surfaces. All proposed drainage improvements were designed in accordance with County of Maui drainage standards. Mitigation measures to divert offsite runoff are not recommended. Offsite flows from adjacent areas will continue to flow through the site. However, a culvert is recommended at the Farrington Avenue/Anahaki Gulch crossing to accommodate offsite drainage flowing across the road. Onsite drainage areas will be maintained in the proposed condition. It is assumed that existing drainage patterns will not change and grading will be minimal. The proposed lot improvements are not anticipated to significantly increase the peak flow runoff since the increase in impervious area relative to the overall project site is small. The volume of runoff increase for the lot areas totals approximately 500 cubic feet per lot.

Mitigation for this increase can be accommodated by using a small basin on each lot with dimensions of 25 foot wide x 25 foot long x 1 foot deep. The volume of additional runoff generated from the roadway improvements varies from 10,000 to 20,000 cubic feet. Mitigation options for the additional roadway runoff can be accommodated by discharging runoff into an existing drainage way, storing runoff in a drainage basin, or storing runoff in infiltration trenches located beneath a road swale. Anahaki Gulch crosses Farrington Avenue, which conveys a total of 1,560 cubic feet per second (cfs) from 256 acres for a 100-year storm event. For this road to be used during storm events, a culvert under the road is needed. Two (2) 13-ft wide by 8-ft high box culverts are needed to convey runoff from a 100-year storm event. A smaller culvert could be considered to convey runoff generated by a smaller storm event that will allow the road to be used for most small storm events. The 10-year storm will generate 640 cfs, requiring two (2) 8-ft wide by 6-ft high box culverts. Refer to **Appendix "B"**.

In addition, Best Management Practices (BMPs) will be implemented during construction to minimize impacts from soil erosion resulting from



Source: Esri, Maxar, Earthstar Geographics, GIS User Community, County of Maui Department of Planning, and the USDA Soil Survey Geographic Database

Figure 7

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

Soil Classification Map

0 375 750 1,500 Feet

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

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wind and water (e.g., dust and silt fencing, watering for dust control, etc.). An application for a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the State Department of Health (DOH) for review and approval prior to the start of construction of the proposed action. Grading Permits will also be obtained for the proposed action. The underlying soils do not pose limitations with respect to project constructability. The proposed project is not anticipated to have an adverse effect on topography and soils. Refer to **Appendix "B"**.

4. Agricultural Productivity Considerations

a. Existing Conditions

In 1977, the State Department of Agriculture developed a classification system to identify Agricultural Lands of Importance to the State of Hawai‘i (ALISH). The classification system is based primarily, but not exclusively, on the soil classification of the land. The three (3) categories are "Prime", "Unique" and "Other Important" agricultural lands, with all remaining lands identified as "Unclassified".

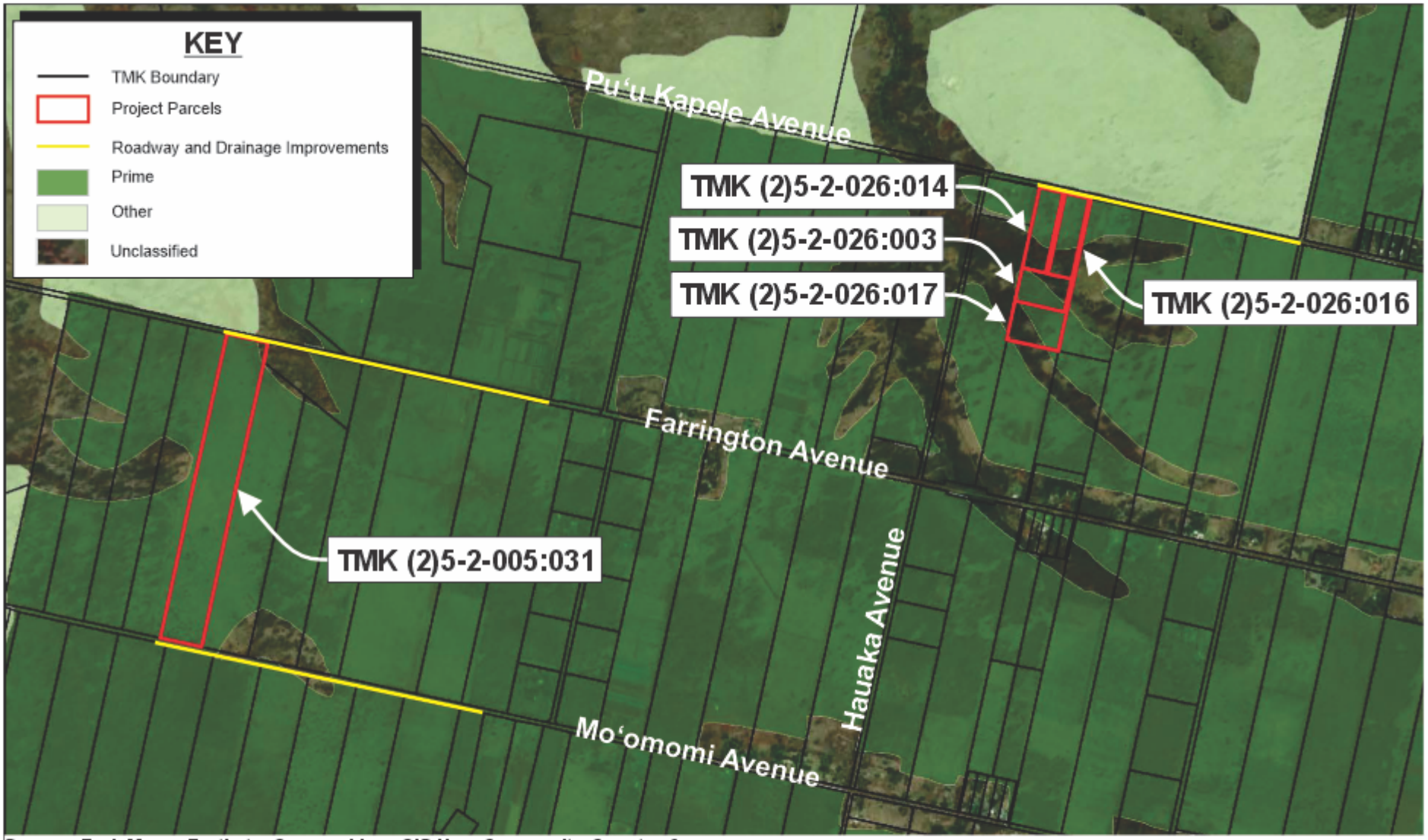
"Prime" agricultural lands have soil quality, growing season, and moisture supply needed to produce sustained high yield crops economically. "Unique" agricultural lands possess a combination of soil quality, growing season, and moisture supply to produce sustained high yields of specific crop. "Other" important agricultural lands are lands that have not been rated "Prime" or "Unique" agricultural lands that are also of statewide or local importance for agricultural use.

The project sites are mostly located within the ALISH's "Prime" land area with a portion of the project area "Unclassified". See **Figure 8**.

Separately, the University of Hawai‘i, Land Study Bureau (LSB) developed the Overall Productivity Rating, which classified soils according to five (5) productivity levels, with "A" representing the class of highest productivity soils and "E" representing the lowest.

The project sites have been classified "D" and "E" by the LSB. See **Figure 9**.

The proposed project will subdivide lots designated for agricultural homesteads and will provide access and infrastructure to allow for the use of the lots for agricultural uses and optional residential uses. The DHHL recognizes the value of prime and productive agricultural lands of Ho‘olehua and the proposed action will encourage agricultural activity. As



Source: Esri, Maxar, Earthstar Geographics, GIS User Community, County of Maui Department of Planning, and the State of Hawai'i Department of Agriculture

Figure 8

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

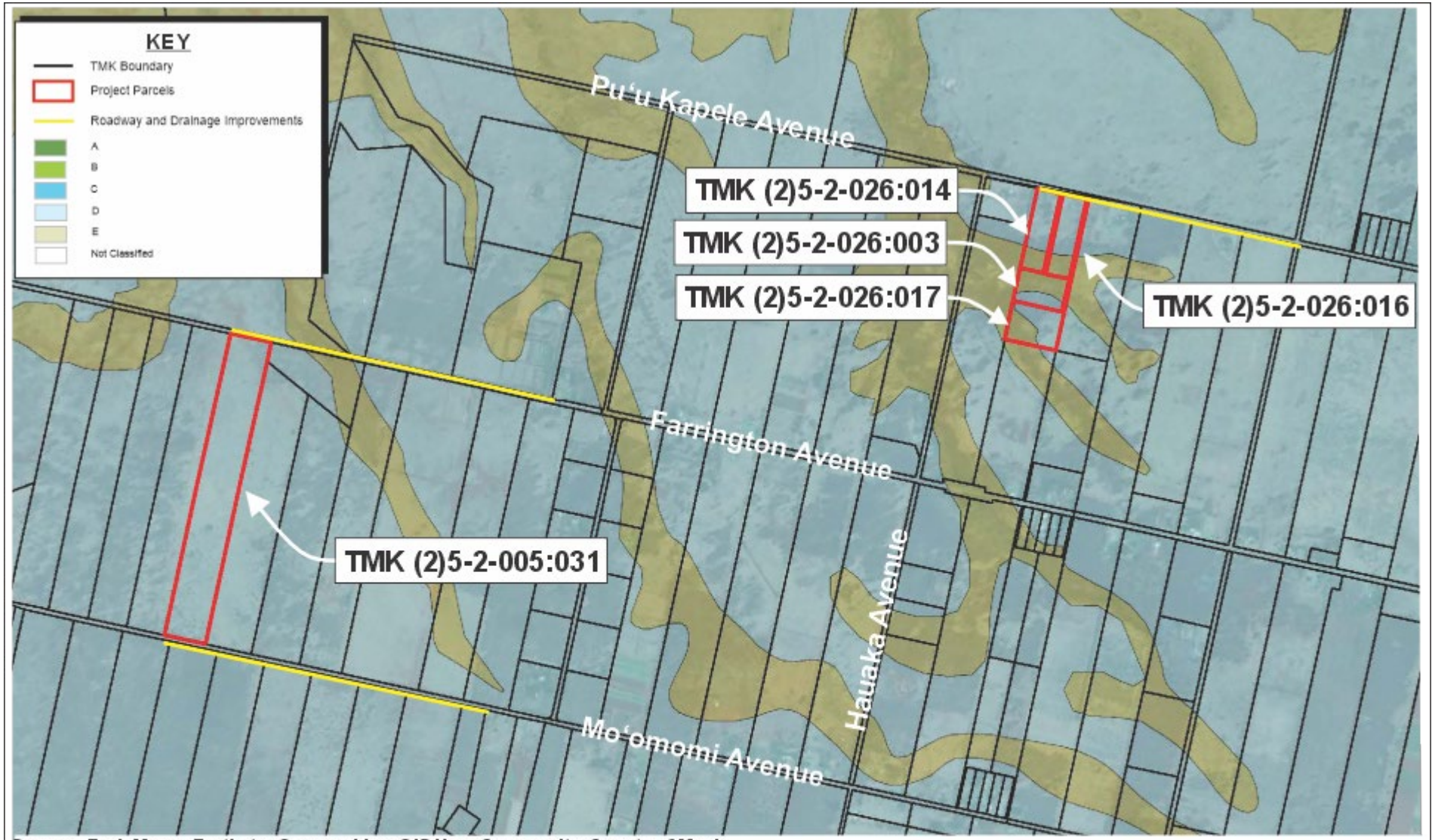
Agricultural Lands of Importance to the State of Hawai'i Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\ALISH_REV



Source: Esri, Maxar, Earthstar Geographics, GIS User Community, County of Maui Department of Planning, and the University of Hawai'i Land Study Bureau

Figure 9

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

Land Study Bureau Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\LSB_REV

such, the project is not expected to have a substantial adverse impact on agricultural designated lands on Molokaʻi. On the contrary, the project seeks to enhance and foster agriculture on Molokaʻi.

5. Flood, Tsunami, and Sea Level Rise

a. Existing Conditions

The Flood Insurance Rate Map (FIRM), Geographic Information System (GIS) layer provided by the United States (U.S.) Federal Emergency Management Agency (FEMA) indicates the project sites are situated in Flood Zone X, outside both the floodplain and tsunami zone. Flood Zone X (unshaded) represents areas outside of the 0.2 percent annual chance flood plain and there are no restrictions upon development within this zone.

As a result of climate change associated impacts from greenhouse gas emissions, sea level rise and flooding are expected to worsen which may have deleterious impacts on the Hawaiian Islands. The Hawaiʻi Sea Level Rise Vulnerability and Adaptation Report (SLRVAR), written to address climate change related threats to public health, natural resources, and the economy, was initially published in 2017 and updated in 2022. The 2022 update has new projections that show an expected three (3) to four (4) foot sea level rise by 2100.

Recent science, presented in the 2022 SLRVAR update has raised the projected intermediate-high sea level rise scenario to 5.9-feet by 2100. Based on this, SLRVAR recommends planning for 5.9-feet of sea level rise by 2100 for planning and design of public infrastructure projects and projects with a low tolerance for flood risk. SLRVAR recommends planning for four (4)-feet of sea level rise by 2100 as the minimum for all other projects. Mid-century modeling shows 1.3-feet of sea level rise by 2050 at the intermediate-high scenario (Sweet et al., 2022).

b. Potential Impacts and Mitigation Measures

The proposed project and related infrastructure improvements will comply with the County of Maui's drainage standards and will utilize stormwater runoff BMPs during construction. The project is located inland, outside of the projected sea-level rise exposure area and outside of the tsunami evacuation zone. As such, there are no significant adverse impacts to drainage conditions and flooding anticipated as a result of the proposed project. In addition, due to the project's upland location, there is no anticipated risk of coastal flooding hazards. Accordingly, significant

adverse impacts associated with floods, tsunamis, and sea level rise are not anticipated.

6. Streams and Wetlands

a. Existing Conditions

The Nenēhānaupō Stream runs adjacent to the eastern project parcels. An unnamed riverine goes through the southern corner of Parcel 17 and south of Parcel 14. Anakahi Gulch flows past Parcel 31 to the east. See **Figure 10**. There are no wetlands within the project area.

b. Potential Impacts and Mitigation Measures

The U.S. Army Corps of Engineers (USACE) was consulted and noted that there appears to be a streambed present on the southwest corner of Parcel 17. On May 22, 2025, the U.S. Army Corps of Engineers (USACE) completed their review of the Jurisdictional Determination request and concluded that the homestead parcels did not contain waters of the U.S., including wetlands or navigable waters. Thus, a U.S. Department of Army permit under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899 was not required for the homestead areas. See **Appendix "B-2"**. DHHL confirms that no work will be conducted within or near any streambed or wetland that would cause alternation, dredging or filling to nearby wetlands or waterbodies.

Since the USACE was first consulted, the project scope area was expanded to include roadway improvements crossing Anahaki Gulch, which is designated as riverine by the USFWS Wetlands Mapper. In order to accommodate the gulch crossing, during high storm events, a drainage culvert is proposed. On December 29, 2025, the USACE completed their review of the additional Jurisdictional Determination request for the project and concluded that the offsite roadway and drainage improvements located along portions of the cited roadways, did not contain waters of the U.S., including wetlands or navigable waters. Thus, a Department of Army permit under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899 was not required for the offsite areas. Based on the USACE determination that no permit is required for all proposed improvements, OPSD consultation for Coastal Zone Management Act federal consistency would not be required. See **Appendix "B-2"**.

Appropriate BMPs will be used during construction along with applicable drainage detention and water quality measures. DHHL will make every

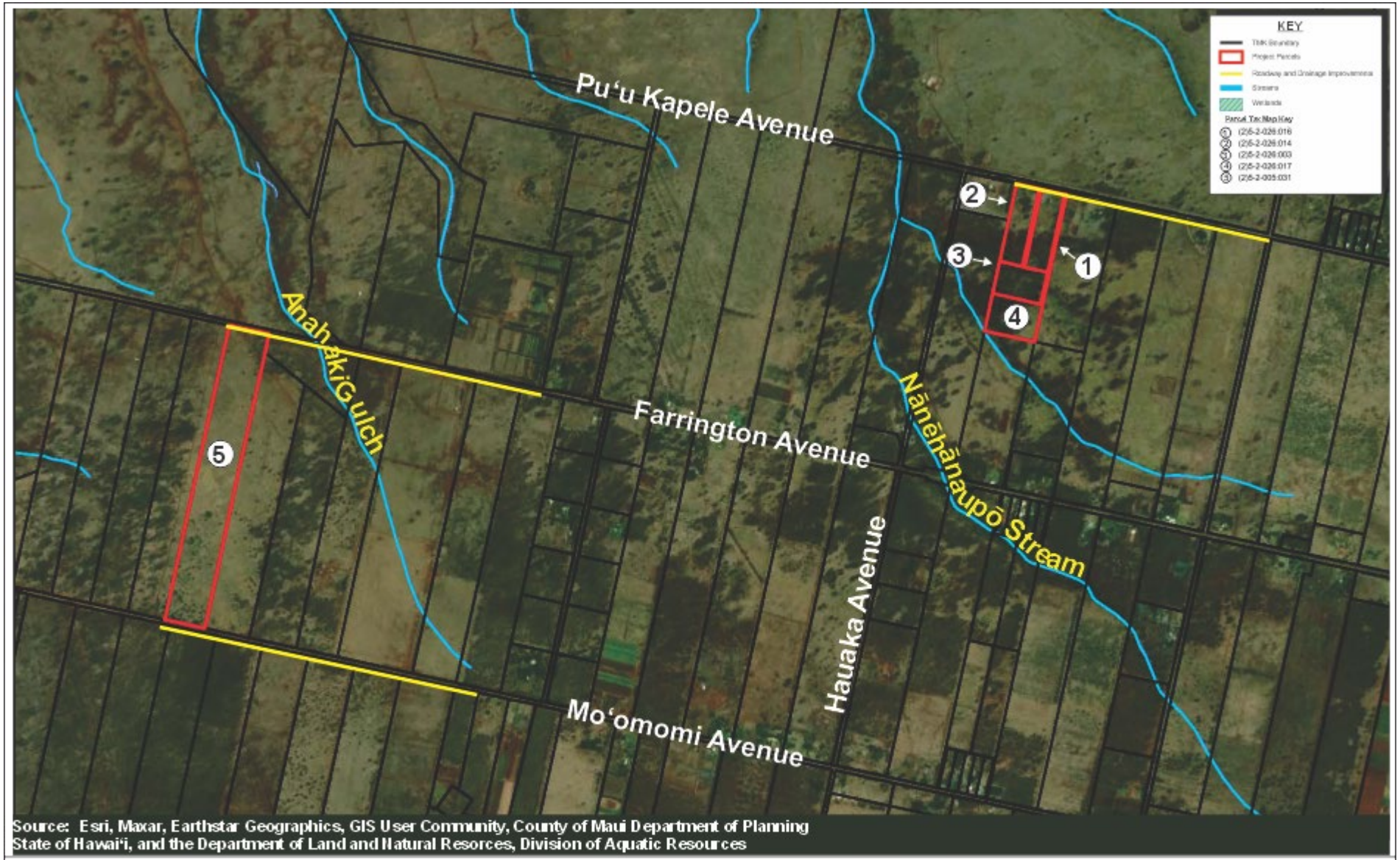


Figure 10

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

Streams and Wetlands Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

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effort to ensure that the project will not have a direct impact upon the waterbodies in the region.

7. Flora and Fauna

a. Existing Conditions

Much of the project area is vacant, consisting of fallow agricultural lands, with the exception of several abandoned structures. Former land uses of the project sites include cattle ranching and grazing for cattle, goats, pigs, and deer. Subsequent land uses include pineapple cultivation and various other agricultural activities. Through consultation with the U.S. Fish and Wildlife Service (USFWS), an official species list was obtained from the USFWS Information for Planning and Consultation (IPaC) website to identify threatened and endangered species that may be present near or within the project area. See **Appendix "C"**.

A biological resources survey was conducted within and near the project area in April 2023 in order to identify and document flora and fauna species their abundance in the project area, and to identify threatened or endangered species. The survey was conducted for the larger DHHL Molokaʻi Water System Improvements project, but included the Hoʻolehua Scattered Lots, with the exception of lots with existing structures. See **Appendix "D"**. Introduced species are non-native species that have been brought by humans or other means to an environment. Native or indigenous species are native to a particular place, but may be found elsewhere in other locations. Endemic species are those that exist exclusively in a particular place.

Flora

Vegetation at the project area was dominated by non-native grasses, including Buffelgrass and Guinea grass. Trees recorded on the project parcels include the koa haole, Formosan Koa scrub and kiawe. A few scattered native shrubs and vines, including ʻuhaloa, ʻilima (*Sida fallax*) and koali ʻawa (*Ipomoea indica*) were also observed. However, all of the native species observed are commonly found throughout the Hawaiian islands and are not of conservation concern.

Fauna

In terms of avian fauna, a total of 17 birds were recorded during the survey. The Warbling White-eye (*Zosterops japonicus*) was the most commonly observed species. The Cattle egret (*Bulbulcus ibis*), Zebra Dove (*Geopelia*

striata), and common myna (*Acridotheres tristis*) also accounted for the majority of all birds recorded during station counts. The only native bird observed was the kōlea or Pacific golden-plover. The kōlea is a migratory bird that is not considered to be a rare or threatened species.

In terms of mammalian species observed, direct observation or signs, including scat or tracks recorded the small Asian mongoose (*Herpestes javanicus*), domestic cat (*Felis catus*), pig (*Sus scrofa*), goat (*Capra hircus*), horse (*Equus ferus caballus*), dogs (*Canis lupusfamiliaris*) and axis deer (*Axis axis*) in the project vicinity. There were no insects or invertebrate fauna of conservation concern observed. A few of the native green darner dragonfly (*Anax junius*) were observed. However, these are also commonly occurring and not of conservation concern.

b. <u>Potential Impacts and Mitigation Measures</u>

As discussed above, the flora and fauna that has been observed within the project area is mostly represented by non-native species that are of no conservation concern. None of the threatened or endangered species on the USFWS species list were observed during the survey. In addition, the biological resources survey noted that the surveyed areas do not contain a suitable habitat for water birds such as the Hawaiian Duck, Hawaiian Coot, and Hawaiian Stilt. Furthermore, there is no suitable nesting habitat for the endangered seabirds such as the Hawaiian Petrel, Band-rumped Storm-Petrel (*Hydrobates castro*), and the threatened Newell's Shearwater (*Puffinus newelli*).

Although no threatened or endangered species were observed in the project area, avoidance and mitigation measures will be implemented to prevent potential harm to threatened or endangered species that may traverse or be present within or near the project area. In order to avoid impacts to Hawaiian Home Lands Trust resources and ensure that threatened, endangered, and candidate species are not affected by the proposed action, the DHHL will implement the following species-specific mitigation measures suggested by the USFWS for the following species:

<u>Ōpeʻapeʻa (Hawaiian Hoary Bat)</u>

The ʻōpeʻapeʻa roosts in woody vegetation across all islands and will leave their young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, June 1 through September 15, there is a risk that young bats could inadvertently be harmed or killed, since they are too young to fly or move away from disturbance. Hawaiian hoary bats forage for insects from as low as three

(3) feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

To avoid and minimize impacts to the endangered Hawaiian hoary bat, the following applicable mitigation measures will be taken:

- The project will not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15).

- The project will not use barbed wire for fencing.

Hawaiian Waterbirds

Listed Hawaiian waterbirds are found in fresh and brackish-water marshes and natural or manmade ponds. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss and habitat degradation. Hawaiian ducks are also subject to threats from hybridization with introduced mallards. The creation of standing or open water may result in the attraction of Hawaiian waterbirds to a site (creative nuisance or habitat sink). In particular, the Hawaiian stilt is known to nest in suboptimal locations (e.g. any ponding water), if water is present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus, the project may create an attractive nuisance.

The proposed project area does not contain a suitable habitat for waterbirds. However, earth moving activities during construction may create temporary ponding that could attract waterbirds, in addition to detention ponds used to collect runoff.

To avoid and minimize potential project impacts to Hawaiian waterbirds, the following applicable measures will be included in the proposed project description:

- In areas where waterbirds are known to be present, post and enforce reduced speed limits, and inform project personnel and contractors about the presence of endangered species onsite.
- Incorporate the USFWS' Best Management Practices for Work in Aquatic Environments into the project design.
- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys, where appropriate habitat occurs within the vicinity of the proposed project site, prior

to project initiation. Repeat surveys again within three (3) days of project initiation and after any subsequent delay of work of three (3) or more days (during which the birds may attempt to nest). If a nest or active brood is found:

- Contact the USFWS within 48 hours for further guidance.
- Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.
- Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

Hawaiian Seabirds

Hawaiian seabirds may traverse the project area at night during the breeding, nesting, and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable to light attraction. It is noted that Maui County Code requires all outdoor lighting to be downward facing and fully shielded in order to protect seabirds and migratory birds.

Nēnē (Hawaiian Goose)

Nēnē are found on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.

To avoid and minimize potential project impacts to nēnē the following mitigation measures will be taken:

- Do not approach, feed, or disturb nēnē.

- If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), have a biologist familiar with nēnē nesting behavior survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of three (3) or more days (during which the birds may attempt to nest).
- Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed project, or a previously undiscovered nest is found within the 150-foot radius after work begins.

The State Division of Forestry and Wildlife (DOFAW) will also be notified if nēnē are observed and construction will stop until chicks have hatched and fledged.

Although not a listed species on Molokaʻi, it is noted that the endemic pueo or Hawaiian short-eared owl is known to occur in the grasslands of Molokaʻi. The biological resources survey indicates that the vegetation of Parcel 31 could be a suitable habitat for the pueo. Out of an abundance of caution, a survey for pueo nests will be conducted prior to initiation of clearing and grubbing.

With the aforementioned mitigation measures, the project is not expected to result in significant negative impacts on threatened or endangered flora and fauna species in this area of Molokaʻi.

8. Archaeological and Historical Resources

a. Existing Conditions

An archaeological Literature Review and Field Inspection (LRFI) was completed by Cultural Surveys Hawaiʻi (CSH) for Parcel 31 and Parcel 14 in November 2021. See **Appendix "E"**. Following the addition of Parcels 3, 16, and 17, a supplemental LRFI was prepared and submitted to the State Historic Preservation Division (SHPD). See **Appendix "E-1"**. Previous archaeological assessments and studies were reviewed to identify potential historic properties and archaeological resources within and near the project sites. In addition, a pedestrian field inspection was completed in September of 2021 and December of 2023.

The project sites are located within the Pālāʻau ahupuaʻa of Molokaʻi. The cultivation of ʻulua or sweet potato was well documented, particularly in the Pālāʻau region. Early historical accounts describe Molokaʻi as having fertile land with abundant fish ponds. After conquering the island of Maui in 1790,

Kamehameha I spent time on Molokaʻi after gaining the allegiance of the Molokaʻi chiefs. Here he trained with his warriors in preparation of his attack on Oʻahu.

Following the Māhele (division of Hawaiian lands) in 1848, most of the project lands were designated as Crown lands owned by the Hawaiian Government. During this time cattle were introduced to Molokaʻi and the cattle and hides trade was established. Other animals, such as sheep, goats and axis deer, were also brought to the island.

In 1897, Molokai Ranch was formed through the purchase of 70,000 acres of Crown lands from the Bishop Estate. The ranch was primarily used for cattle ranching but also included pineapple cultivation, forest reserves and honey production. Molokai Ranch was influential in the modern agriculture economy but has ceased operations since 2008.

Other than cattle ranching, there was a notable commercial pineapple industry on Molokaʻi. Specifically in the Pālāʻau-Hoʻolehua area, Hawaiian homesteaders harvested commercial pineapple for companies including Libby, McNeill and Libby, which was later incorporated by Dole Pineapple, and the California Packing Corporation (Calpac). Both Dole Pineapple and Calpac ceased pineapple production in 1975 and 1983, respectively. Subsistence agriculture has also continued through the establishment of the Hawaiian Homes Commission and homesteads in Pālāʻau-Hoʻolehua.

The 2021 and 2023 archaeological LRFIs note that previous archaeological studies conducted found no historic properties in the project area and only a few historic properties have been discovered in the vicinity of the project. Historic properties previously identified in the vicinity are limited to a few sites recorded, including the legendary Kapeʻelua Complex (SIHP # 50-60-03-11). There appears to have been a focus of traditional Hawaiian activity in Anahaki Gulch north of the western project area. No potential historic properties or cultural features were observed during the field study. Overall, most of the project area appeared to have been modified by varying levels of grading. An abandoned house was discovered on Parcel 14 and it is predicted that it was constructed sometime in the 1970s. This parcel also contained two (2) terrace alignments made of small boulders on the southern portion of the parcel beneath a natural drainage swale. It is predicted that these terrace alignments were for agricultural purposes, but their origin is unknown. A modern, abandoned home and greenhouse were observed on Parcel 16. The remaining parcels were vacant aside from vegetation.

b. Potential Impacts and Mitigation Measures

Following review of the 2021 LRFI, the SHPD issued a determination on their review of Parcel 31 and Parcel 14, providing their concurrence with DHHL's determination of "No historic properties affected". The 2023 LRFI for Parcels 3, 16 and 17 was submitted to the SHPD in February 2024. On January 6, 2026, DHHL presumed SHPD's concurrence with the project effect determination of "no historic properties affected" given that DHHL had not received written comments from SHPD within the 90 day comment period. As no historic properties have been identified within the project areas or within 500 meters of the project areas, the proposed action is not anticipated to result in significant adverse impacts to archaeological or historic resources.

9. Cultural Resources

a. Existing Conditions

A Cultural Impact Assessment (CIA) was prepared by Cultural Surveys Hawai'i (CSH) in September 2023 to identify the possibility of previous and/or currently conducted traditional cultural practices and traditional resources procured within the project area and the greater ahupua'a of Pālā'au, and to assess the potential for impacts to these cultural resources from the proposed action, alternatives to the proposed action, and to determine applicable mitigation measures to protect cultural resources, practices, and beliefs. See **Appendix "F-1"**. The CIA relied on archival and documentary research, as well as communication with organizations and individuals having knowledge of the project area, its cultural resources, and its practices and beliefs. Outreach efforts involved contact to individuals and groups including Native Hawaiian Organizations (NHO), agencies, community members and descendants of the area, in order to identify individuals with cultural expertise and/or knowledge of the project area or the ahupua'a of Pālā'au. CSH was able to conduct interviews with Kilia Purdy-Avelino and Justin Avelino, kama'āina of Ho'olehua, and Malia Lani Forbes Greaney, kama'āina of Pālā'au. A supplemental CIA was prepared in July 2024 to include additional adjacent parcels that were added to the project. See **Appendix "F-2"**.

Community consultation and background research conducted as part of the CIAs identified the following cultural practices within the greater Pālā'au ahupua'a:

1. Agricultural and gathering practices
2. Marine resources

3. Moʻolelo (stories) and wahi pana (storied places)
4. Healing practices
5. Religious activities
6. Burial practices

No ongoing cultural practices were identified within the project site during community consultation. Additionally, a Ka Paʻakai Analysis (KPA) was completed and appended to the CIA report in January 2026. Refer to **Appendix "F-2"**. The KPA found that no impacts on traditional or customary practices are anticipated because they were not found within the project area. However, the project is located in the general vicinity of ongoing cultural practices, as noted above.

b. <u>Potential Impacts and Mitigation Measures</u>

Four (4) impacts to ongoing cultural practices were identified within the project vicinity during community consultation for the CIAs. Consultation identified a number of concerns related to the environment and the broader community:

1. Availability of water
2. Soil quality
3. Impacts to ʻuhane (spirits) and ʻiwi kūpuna (ancestral remains)
4. Impacts to wahi pana

The CIAs propose mitigation measures and considerations to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups. The CIA recommendations and responses, where appropriate, are provided:

1. *Mrs. Purdy-Avelino expressed concerns for sacred sites located in the vicinity of the project area. She supports the development of more homestead lots for homesteaders on the waitlist, however, she emphasized the need to make sure to continue to protect sacred sites.*

   DHHL acknowledges Mrs. Purdy-Avelino's support for the development of DHHL homestead lots and will endeavor to protect known sacred sites.

2. *Mr. Avelino stated that it is vital that no work be done to the Makahiki Grounds.*

   DHHL confirms that no work will be done on the Makahiki Grounds.

3. *Ms. Greaney expressed concern regarding the availability of water. She noted that Hoʻolehua, including Nāʻiwa, is historically known for its dry and barren land, with little to no water available. She stressed that it is also important to ensure access to the appropriate amount of water is available and at a reasonable cost.*

   Water service will be made available to each of the lots as part of the proposed improvements.

4. *Ms. Greaney strongly suggests the soil be tested well by third party professionals for any presence of harmful chemical residue possibly remaining in the soil. This is a good safety precaution for farmers.*

   DHHL will consider soil testing for presence of chemicals prior to leasing the lots.

5. *Ms. Greaney also suggested that future studies may also look at nearshore areas off of Pālāʻau to assess for the presence of chemicals from runoff and any impacts.*

   DHHL acknowledges the recommendation to review nearshore areas of Pālāʻau for the presence of hazardous chemicals in future studies.

6. *Ms. Greaney insists that the homestead community should be notified well in advance of any proposed developments that will occur on the Makahiki lands.*

   DHHL confirms that no work will be done on the Makahiki Grounds.

7. *Ms. Greaney also stated that if there are any future developments, it is important that in-depth archaeological inventory surveys be conducted as it is known that many artifacts still exist in the mauka (toward the mountains) and central regions of Nāʻiwa and Pālāʻau.*

   DHHL confirms that future developments in the region will consult with the SHPD to assess the potential for impacts to archaeological features and appropriate archaeological investigations.

8. *Mrs. Purdy Avelino recommends a cultural monitor be present on site during any work to help provide guidance in regards to Hawaiian sense of place, protection of sacred areas and objects, and be a voice for kupuna.*

   DHHL will consider cultural monitoring for the project.

9. *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.

10. *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.*

    Non-Native Hawaiian human remains will undergo the process laid out under State law (HAR 13-300), however, Native Hawaiian human remains and cultural items found on DHHL lands are subject to the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3001 et seq and its implementing regulations (43 CFR Part 10). As 43 CFR § 10.2 provides, tribal lands include "All lands administered by the Department of Hawaiian Home Lands (DHHL) under the Hawaiian Homes Commission Act of 1920 (HHCA, 42 Stat. 108) and Section 4 of the Act to Provide for the Admission of the State of Hawai'i into the Union (73 Stat. 4), including "available lands" and "Hawaiian home lands."" Under NAGPRA, DHHL must prepare a plan of action (POA) prior to any planned activity that is likely to result in a discovery or excavation of human remains or cultural items. If not part of a planned activity, a POA is required after a discovery of human remains or cultural items. In developing a POA, DHHL will initiate consultation with lineal and cultural descendants, consult on the POA, and approve and sign the POA and provide a copy to all consulting parties. The 3-step process for drafting a POA pursuant to NAGPRA can be found in 43 CFR § 10.4(b).

With consideration of the aforementioned recommendations and implementation of appropriate mitigation measures, the proposed project is not anticipated to have a significant adverse impact on cultural resources.

10. Wildfire Hazard

a. Existing Conditions

In the State of Hawai‘i, although wildfires can occur year-round, the fire season typically runs from the dry months of April through October. Dry periods or periods of drought can extend the fire season. With drought and dry seasons, there is an increased likelihood of wildland fires. Wildfires in Hawai‘i destroy native forests, alter soil composition, and threaten human safety and infrastructure. Although the term “wildfire” may indicate that they are naturally occurring, over 98 percent of wildfires are human-caused. Each year, approximately 0.5 percent of the State of Hawai‘i’s total land area burns, which is equal to or greater than the proportion burned of any other state. The potential for significant damage to life and property exists in areas designated as “wildland urban interface (WUI) areas,” where development is adjacent to densely vegetated areas. Across the continental United States, the WUI is roughly defined as the zone where natural areas and development meet. In Hawai‘i, this definition has been expanded. Steep slopes create linkages between upland wildland fires and downslope impacts on communities, coastal areas, and municipal resources. Conversely, wildfires ignited near developed areas quickly spread into forested areas because of invasive grasses, putting threatened and endangered plant and animal species at risk. Hawai‘i is also unique in that the vegetation surrounding communities is rapidly undergoing changes that yield higher wildfire risk, in large part due to increased invasion by fire-prone species from changes in land uses, such as active agriculture becoming unmanaged fallow land (Hawai‘i Emergency Management Agency, 2023). In 2020, the U.S. Department of Agriculture has mapped wildfire risk to communities throughout the country with a risk level ranging from very low to very high. Wildfire risk was evaluated based on the likelihood and intensity of potential wildfires through fire behavioral modeling which simulates factors such as weather, topography, and ignitions in recent decades along with the presence of vegetative fuel. Other factors that contribute to wildfire risk is interface of urban development adjacent to wildland vegetation. The proposed project is classified as having a very low to medium wildfire risk. See **Figure 11**.

Agencies and organizations such as the DOFAW and the Hawai‘i Wildfire Management Organization (HWMO) have identified wildfires as an increasingly common hazard to communities and native ecosystems due to dry climatic conditions, non-native invasive species and increased commercial residential development and more people living in close proximity to wildland areas. In Hawai‘i, wildfires have also been correlated

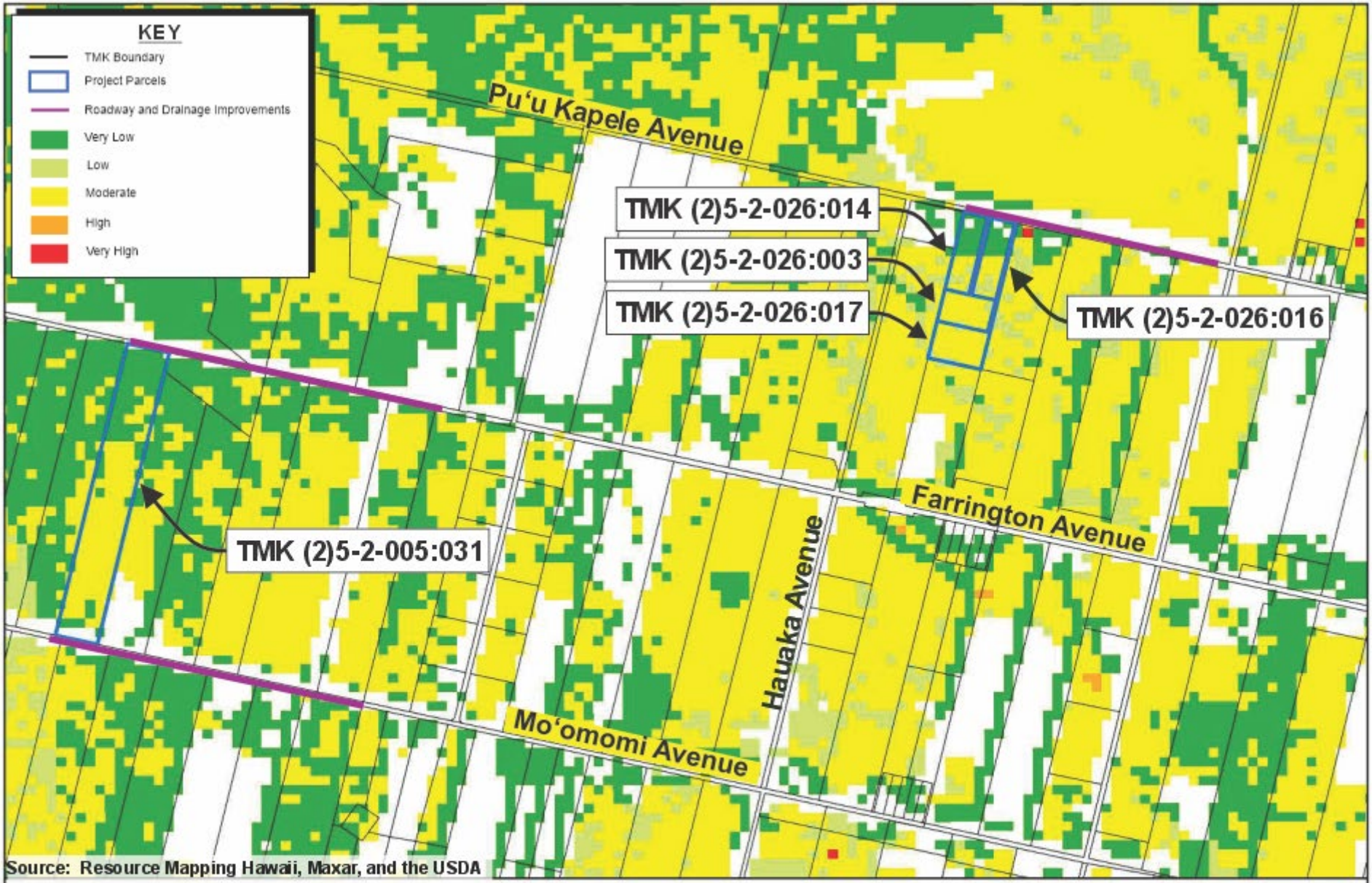


Figure 11

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

Wildfire Hazard Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\Wildfire

to drought conditions. Wildfire history data show an increase in ignition and the areas burned during the warmer drier months of summer. The State's Fire Management Program is part of the Watershed Protection and Management Section of DOFAW. DOFAW's Fire Management Program continues to be at the forefront of wildfire and all other risk-management training throughout the state, despite the fact that DOFAW personnel are primarily natural resource managers and not full-time wildland firefighters.

DOFAW has worked in partnership with the HWMO to address wildfire hazards, mitigation and response efforts. HWMO has worked on developing Community Wildfire Protection Plans across the State. The proposed project is located within The Molokaʻi Community Wildfire Protection Plan (CWPP), which was finalized in 2016 covers the entire island. The Molokaʻi CWPP comprehensively defines the entire island of Molokaʻi as a WUI at-risk area. The landscape of Molokaʻi is characterized by steep slopes, rough terrain, strong winds, and a large percentage of highly ignitable invasive grasses. The region is generally dominated by non-native vegetation such as Christmas berry, Kiawe, and several fire-promoting shrubs and grasses These factors, combined with drought conditions and a history of human-caused fires puts the area at increased risk of wildfire. The proximity of development to fire-prone wildlands present hazardous conditions that now threaten communities and natural resources. Conditions such as 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. Together, these factors create the fire environment that puts Molokaʻi at risk of wildfires.

b. <u>Potential Impacts and Mitigation Measures</u>

In recognition of the wildfire risk in the project area, hazard mitigation measures will be incorporated into the proposed improvements to reduce risk of damage to life, property and natural resources. These wildfire hazard mitigation measures include, but are not limited to, vegetation control, removal of leaf litter, planting of drought-tolerant, fire resistant plants away from powerlines, and removal of highly flammable materials such as scrap wood, firewood, and combustible furniture. In addition, beneficiaries will be advised of construction materials and methods that may be utilized to reduce wildfire-caused ignitions of residences and structures is to harden the home or structure with noncombustible building materials and ignition-reducing strategies.

11. Air Quality

a. Existing Conditions

The State of Hawai‘i conducts air quality monitoring on the islands of Hawai‘i, Kaua‘i, O‘ahu, and Maui to ensure Federal and State air quality standards are met. Although the State does not measure air quality on the island of Moloka‘i, the air quality is considered to be good due to consistent tradewinds and limited development that results in limited sources of pollution. Airborne pollutants can be attributable to vehicular traffic on the nearby roadways and from the Moloka‘i Airport. Windblown dust from surrounding fallow agricultural lands is another source of indirect emissions in the region. These sources, however, are intermittent and prevailing winds quickly disperse the particulates generated by these temporary sources. Overall, the air quality in the region is considered good.

b. Potential Impacts and Mitigation Measures

In the short term, construction-related activities for the proposed project will be the primary source of airborne pollutants affecting the surrounding area. Site work involving clearing, grubbing, and grading operations will generate fugitive dust. Appropriate BMPs, such as periodic watering of exposed surfaces, installation of dust screens, and regular maintenance of construction equipment will be utilized to minimize air quality impacts associated with project construction.

The proposed project is not an action which will generate adverse long-term air quality impacts. In the long term, the proposed project will provide agricultural homesteading opportunities for DHHL beneficiaries. The proposed subdivided subsistence agricultural lots and improvements are not anticipated to have an adverse effect upon air quality

12. Greenhouse Gas Considerations

a. Existing Conditions

Greenhouse gases (GHG) (carbon dioxide, methane, nitrous oxide and fluorinated gases) trap heat in the earth’s atmosphere. In the context of climate and ocean warming, increases in levels of atmospheric GHG have been attributed to human activity (IPCC, 2021). Within the State of Hawai‘i, the energy sector (including fossil fuel burning to produce electricity, transportation, waste incineration, and natural gas systems) is identified as the source of 89.7 percent of GHG emissions (Hawai‘i Department of Health, 2019). Other sources of GHG emissions include industrial facilities,

agriculture and forestry, and waste treatment such as landfills, composting, and wastewater treatment.

The Federal Greenhouse Gas Reporting Program (40 CFR Part 98) requires mandatory reporting of GHG emissions from sources that emit 25,000 metric tons or more of carbon dioxide equivalent (CO2 EQ) per year in the United States. Categories of use which are generally associated with this level of reporting include power plants, petroleum and natural gas systems, refineries, and other heavy manufacturing processes. On Molokaʻi, the Maui Electric Company's Pālāʻau Generating Station is the only facility operating near the 25,000 metric ton level. 2022 data show that Pālāʻau Generating Station produced 23,724 metric tons of CO2 EQ emissions, however, the last time emission levels exceeded 25,000 metric tons was in 2011 when 25,078 metric tons of CO2 EQ was reported (U.S. EPA, 2022).

b. Potential Impacts and Mitigation Measures

The proposed action will involve short-term consumption of fuel for construction equipment, vehicles, and machinery during the construction period. This usage is not anticipated to be substantial or excessive within the context of the action's benefits over the lifetime of the project. After the project is completed, use of the homestead lots and driveways may result in increased motor vehicle traffic in the project area. Statewide, vehicle-related fuel consumption for commercial, industrial, and residential sectors is a less significant contributor to total GHG emissions than emissions attributable to electricity consumption (Hawaiʻi Department of Health, 2019), and this contribution is anticipated to continue to decrease due to ongoing reduction in vehicle emission standards as well as increased utilization of hybrid and electric vehicles.

Furthermore, the State of Hawaiʻi has set a renewable energy portfolio standard of 100 percent (100%) by the year 2045 (Section 269-92, HRS) to minimize dependence on fossil fuel combustion, Hawaiian Electric supplies power to all of Maui County. Their total sales of renewable energy on Maui County accounted for 40.80 percent of energy sales in 2019 which is higher than the state-wide consumption of renewable energy, which averaged 29.79% in 2019 (Hawaiʻi State Energy Office, 2020).

The proposed action is not anticipated to create significant direct and indirect foreseeable GHG emissions. This action does not fall within the threshold of mandatory GHG reporting.

13. Noise Quality

a. Existing Conditions

There are no fixed noise generators in the vicinity of the project site. The limited noise generated in the area is primarily attributed to vehicular traffic along the surrounding roadways and aircraft noise from the Molokaʻi Airport in Hoʻolehua. Overall, the noise level in the region is low.

b. Potential Impacts and Mitigation Measures

Ambient noise conditions may be temporarily affected by construction activities. Heavy construction machinery, such as backhoes, dump trucks, front-end loaders, and material-transport vehicles are anticipated to be the dominant noise-generating sources during the construction period of the proposed project.

In order to mitigate noise impacts, construction activities are anticipated to be limited to daylight work hours. Project-related noise will be minimized through use of applicable BMPs, such as regular maintenance of construction equipment and use of properly muffled equipment. In the long term, the proposed project is not anticipated to have adverse noise quality impacts.

14. Hazardous Materials

a. Existing Conditions

The project area has primarily been used for pineapple cultivation and ranching. Due to its former agricultural use, there may be the limited potential for residual hazardous materials, such as pesticides or fertilizer. A Limited Hazardous Materials Survey was conducted for the dilapidated and abandoned house on Parcel 14 and greenhouse on Parcel 16. See **Appendix "G"**. Sampling and testing was conducted to identify potential presence of asbestos-containing materials (ACM), arsenic and lead paint. A visual inventory for polychlorinated biphenyls (PCBs) and mercury in fluorescent light fixtures was also conducted.

The limited asbestos survey was conducted in general accordance with U.S. Environmental Protection Agency (EPA) 40 Code of Federal Regulations (CFR) 763 Asbestos and the State of Hawaiʻi, Department of Health (DOH), Chapter 11, Hawaiʻi Administrative Rules (HAR) Asbestos Requirements. The asbestos survey consisted of the collection of bulk samples from observed accessible suspect building components samples

of the floors, walls, and roofing were tested, in addition to the concrete cover on the septic tank. No asbestos was detected in the samples collected. A limited paint survey was conducted in general accordance with U.S. Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of lead-based paint (LBP) Hazards in Housing and Chapter 11, HAR.

The limited lead paint survey consisted of the collection of paint samples of building components with paint in poor condition only. Five (5) paint chip samples were collected and tested for lead-based paint (LBP) and lead-containing paint (LCP). The paint samples, collected from paint in poor condition, contained detectable concentrations of lead ranging from 0.009 to 2 mg/kg and are considered LCP.

Canec is the common name for a fiberboard building material that was made from sugar cane bagasse, the residual fiber that remains after the juice has been extracted from the sugar cane. Canec contains arsenic in the range of 1,000 to 4,000 mg/kg. Canec was not observed at the surveyed sites. Inaccessible and/or hidden suspect arsenic-containing materials not sampled during this field effort should be presumed arsenic-containing until sampled and proven otherwise.

b. <u>Potential Impacts and Mitigation Measures</u>

The project sites have been vacant and the soils in the project area are not anticipated to contain significant amounts of hazardous materials. No ACM was identified through the survey and testing. However, the report notes that inaccessible and hidden suspect materials not tested during the survey should be assumed to be ACM unless proven otherwise. Should there be ACM encountered or generated during future demolition at the project site, the ACM will be removed and disposed of by trained workers in accordance with the Occupational Safety and Health Administration (OSHA) Asbestos Standard 29 CFR 1926.1101, Hawai‘i Occupational Safety and Health (HIOSH) rules and regulations, EPA National Emission Standard for Asbestos 40 CFR 61-Subpart M, and 40 CFR 763 Asbestos.

Lead paint or debris that will be encountered at the project site will be properly handled, removed and disposed of in accordance with OSHA Lead in Construction Standard 29 CFR 1926.62 and HIOSH rules and regulations. Appropriate worker protection measures will be taken during the demolition work to limit lead exposure of personnel and releases to the environment.

Canec building materials are exempt from State laws requiring a hazardous waste determination to be made prior to disposal. As a result of this exemption, testing canec for arsenic content or leaching characteristics is not required by the State for disposal. The exemption applies whenever canec building materials are segregated from other building materials and disposed of separately.

When canec is mixed with other building demolition waste, the combined waste could be subject to hazardous waste determination before disposal.

The Toxic Substances Control Act (TSCA) banned the production of PCBs in 1976 in the U.S. In fluorescent light fixtures, PCBs are usually found in ballasts either within small capacitors or in the form of a black tar-like compound. E2 conducted a visual inventory for suspect PCBs in fluorescent light fixture ballasts and the accompanying mercury-containing fluorescent tubes or compact fluorescent light (CFL) bulbs. Only one fluorescent light fixture was observed in the greenhouse; it contained a ballast that was labeled “No PCBs” and one green-banded lamp, which has lower amounts of mercury than regular fluorescent lamps. If a ballast is not labeled “No PCBs”, it is assumed to contain PCBs. If PCB debris is encountered and/or generated at the project site, the PCB will be properly disposed of in accordance with OSHA PCB Standards 29 CFR 1910.1000 and 40 CFR 761.

15. Scenic and Open Space Resources

a. Existing Conditions

Maunaloa to the west, Kamakou to the east, and Moʻomomi Bay and the Pacific Ocean to the north define the scenic resources in Central Molokaʻi.

The project site is surrounded by similar agricultural lands and homesteads.

b. Potential Impacts and Mitigation Measures

The proposed project will subdivide lands for subsistence agricultural use and will be similar in use to agricultural homesteads in the vicinity. The subdivided lots will be improved to include driveway access and water utility connections. Although not developed as part of the proposed action, individual lessees of the lots may opt to construct homes on the lots. These homes, however, are expected to be of similar scale to neighboring homes. It is not anticipated that the project will have an adverse impact on scenic and open space resources.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Land Use and Community Character

a. Existing Conditions

Molokaʻi is considered to be one of the most rural and least developed Hawaiian islands. Molokaʻi is also referred to as the "most Hawaiian" of the Hawaiian islands due to having the highest percentage of Native Hawaiian residents in the State, excluding the island of Niʻihau. Additionally, many Molokaʻi residents practice a more traditional, subsistence-based lifestyle through farming, fishing, hunting and bartering and are protective of the island's rural character.

From a regional perspective, the project sites are located in central Molokaʻi and are surrounded by agricultural lands and residential homesteads.

b. Potential Impacts and Mitigation Measures

The project is compatible with the adjacent land uses and rural community character. As such, the proposed project is in consonance with the current land use and community character of the area.

2. Population

a. Existing Conditions

The population of the island of Molokaʻi has exhibited little growth over the past several decades. According to the 2020 U.S. Census, the population of Molokaʻi is 7,369, which is a slight increase from the 2010 census population of 7,345.

b. Potential Impacts and Mitigation Measures

The proposed project involves developing needed homesteads for DHHL beneficiaries in Molokaʻi. Although there has been little change in the island's population, there is a total of 2,149 DHHL beneficiaries on the waitlist for homesteads in Molokaʻi as of March 1, 2026. There are 1,123 beneficiaries waitlisted for agricultural homestead lease awards in Molokaʻi and 15 beneficiaries on the Area Waitlist for Hoʻolehua Agricultural lots. As such, the proposed project is expected to help meet the demand for homesteading opportunities in Molokaʻi and is not anticipated to significantly alter population trends. The proposed project is not anticipated

to result in adverse impacts on the region's or island's population parameters.

3. Economy

a. Existing Conditions

Molokaʻi is known for its subsistence economy, largely influenced by aquaculture and agriculture due to its natural fishponds and superior soil and agricultural conditions. The tourism industry of Molokaʻi is much less significant than the industry on the island of Maui. In 2019, there were 3,059,905 visitor arrivals on Maui Island compared to 63,035 visitor arrivals on Molokaʻi. Historically, Molokaʻi has a higher than average level of unemployment compared to the rest of the State (State of Hawaiʻi Data Book, 2023).

b. Potential Impacts and Mitigation Measures

The proposed project supports the economy of Molokaʻi by providing homestead opportunities to DHHL beneficiaries and through encouraging sustainable agricultural activity. In addition, the project will generate positive economic impacts associated with construction-related activity and is not anticipated to have adverse impacts on Molokaʻi's economy.

4. Housing

a. Existing Conditions

DHHL homesteads in Hoʻolehua consist of a mix of pastoral, agricultural, and residential homesteads. As of November 2019, there were a total of 155 residential homestead lots leased to beneficiaries in Hoʻolehua (DHHL Molokaʻi Regional Plan, 2019).

b. Potential Impacts and Mitigation Measures

The proposed project does not involve the construction of housing; however, subsistence agricultural lessees are allowed to construct homes on their homesteads. The project will not increase the need for housing on Molokaʻi and is not expected to have adverse negative impacts on housing in Molokaʻi.

C. PUBLIC SERVICES

1. Solid Waste Collection and Disposal

a. Existing Conditions

The County of Maui Solid Waste Division operates the Molokaʻi-Nāʻiwa Landfill and Recycling Center, which is located off of Maunaloa Highway in Maunaloa. The landfill and recycling center accepts commercial and residential waste and recycling items. The County also operates the Molokaʻi Metals Facility in Maunaloa, which accepts items such as scrap metal, motor vehicles, appliances, batteries, engine parts, and propane tanks.

b. Potential Impacts and Mitigation Measures

Construction-related waste will be properly disposed of in accordance with policy and practices established by the Solid Waste Division to ensure that there are no adverse impacts to the County's Landfill.

As the homestead lots will be located in an area currently serviced by the County, there are no adverse impacts anticipated to the County's collection system or disposal capacities attributed to the proposed project.

2. Police, Fire, and Medical Facilities

a. Existing Conditions

Police protection for Molokaʻi is provided by the Maui County Police Department located at the Molokaʻi Police Station in Kaunakakai. 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.

Fire prevention, protection, rescue, and emergency services for Molokaʻi are provided by the Maui County Department of Fire and Public Safety. The department has two (2) stations to service Molokaʻi, which include the Hoʻolehua Fire Station and the Kaunakakai Fire Station. In addition, there are fire hydrants located on Farrington Avenue, Moʻomomi Avenue and Puʻu Kapele Avenue fronting the project sites. Refer to **Appendix "B"**.

The Queen's Health System operates the Molokaʻi General Hospital, which is the only hospital on Molokaʻi. Located in Kaunakakai, the Molokaʻi General Hospital offers 24/7 service and is equipped with 15 beds.

Services offered include digital x-rays, outpatient chemotherapy, acute care, physical therapy, and a midwifery program.

In addition, the Molokaʻi Community Health Center in Kaunakakai offers primary care, behavioral health services and dental care for adults and children. Other independent medical services are offered and are primarily located in Kaunakakai. The project sites are located in Central Molokaʻi in relative proximity to the main town of Kaunakakai.

b. Potential Impacts and Mitigation Measures

The proposed project involves the subdivision of homestead lots and construction of access driveways and waterlines. The proposed project is located within service areas for existing police, fire, and medical facilities and is not anticipated to adversely impact these services. A new 8-inch waterline will be constructed on Puʻu Kapele Avenue to provide adequate water flow for fire protection purposes. Refer to **Appendix "B"**. Based on consultation with the Maui Fire Prevention Bureau, it is acknowledged that one (1) and 2 (two) family dwelling units are required to be within 600 feet of a fire hydrant.

3. Educational Facilities

a. Existing Conditions

The State Department of Education (DOE) operates several schools on Molokaʻi. Public school facilities include one (1) high school and one (1) middle school, Molokaʻi High (grades 9-12) and Molokaʻi Middle (grades 7-8), both located in Hoʻolehua. There are a total of four (4) K-6 elementary schools on Molokaʻi, which are Kaunakakai Elementary and Kilohana Elementary in Kaunakakai, Maunaloa Elementary in Maunaloa, and Kualapuʻu Elementary Charter School in Kualapuʻu.

b. Potential Impacts and Mitigation Measures

The proposed project entails the subdivision of agricultural lots and related improvements and is not anticipated to have adverse negative impacts on educational facilities. The proposed project is not considered a significant population generator that would require the provision of additional educational facilities.

4. Recreational Facilities

a. Existing Conditions

There are multiple public parks and facilities on Molokaʻi. Parks and facilities near the project sites in the Central Molokaʻi region include the Mitchell Pauʻole Center, Palaʻau State Park, Duke Maliu Regional Park, Kakahaia Park, Kualapuʻu Park and Community Center, and Lanikeha Community Center.

b. Potential Impacts and Mitigation Measures

The proposed project will subdivide agricultural lots and construct related improvements to provide homestead opportunities to DHHL beneficiaries on Molokaʻi and is not anticipated to have an adverse impact on recreational resources or require the provision of additional resources as the project is not considered to be a significant population generator.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

There are several major roadways in the vicinity of the project sites. State highways that run through or near the project area include Maunaloa Highway (Route 460) and Airport Loop (Route 465) off of Maunaloa Highway, which provide access to the Molokaʻi Airport. Puʻupeʻelua Avenue (480) is another State highway that runs from Maunaloa Highway to Farrington Avenue. Parcel 31 is situated between Farrington Avenue and Moʻomomi Avenue, with the remaining parcels being located below Puʻu Kapele Avenue. However, the portion of Puʻu Kapele Avenue fronting the project parcels is currently undeveloped and overgrown with trees and vegetation.

b. Potential Impacts and Mitigation Measures

The proposed action involves the paving and extension of existing roads to provide driveway access to the subdivided lots. Swales and culverts will also be constructed for proper drainage. DHHL will be responsible for maintenance of the proposed driveways. Paved roads will improve access for lessees and emergency vehicles. The proposed road cross sections will consist of twenty-foot wide asphaltic cement pavement in the center of the ROW. Runoff will be collected at the low point in a grassed swale. Proposed

road right-of-way widths are 40 and 50 feet. Road profiles will follow the existing terrain as much as possible to reduce earthwork, maintain existing drainage patterns, and to preserve the existing water and irrigation lines that are already in place. The Maui County Police Department was consulted and determined there are no significant adverse effects anticipated as a result of the project. The project contractor will be required to secure necessary permits and approvals prior to the start of construction. In addition, it is not anticipated that implementation of the proposed project would significantly increase traffic in the area and thus, would not necessitate additional improvements.

2. Potable Water

a. Existing Conditions

The proposed lots will be serviced by the Hoʻolehua Water System (PWS 230), which is operated by DHHL. The Kualapuʻu Aquifer supplies water to the DHHL wells in the Hoʻolehua Water System (PWS 230), which operates two (2) wells pumping water from the Kualapuʻu Aquifer. Existing water mains and fire hydrants are located within the existing unimproved roads. At Parcel 31, there is a 6-inch waterline within Farrington Avenue and a 6-inch waterline within Moʻomomi Avenue. At the eastern project parcels, there is an existing 1.5-inch lateral providing service to the existing houses on Puʻu Kapele Avenue.

b. Potential Impacts and Mitigation Measures

The existing low-pressure water system will provide water service to the proposed lots. Potable water demand is based on 600 gallons per day, per the Department of Water Supply's Water System Standards for a single-family house. Irrigation usage is not included in this calculation since there is an existing non-potable irrigation system available.

The existing water system was modeled to determine residual pressures for domestic and fire protection uses. The results of the model indicate that the existing water system is adequate to support the proposed subdivision. The hydraulic analysis results indicate that there is ample residual pressure available in the existing water system to support the proposed subdivisions. No improvements to the existing water system are recommended, except for the installation of a proposed 8-inch water line on Puʻu Kapele Avenue, which will provide fire protection for the project's eastern lots. Water laterals will need to be extended along the flag stems to provide service to the interior lots. On Puʻu Kapele Avenue, a new water lateral will need to be extended along the flag stem to service the rear lot. The availability of

ground water to support the proposed subdivision was affirmed by DLNR. A ground water use permit application (GWUP NO. 01100) was approved by the Commission on Water Resource Management (CWRM) on July 20, 2021. See **Appendix "B-1"**. The permit allows the DHHL to utilize 0.595 million gallons per day (mgd) of water on a 12-month moving average basis from the Kauluwai 2 (Well Nos. 4-0801-002) and Kauluwai 1 (Well Nos. 4-0801-001) Wells. New water meters will be issued for each lot if there is no existing meter.

3. Non-Potable Water

a. Existing Conditions

The State Department of Agriculture (DOA) operates the Molokaʻi Irrigation System (MIS) consisting of the existing irrigation mains located within existing roads adjacent to the proposed project sites. There is an existing 12-inch irrigation line in Moʻomomi Avenue and 8-inch lines on Farrington Avenue and Puʻu Kapele Avenue.

The MIS source is Waikolu Valley. Water from the valley is collected and pumped through a five (5) mile long tunnel and pipe line to the Kualapuʻu reservoir, where water is stored. The water surface elevation in the reservoir fluctuates based on rainfall, evaporation, demand, and other factors. Reservoir water depth data provided by DOA was used to determine the average water surface elevation to use for this analysis. Over the past five (5) years, the reservoir depth varied between 28.5 and 48 feet, resulting in an average depth of 38.25 feet. This depth equates to a water surface elevation of 843 feet, which provides a minimum static pressure of 173 psi at Puʻu Kapele Ave. The approximate reservoir volume at this depth is 974 million gallons. Prior issues regarding the quality of the MIS water include turbidity, trash, and fish. MIS usage data provided by DOA for the past year showed that the usage for 3,382 acres in Hoʻolehua varied from a low of 40 million gallons in March to a high of 98 million gallons in August. The average daily usage ranges from 383 gallons per acre to 936 gallons per acre.

b. Potential Impacts and Mitigation Measures

Proposed irrigation demands were determined by comparing the demand from the Department of Water Supply's Water System Standards (WSS) and actual MIS usage. The WSS water demand for agricultural lots is 5000 gallons per acre. The monthly MIS usage per acre for the highest month is 29,024 gallons per acre or 936 gallons per acre per day. Since the WSS demand is more conservative, 5000 gallons per acre was used to calculate

irrigation water demand. The area for each proposed lot was used to calculate its demand.

According to the Preliminary Engineering and Drainage Report (PEDR) prepared for the project, the existing MIS and new 8-inch irrigation line will be adequate to provide irrigation to the proposed lots. See Appendix "B". On Farrington Avenue the existing 8-inch main will be extended to Parcel 31. Irrigation laterals will be extended along the flag stems to provide service to the interior lots. On Puʻu Kapele Avenue, a new irrigation lateral will need to be extended along the flag stem to service the rear lot. The DHHL will coordinate with the DOA to obtain irrigation service and meters. The irrigation system model only represents a portion of the existing MIS and does not include the impacts of existing demands on the irrigation network, which may affect pressures at common nodes where the existing lines and flows are split.

4. Wastewater

a. Existing Conditions

There is currently no County wastewater service. Existing wastewater facilities on Parcels 14 and 16 are no longer operational and will be closed in accordance with State of Hawaiʻi Department of Health regulations.

b. Potential Impacts and Mitigation Measures

Should lessees decide to construct a home on the awarded lots, installation and construction of appropriate wastewater facilities would be the responsibility of the lessee. New cesspools were banned in Hawaii in 2016 with the passage of Act 120, stopping their construction statewide to prevent further pollution of groundwater and the ocean. Therefore, lessees will need to install DOH-Approved Individual Wastewater Systems, aka septic systems, on their lots in order to build a home. Existing wastewater facilities on Parcels 14 and 16 are no longer operational and will be closed in accordance with State of Hawaiʻi Department of Health regulations.

5. Drainage

a. Existing Conditions

Drainage affecting the project sites are categorized into offsite and onsite runoff. Runoff calculations were prepared in accordance with the County of Maui's Storm Drainage Standards. Refer to **Appendix "B"**. Runoff for drainage areas larger than 100 acres is calculated for a 100-year storm

event. Runoff for drainage areas less than 100-areas is calculated for a 10-year storm event. Offsite drainage does not directly impact either of the proposed sites. However, Anahaki Gulch is located near Parcel 31 and crosses Farrington Avenue where the road will be extended. The drainage area for this portion of Anahaki Gulch is 260 acres, which generates 1560 cubic feet per second (cfs) of runoff for a 100-year storm event. Onsite drainage consists of the existing road and lot area. The existing roads are unimproved dirt roads and lots are primarily undeveloped and covered with vegetation. The existing unimproved segments of Moʻomomi Avenue, Farrington Avenue, and Puʻu Kapele Avenue roads do not have a drainage system. The total existing runoff of the roadway portions fronting the lot is 120.0 cfs, with 28.2 cfs for the roads and 91.8 cfs for the lots. Minimal grading is anticipated for the construction of these improvements and existing drainage patterns will be maintained.

b. <u>Potential Impacts and Mitigation Measures</u>

Proposed subdivision improvements that affect drainage are grading and installation of impervious surfaces.

The total runoff increase is 15.7 cfs, with 13.0 cfs for the roads and 1.7 cfs for the lots. All of the drainage areas are less than 100 acres, so runoff is calculated for a 10-year storm event. The volume of runoff increase for the lots are approximately 500 cubic feet per lot. Mitigation for this increase can be accommodated by using a small basin on each lot with dimensions of 25 feet wide x 25 feet long x 1 feet deep. The basin should be located downstream of proposed improvements and swales used to direct flow into the basin. Overflow from the basin should follow the natural drainage path. Maintenance activities for a detention basin include:

- Inspection of basin including inlets/outlets and pipes after storm event
- Trim vegetation to maintain access into the basin.
- Inspect and remove sediment at inlets/outlets to maintain flow and basin capacity.
- Remove litter and debris

The drainage system for the proposed roads will consist of a road swale on the low side of the road. Drain inlets and piping will not be used. The conceptual drainage improvements in this study were designed in accordance with the County of Maui drainage standards. Runoff on the roads will be collected by the road swale. The volume of additional runoff generated from the roadway improvements varies from 10,000 to 20,000

cubic feet. Mitigation options for the additional roadway runoff can be accommodated by discharging runoff into an existing drainage way, storing runoff in a drainage basin, or storing runoff in infiltration trenches located beneath the road swale. Infiltration trenches are recommended for use beneath road swales to provide storage of the increase in runoff generated by the new roads. The trenches will be 6-feet deep by 3-feet wide and will be filled with drain rock. Runoff will be stored in the voids in the rock. Since the roads are sloped, dams will need to be used to prevent collected runoff from flowing downstream and allow runoff collected in each section of trench to percolate into the existing soils.

Onsite drainage areas will be maintained in the proposed condition. It is assumed that existing drainage patterns will not change and grading will be minimal. The proposed lot improvements are not anticipated to significantly increase the peak flow runoff since the increase in impervious area relative to the overall project site is small. Existing drainage runoff patterns will be maintained onsite and drainage areas will continue to discharge into the existing locations onsite.

Offsite drainage is not anticipated to have a direct impact on the proposed lot areas. Mitigation measures to divert offsite runoff are not recommended. Offsite flows from adjacent areas will continue to flow through the site. However, offsite drainage is expected to impact the design of the Farrington Avenue extension at the Anahaki gulch crossing. A culvert is recommended at this location to accommodate offsite drainage flowing across the road at the gulch crossing.

6. Electric, Telephone, and Cable

a. Existing Conditions

The Hoʻolehua Scattered Lots are serviced by Hawaiian Electric Company (HECO) via overhead primary conductors from the Palaʻau Substation #81. Proposed lots on Puʻu Kapele Avenue are located along a 7200 volt, single-phase circuit while Parcel 31 between Farrington Avenue and Moʻomomi Avenue is outside the area currently served by HECO. Existing overhead infrastructure along Farrington Avenue is a 7200 volt, single-phase circuit. This design allows more capacity as the load can be split between the two different overhead phase conductors. Unlike the infrastructure along Farrington Avenue, Moʻomomi Avenue is serviced overhead with a 7200 volt, single-phase circuit. As in all cases, a primary line extension will be required to service all parcels within the proposed lots. Telephone, cable,

and internet service is also available via overhead lines along existing roads.

b. Potential Impacts and Mitigation Measures

The eastern project parcels are located at the end of a single phase medium voltage circuit run along Puʻu Kapele Avenue. To service each subdivided parcel, a new buck pole is to be installed along the existing overhead line across an access driveway. A new 450 foot primary line extension will incorporate two (2) new poles spaced approximately 225 feet apart from the new buck pole. The western parcel, Parcel 31, which will be subdivided into eight (8) separate lots, is located approximately 3,000-3,250 feet west of the last existing HECO power poles. To extend overhead primary power to the lot, an estimated 13 poles will be installed along Farrington Avenue and an estimated 11 poles will be installed along Moʻomomi Avenue. Spacing between poles is estimated at 275 feet. Overhead lines will be bucked off the last proposed poles on Farrington and Moʻomomi Avenues and extend two (2) poles along the access driveways. These poles are spaced approximately 200 feet apart. An additional pole is to be installed across the access driveway at the first pole to service on of the lots. As there is existing telephone, cable, and internet service available, these services can be extended to the planned lots, as may be needed.

E. CUMULATIVE AND SECONDARY IMPACTS

Pursuant to the Hawaiʻi Administrative Rules, Chapter 200, Section 11-200.1-2, entitled Environmental Impact Statement Rules, a cumulative impact means:

> *…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

"Secondary impacts" or "indirect impacts" are defined as:

> *…effects that are caused by the action or are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems including ecosystems.*

Cumulative and secondary impacts can be viewed as actions of others that are taken because of the presence of the project. Secondary impacts from highway projects, for example, can occur because they can induce development by removing one (1) of the impediments to growth.

The project is proposed to be implemented in an area developed with agricultural lots and homesteads of a similar nature. The proposed project is not a phase of a larger action, nor does it represent a commitment to such actions. Given the surrounding homesteads and vacant agricultural land, significant environmental impacts are not anticipated as a result of the project. Although the proposed project requires the provision of basic infrastructure such as water service and access driveways, these requirements are not considered significant, as the project will be developed within the existing service limits for these services.

Secondary impacts are those, which have the potential to occur late in time or farther in distance, but are still reasonably foreseeable. They can be viewed as actions of others that are taken because of the presence of a project. The proposed project involves the subdivision of five (5) lots to create two (2) subsistence agricultural lots and the demolition/removal of existing abandoned structures. Related improvements to the lots include waterlines for access to irrigation and potable water sources and the construction of driveways to provide access to adjacent roadways. However, as previously discussed, the lots are being provided for DHHL beneficiaries who are anticipated to already be residing on Molokaʻi. As such, secondary impacts related to population increase in the region are not anticipated. The proposed project will be located in the midst of similar agricultural lands and homesteads. As previously discussed, the project will help to address the increasingly long beneficiary waitlist for homestead opportunities on Molokaʻi. Although the proposed project will benefit native Hawaiian beneficiaries of the DHHL specifically, the provision of subsistence agricultural lots will encourage agricultural activity and promote self-sufficiency, which will benefit the community as a whole. As such, given the surrounding environment, significant environmental impacts are not anticipated as a result of the project. Therefore, with the proposed mitigation measures, the project is not anticipated to result in significant adverse secondary impacts.

III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE DISTRICTS

Pursuant to Chapter 205, Hawai'i Revised Statutes (HRS), all lands in the State have been placed into one (1) of four (4) major land use districts by the State Land Use Commission. These land use districts are designated "Urban", "Rural", "Agricultural", and "Conservation". The project site is located within the "Agricultural" district. See **Figure 12**. Pursuant to Chapter 205, HRS, the "Agricultural" districts shall include uses or activities provided by ordinances or regulations of the County in which the "Agricultural" district is located. Section G below, outlines the County of Maui's zoning regulations that are applicable to the proposed project. The proposed project is consistent with the "Agricultural" district designation.

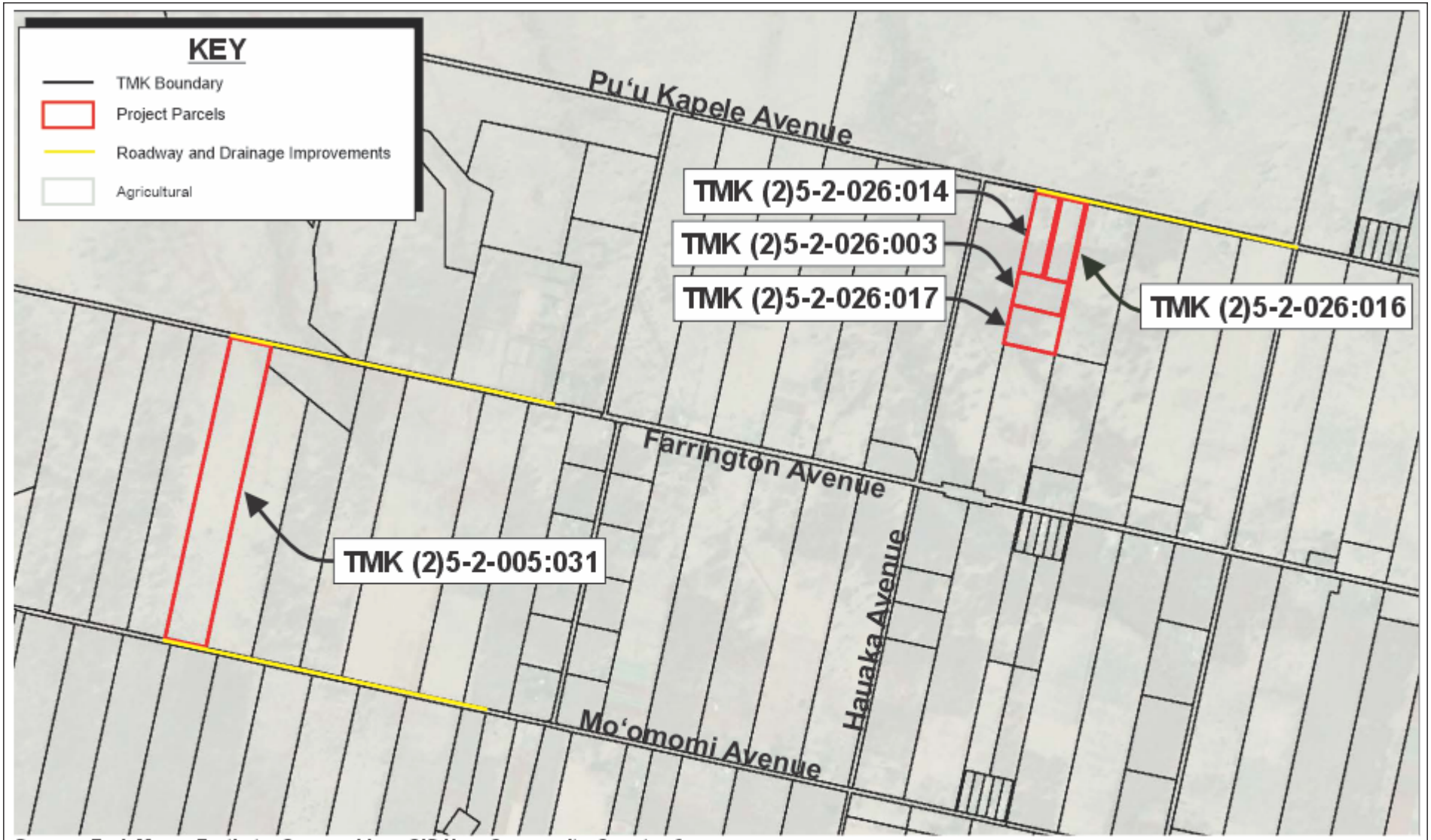
B. DEPARTMENT OF HAWAIIAN HOME LANDS PLANNING SYSTEM

The mission of the Department of Hawaiian Home Lands (DHHL) is to effectively manage the Hawaiian home lands trust and to develop and deliver land to Native Hawaiians. The Hawaiian Homes Commission Act (HHCA), codified within the constitution of the State of Hawai'i, vests onto the DHHL the authority to use its lands at its discretion. Specifically, HHCA Section 204 states, "*all available lands shall immediately assume the status of hawaiian home lands and be under the control of the department to be used and disposed of in accordance with the provisions of this Act*".

As such, the DHHL has implemented its own planning system consisting of a general plan, island plans, community-specific regional plans, subject-specific program plans, and special area plans to guide its development of its lands. Below is a discussion of the project's consistency with the DHHL planning system.

1. General Plan

The DHHL General Plan was adopted by the Hawaiian Homes Commission (HHC) in November 2022. The General Plan sets the vision and establishes goals and policies to guide the discussions and decision-making of the HHC. The General Plan guides DHHL plans, programs, and policies through year 2040. The Vision was developed through extensive consultation with beneficiaries, DHHL staff, the HHC Investigative Committee, and administration to identify the words and ideas that capture shared aspirations and ideals for the future of the Hawaiian Home Lands Trust. The resulting Vision for 2040 is below.



Source: Esri, Maxar, Earthstar Geographics, GIS User Community, County of Maui Department of Planning, and the State of Hawai'i Land Use Commission

Figure 12

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

State Land Use District Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\SLUD_REV

By 2040, the Hawaiian Home Lands Trust and its beneficiaries will be thriving, self-sufficient, and connected to one another and the ʻāina.

TRUST LANDS

will nurture and sustain beneficiary communities through an array of uses and activities on homestead and non-homestead lands.

BENEFICIARY COMMUNITIES

will be self-sufficient, healthy, prosperous, and grounded in cultural knowledge and traditions. Values of mālama ʻāina will be passed on from kūpuna to ʻōpio to nourish the land and future generations.

BENEFICIARIES

will be thriving on the land and engaged in activities that support the rehabilitation and self-determination of all Hawaiians. Education, resources, and technical support will be available to promote greater economic opportunity, choice, and control.

DHHL

will be sufficiently funded by the State Legislature to support the continued advancement of native Hawaiians. Beneficiaries, DHHL, and the Hawaiian Homes Commission will communicate transparently with aloha as they collaborate toward achieving a shared Vision. Beneficiary voices will remain vital to advocate for funding and resources and guide decision-making by DHHL and HHC.

ALL OF HAWAIʻI

will support the continued implementation of the Hawaiian Homes Commission Act and the rehabilitation of native Hawaiians as provided by Article XII Section 2 of the State Constitution.

Guiding principles were also developed based on beneficiary consultation and input. The guiding principles are broad themes that articulate the key values important to beneficiaries, DHHL, and the Hawaiian Home Lands Trust. The proposed project is in consonance with the following guiding principles, goals, and policies.

GUIDING PRINCIPLES

- *ʻAuamo Kuleana: Acknowledge the shared kuleana of the Department, beneficiaries, State, federal and county agencies, Hawaiian serving organizations, and all of Hawaiʻi toward fulfilling the mission of the Hawaiian Home Lands Trust. Foster trust,*

communication, and transparency among all parties to work toward the Vision.

- *Returning Hawaiians to the Land: Actively facilitate returning native Hawaiians to their lands to support self sufficiency and self-determination. Maintain a primary focus on using and acquiring lands suitable for development of homesteads. Explore and expand opportunities for beneficiaries to restore their relationship with and use Trust lands and resources.*
- *Homestead Choice and Diversity: Offer a variety of homesteading opportunities to meet diverse beneficiary needs and desires. Explore creative models and innovative ideas for getting Hawaiians onto the land and cultivating healthy, thriving beneficiary communities.*

Response: The proposed project will make necessary improvements to DHHL lands in order to award subsistence agricultural lots to native Hawaiian beneficiaries in Ho'olehua. The DHHL has coordinated with State and County agencies on roadway improvements. Opportunities for agency and public review of the proposed action are provided pursuant to Chapter 343, HRS. In addition, DHHL actively engages with its beneficiaries on projects it intends to develop.

LAND USE PLANNING

Goals

- *Utilize Hawaiian Home Land for uses more appropriate to meet the needs and desires of the beneficiary population.*

Policies

- *Provide space for and designate a balanced mixture of appropriate land uses, economic opportunities, and community services in a Native Hawaiian-friendly environment.*
- *Incorporate Native Hawaiian mana'o, traditional place names, historical uses, and cultural knowledge in land use planning to identify appropriate uses in appropriate places*

Response: The proposed project advances the goals and policies for land use planning. The proposed subsistence agriculture lots are an appropriate use among the surrounding community and is in line with beneficiary preferences. The subsistence agriculture designation allows lessees to construct homes on their homestead and promotes beneficiary self-sufficiency through subsistence agriculture.

WATER RESOURCES

Goal:

- *Implement water planning and management strategies that meet current needs and protect water resources for the future.*

Policy:

- *Implement water conservation and efficiency measures, such as water catchment, greywater reuse, and xeriscaping for Residential and Agricultural homesteads.*

Response: The proposed subsistence agriculture lots will use non-potable water for irrigation, which helps to conserve the use of potable water resources.

INFRASTRUCTURE

The DHHL General Plan does not have specific goals and policies for infrastructure. However, the General Plan identifies recommended level of service standards for each of the land use designations. For Subsistence Agriculture uses, the recommended level of service for water, wastewater, stormwater, roads, electricity and telecom/broadband is that the infrastructure is built to County standards.

Response: Potable and non-potable water demand calculations were prepared based on County DWS WSS, and runoff calculations were prepared in accordance with the County Storm Drainage Standards. However, the potable and non-potable water systems are operated by the DHHL and State DOA, respectively. County of Maui road standards were not considered since they are extensions of existing roads.

FOOD PRODUCTION

Goal:

- *Provide agriculture and pastoral homestead lots for subsistence and supplemental purposes.*

Policies:

- *Increase the number of subsistence agricultural leases awarded.*
- *Align agricultural homestead offerings with beneficiary needs and preferences.*

Response: The proposed action will result in the creation of 12 subsistence agriculture homesteads, which allows lessees to farm for subsistence purposes with the option to reside on their homestead.

2. Molokaʻi Island Plan

The DHHL Molokaʻi Island Plan (MIP) was adopted in 2005 and serves as a comprehensive resource for planning and managing the Molokaʻi Island lands and establishes land use designations to encourage orderly social, physical, and economic development in a Native Hawaiian-friendly environment. The MIP designates the subject properties for Subsistence and Supplemental Agriculture uses. See **Figure 13**.

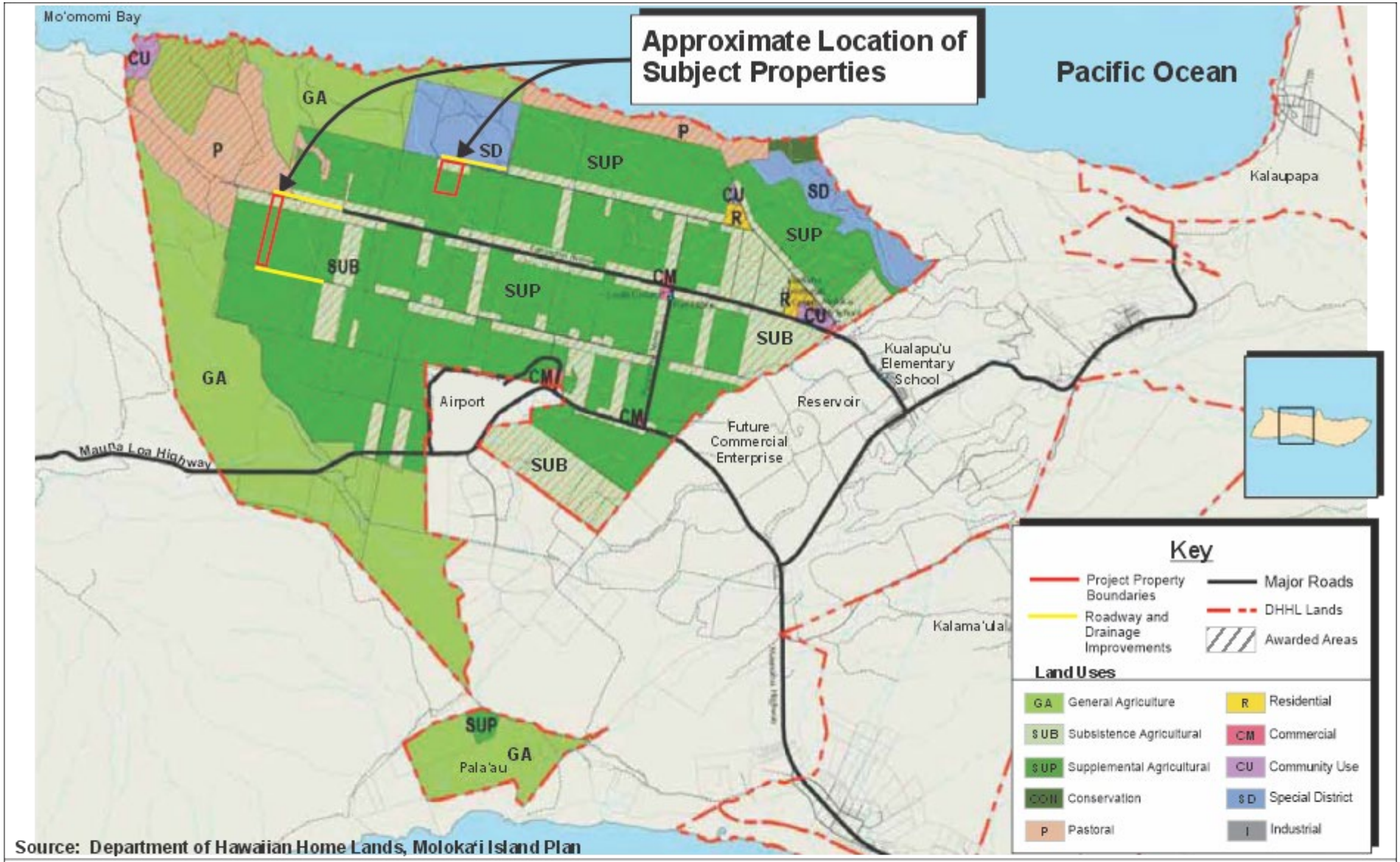
The MIP discusses the General Plan's goals of increasing the delivery of agricultural homesteads to beneficiaries each year. The proposed project is in support of these goals. The MIP also provides data from a beneficiary survey conducted in 2004 to assess the preferences of DHHL beneficiaries on Molokaʻi. The results of the survey show that most beneficiaries applying for agricultural and pastoral homesteads indicated a desire to reside on their homesteads. Additionally, the survey indicated a preference for smaller agricultural lots between three (3) to five (5) acres for subsistence or supplemental agricultural use. On April 17, 2023, an informational update was provided to the Hawaiian Homes Commission (HHC) by the DHHL Land Development Division and Planning Office to report progress on the proposed project, and present summary highlights of the technical studies being prepared for the Draft EA. Most recently, a beneficiary information meeting was held on November 12, 2025 at Kūlana ʻŌiwi in Molokaʻi. A presentation was shared with 18 attendees which included an overview of the proposed project. A meeting summary memo is provided in **Appendix "I"**. The comments were shared with the project team for consideration.

On January 20, 2026, a second informational update was provided to the HHC by the DHHL Land Development Division and Planning Office to report progress on the proposed project, and present summary highlights of the Draft EA. Their comments were recorded, shared with the project team for consideration and incorporated into the Final EA.

The proposed project is in line with these beneficiary preferences as discussed in the MIP.

3. Molokaʻi Regional Plan

The 2019 Molokaʻi Regional Plan is one (1) of 22 DHHL regional plans. The regional plan focuses at a regional/community level to reflect Molokaʻi's Native Hawaiian beneficiary community's vision for a successful homestead community.



Source: Department of Hawaiian Home Lands, Moloka'i Island Plan

Figure 13

DHHL Ho'olehua Scattered Lots Subdivision and Improvements

DHHL Moloka'i Island Plan Map

NOT TO SCALE

MUNEKIYO HIRAGA

Prepared for: State of Hawai'i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\DHHL MIP

The vision statement of the Molokaʻi Regional Plan is as follows:

> *Molokaʻi beneficiaries are thriving on the land where the way of life and sense of community continue to hold strong. Acknowledging the diversity of each homestead on Molokaʻi, we envision a unified community grounded in Hawaiian values and cultural traditions passed to us from our kupūna. Core values are preserved while embracing modern pathways to a sustainable future.*

Through the planning process, priority projects are identified with the goal of being implemented within five (5) years based on land use development factors, issues and opportunities, and input and collaboration from Native Hawaiian beneficiaries and community groups. The Hoʻolehua Scattered Lots project is consistent with the priorities of the DHHL and the Molokaʻi Regional Plan through improving subsistence agricultural lots for lease to Molokaʻi beneficiaries.

C. HAWAIʻI STATE PLAN

Chapter 226, HRS, also known as the Hawaiʻi State Plan, is a long-range comprehensive plan which serves as a guide for the future long-term development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The Plan consists of three (3) parts. Part I includes the Overall Theme, Goals, Objectives, and Policies; Part II includes Planning, Coordination, and Implementation; and Part III establishes Priority Guidelines. Part II of the State Plan covers its administrative structure and implementation process.

The overall theme of the Hawaiʻi State Place is governed by the following general principles.

1. Individual and family self-sufficiency

2. Social and economic mobility

3. Community or social well-being

In consonance with the foregoing principles, the Hawaiʻi State Plan identifies three (3) clarifying goals:

1. A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaiʻi's present and future generations.

2. A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

3. Physical, social, and economic well-being, for individuals and families in Hawai‘i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

This section of the environmental assessment examines the applicability of the proposed action as it relates to the objectives, policies, and priority guidelines of the Hawai‘i State Plan, as set forth in HRS Sections 226-5 through 226-27. **Table 2** below summarizes the relationship between the proposed action and the goals of the Hawai‘i State Plan. The relationship between the action and the goals are categorized into the following groups. More detailed analysis and discussion, including the methodology used, is presented in **Appendix "H-1"**.

1. **Directly applicable:** the action and its potential effects directly advances or promotes the objective, policy or priority guideline.

2. **Indirectly applicable:** the action and its potential effects indirectly supports or advances the objective, policy or priority guideline.

3. **Not applicable:** the action and its potential effects have no direct or indirect relationship to the objectives and policies of the Hawai‘i State Plan.

In general, a proposed action's applicability to the objectives, policies and priority guidelines of the Hawai‘i State Plan is judged on the basis of the action's direct or indirect relationship to the respective objectives, policies and priority directions. It is recognized that the categorization of "applicability" is subject to interpretation and should be appropriately considered in the context of local and regional conditions. The analysis presented in **Table 2** and summarized below focuses on key elements of the proposed action's relationship to the Hawai‘i State Plan. Detailed discussion on the applicability of the proposed action to each goal and related objectives, policies, and implementing actions of the Hawai‘i State Plan is provided in **Appendix "H-1"**.

Table 2. Hawai'i State Plan, Chapter 226, HRS Part I.
Overall Themes, Goals, Objectives and Policies (HRS 226-1 to 226-27)

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies **Key: DA = Directly Applicable, IA = Indirectly Applicable, NA = Not Applicable**	**DA**	**IA**	**NA**
HRS 226-1: Findings and Purpose			
HRS 226-2: Definitions			
HRS 226-3: Overall Theme			
HRS 226-4: State Goals. In order to ensure, for the present and future generations, those elements of choice and mobility that ensure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve: (1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations. (2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people. (3) Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.			
Chapter 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.	**X**		
Chapter 226-6 Objectives and policies for the economy – – in general			
Objectives:			
(a) Planning for the State's economy in general shall be directed toward achievement of the following objectives:			
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.	**X**		
(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.			**X**
Chapter 226-7 Objectives and policies for the economy – – agriculture.			
Objectives:			
(a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:			
(1) Viability of Hawaii's sugar and pineapple industries.			**X**
(2) Growth and development of diversified agriculture throughout the State.	**X**		
(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being.	**X**		
Chapter 226-8 Objective and policies for the economy – – visitor industry.			
Objective:			

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: DA = Directly Applicable, IA = Indirectly Applicable, NA = Not Applicable	DA	IA	NA
(a) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.			X
Chapter 226-9 Objective and policies for the economy – – federal expenditures.			
Objective:			
(a) Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawaii's economy.			X
Chapter 226-10 Objective and policies for the economy – – potential growth and innovative activities.			
Objective:			
(a) Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion of potential growth and innovative activities that serve to increase and diversify Hawaii's economic base.	X		
Chapter 226-10.5 Objectives and policies for the economy – – information industry.			
Objective:			
(a) Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawaii as a leader in broadband and wireless communications and applications in the Pacific Region.			X
Chapter 226-11 Objectives and policies for the physical environment – – land based, shoreline, and marine resources.			
Objectives:			
(a) Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:			
(1) Prudent use of Hawaii's land-based, shoreline, and marine resources.		X	
(2) Effective protection of Hawaii's unique and fragile environmental resources.			X
Chapter 226-12 Objective 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.		X	
Chapter 226-13 Objectives and policies for the physical environment – – land, air, and water quality.			
Objectives:			
(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.		X	
(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.		X	

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: DA = Directly Applicable, IA = Indirectly Applicable, NA = Not Applicable	DA	IA	NA
(2) Greater public awareness and appreciation of Hawaii's environmental resources.			X
Chapter 226-14 Objective and policies for facility systems – – in general.			
Objective:			
(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, sustainable development, climate change adaptation, sea level rise adaptation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.	X		
Chapter 226-15 Objectives and policies for facility systems – – solid and liquid waste.			
Objectives:			
(a) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:			X
(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.			X
(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.			X
Chapter 226-16 Objective and policies for facility systems – – water.			
Objective:			
(a) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.	X		
Chapter 226-17 Objectives and policies for facility systems – – transportation.			
Objectives:			
(a) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:			X
(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.			X
(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.			X
Chapter 226-18 Objectives and policies for facility systems – – energy.			
Objectives:			
(a) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:			
(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;			X
(2) Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawaii's dependence on imported fuels for electrical generation and ground transportation.			X
(3) Greater diversification of energy generation in the face of threats to Hawaii's energy supplies and systems;			X

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: DA = Directly Applicable, IA = Indirectly Applicable, NA = Not Applicable	DA	IA	NA
(4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use; and			X
(5) Utility models that make the social and financial interests of Hawaii's utility customers a priority.			X
Chapter 226-18.5 Objectives and policies for facility systems – – telecommunications.			
Objective:			
(a) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.			X
Chapter 226-19 Objectives and policies for socio-cultural advancement – – housing.			
Objectives:			
(a) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:			X
(1) Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low-, low- and moderate-income segments of Hawaii's population.	X		
(2) The orderly development of residential areas sensitive to community needs and other land uses.			X
(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawaii's people.			X
Chapter 226-20 Objectives and policies for socio-cultural advancement – – health.			
Objectives:			
(a) Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:			
(1) Fulfillment of basic individual health needs of the general public.			X
(2) Maintenance of sanitary and environmentally healthful conditions in Hawaii's communities.			X
(3) Elimination of health disparities by identifying and addressing social determinants of health.			X
Chapter 226-21 Objectives and policies for Socio-cultural advancement – – education.			
Objective:			
(a) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.			X
Chapter 226-22 Objective and policies for socio-cultural advancement – – social services.			
Objective:			

Hawai'i State Plan, Chapter 226, HRS Part I. Overall Themes, Goals, Objectives and Policies Key: DA = Directly Applicable, IA = Indirectly Applicable, NA = Not Applicable	DA	IA	NA
(a) Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.			X
Chapter 226-23 Objective and policies for socio-cultural advancement – – leisure.			
Objective:			
(a) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.			X
Chapter 226-24 Objective and policies for socio-cultural advancement – – individual rights and personal well-being.			
Objective:			
(a) Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.			X
Chapter 226-25 Objective and policies for socio-cultural advancement – – culture.			
Objective:			
(a) Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawaii's people.		X	
Chapter 226-26 Objectives and policies for socio-cultural advancement – – public safety.			
Objectives:			
(a) Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:			
(1) Assurance of public safety and adequate protection of life and property for all people.			X
(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.			X
(3) Promotion of a sense of community responsibility for the welfare and safety of Hawaii's people.			X
Chapter 226-27 Objectives and policies for socio-cultural advancement – – government.			
Objectives:			
(a) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:			
(1) Efficient, effective, and responsive government services at all levels in the State.	X		
(2) Fiscal integrity, responsibility, and efficiency in the state government and county governments.	X		

The proposed action is directly supportive of the objectives and policies for the agricultural economy, water facility systems, and the socio-cultural advancement of Hawaiian culture and traditions. The DHHL proposes increasing the number of subsistence agricultural lots and infrastructure improvements for lease to DHHL beneficiaries. Investment in small scale agricultural production is directly applicable to the objectives and policies for the economy and diversifying Hawai'i's economic base. The proposed action will have short-term and long-term impacts on the economy through construction-related activity and through encouraging agricultural activity. In addition, the Cultural Impact Assessment (CIA) prepared for the proposed project fosters increased knowledge of Native Hawaiian cultural practices, as well as the history of the project area, directly supporting the objective and policies for socio-cultural advancement. Furthermore, the proposed project involves infrastructure improvements to connect the subdivided lots to existing water sources and allows for lessees to reside on homestead properties, thereby providing Native Hawaiians opportunities for socio-cultural advancement related to housing.

The Environmental Assessment (EA) being prepared represents the Applicant's commitment to ensure that natural resources such as the coastal environment are not impacted by construction activities. The commitment to utilizing Best Management Practices (BMPs) also ensures compatibility between land-based and water-based functions, resources, and ecological systems during the construction phase. The EA process involves analyzing the project's impact on a number of natural and socio-economic resource parameters and forwarding measures aimed at mitigating any potential impacts.

As an action aimed at providing homestead opportunities to DHHL beneficiaries, the proposed action does not directly or indirectly impact objectives and policies related to areas such as the visitor industry, the information industry, telecommunication and energy systems, health, leisure, or public safety.

Priority Guidelines

"Priority guidelines" means those guidelines which shall take precedence when addressing areas of statewide concern. This section addresses applicability criteria to the priority guidelines set forth in HRS 226-103.

Priority guidelines of the Hawai'i State Plan covers the economy, population growth and land resources, crime and criminal justice, affordable housing, quality education, sustainability, and climate change adaptation.

The table below summarizes the relationship between the proposed action and the priority guidelines of the Hawai'i State Plan. More detailed discussion is presented in **Appendix "H-1"**.

Table 3. Hawai'i State Plan, Chapter 226, HRS Part III.
Priority Guidelines (Chapters 226-101 to 226-109)

Hawai'i State Plan, Chapter 226, HRS Part III. Priority Guidelines **Key: DA = Directly Applicable, IA = Indirectly Applicable, NA = Not Applicable**	**DA**	**IA**	**NA**
Chapter 226-101: Purpose. The purpose of this part is to establish overall priority guidelines to address areas of statewide concern.			
Chapter 226-102: Overall direction. 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 seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation.			
Chapter 226-103: Economic priority guidelines.			
(a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawaii's people and achieve a stable and diversified economy	**X**		
(b) Priority guidelines to promote the economic health and quality of the visitor industry			**X**
(c) Priority guidelines to promote the continued viability of the sugar and pineapple industries			**X**
(d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture	**X**		
(e) Priority guidelines for water use and development	**X**		
(f) Priority guidelines for energy use and development			**X**
(g) Priority guidelines to promote the development of the information industry			**X**
Chapter 226-104: Population growth and land resources priority guidelines.			
(a) Priority guidelines to effect desired statewide growth and distribution			**X**
(b) Priority guidelines for regional growth distribution and land resource utilization	**X**		
Chapter 226-105: Crime and criminal justice.			
Priority guidelines in the area of crime and criminal justice			**X**
Chapter 226-106: Affordable housing.			
Priority guidelines for the provision of affordable housing			**X**
Chapter 226-107: Quality education.			
Priority guidelines to promote quality education			**X**
Chapter 226-108: Sustainability			
Priority guidelines and principles to promote sustainability			**X**
Chapter 226-109: 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:			**X**

The proposed project is most directly supportive of the State's priority guidelines for the growth and development of diversified agriculture and priority guidelines for land resource utilization by maintaining prime and productive agricultural land for agricultural use. As

previously mentioned, the project also involves water infrastructure improvements to provide domestic water and irrigation water to the homestead lots, allowing for agricultural activity.

D. STATE FUNCTIONAL PLANS

A key element of the Statewide Planning System is the Functional Plans which set forth the policies, statewide guidelines, and priorities within a specific field of activity. There are thirteen (13) Functional Plans which have been developed by the State agency primarily responsible for a given functional area. Together with the County General Plans, the State Functional Plans establish more specific strategies for implementation. In particular, State Functional Plans provide for the following:

- Identify major Statewide priority concerns
- Define current strategies for each functional area
- Identify major relationships among functional areas
- Provide direction and strategies for departmental policies, programs, and priorities
- Provide a guide for the allocation of resources
- Coordinate State and County roles and responsibilities in the implementation of the Hawai‘i State Plan

Thirteen (13) Functional Plans have been prepared by State agencies. **Table 4** provides an assessment of the relationship between the proposed action and each of the 13 Functional Plans.

Table 4. Relationship Between the Proposed Hoʻolehua Scattered Lots and the State Functional Plans

	State Functional Plan	State Coordinating Agency	Purpose	Analysis
1	Agriculture Functional Plan (1991)	Department of Agriculture	Continued viability of agriculture throughout the State	The proposed project will be implemented on prime and productive agricultural land and is directly supportive of the Agriculture Functional Plan by providing suitable land and water to native Hawaiian beneficiaries for agricultural use. Furthermore, the DHHL assists in providing education and training for agricultural lessees so they may be better equipped to farm the land.
2	Conservation Lands State Functional Plan (1991)	Department of Land and Natural Resources	Addresses issues of population and economic growth and its strain on current natural resources; broadening public use of natural resources while protecting lands and shorelines from overuse; additionally, promotes the aquaculture industry	The proposed project will not utilize any State Conservation lands. Similarly, the project is located inland, and not near the coastline. BMPs will be implemented to minimize adverse impacts to downstream properties and the shoreline. The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
3	Education State Functional Plan (1989)	Department of Education	Improvements to Hawaiʻi's educational curriculum, quality of educational staff, and access to adequate facilities	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
4	Employment State Functional Plan (1990)	Department of Labor and Industrial Relations	Improve the qualifications, productivity, and effectiveness of the State's workforce through better education and training of workers as well as efficient planning of economic development, employment opportunities, and training activities	The proposed action will result in the creation of construction jobs throughout the construction period. This will provide local residents with opportunities to successfully compete in the workforce. The proposed action is not anticipated to contravene the objectives and policies of this functional plan.

	State Functional Plan	State Coordinating Agency	Purpose	Analysis
5	Energy State Functional Plan (1991)	Department of Business, Economic Development and Tourism	Lessen the reliance on petroleum and other fossil fuels in favor of alternative sources of energy so as to keep up with the State's increasing energy demands while also becoming a more sustainable island state; achieving dependable, efficient, and economical statewide energy systems	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
6	Health State Functional Plan (1989)	Department of Health	Improve health care system by providing for those who don't have access to private health care providers; increasing preventative health measures; addressing 'quality of care' elements in private and public sectors to cut increasing costs	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
7	Higher Education Functional Plan (1984)	University of Hawai'i	Prepare Hawai'i's citizens for the demands of an increasingly complex world through providing technical and intellectual tools	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
8	Historic Preservation State Functional Plan (1991)	Department of Land and Natural Resources	Preservation of historic properties, records, artifacts and oral histories; provide public with information/education on the ethnic and cultural heritages and history of Hawai'i	A CIA conducted as part of the environmental review process for the proposed project demonstrates an effort to preserve Hawai'i's natural and historical resources and protect Hawai'i's ethnic and cultural heritage. The State Historic Preservation Division (SHPD) has been consulted and a letter of presumed concurrence on a "no historic properties affected" determination has been issued by DHHL.

	State Functional Plan	State Coordinating Agency	Purpose	Analysis
9	Housing State Functional Plan (2017)	Hawai‘i Housing Finance and Development Corporation	Based largely on joint public/private efforts to finance, build, and maintain an adequate supply of affordable housing. It will be a working tool to guide the State, the counties, as well as the private sector in meeting the overall goal that every Hawaii resident will have the opportunity to live in a safe, decent and affordable home.	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
10	Human Services State Functional Plan (1989)	Department of Human Services	Refining support systems for families and individuals by improving elderly care, increasing preventative measures to combat child/spousal abuse and neglect; providing means for ‘self-sufficiency’	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
11	Recreation State Functional Plan (1991)	Department of Land and Natural Resources	Manage the use of recreational resources via addressing issues: (1) ocean and shoreline recreation, (2) mauka, urban, and other recreation opportunities, (3) public access to shoreline and upland recreation areas, (4) resource conservation and management, (5) management of recreation programs/facilities/areas, and (6) wetlands protection and management	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.

	State Functional Plan	State Coordinating Agency	Purpose	Analysis
12	Tourism State Functional Plan (1991)	Department of Business, Economic Development and Tourism	Balance tourism/economic growth with environmental and community concerns; development that is cognizant of the limited land and water resources of the islands; maintaining friendly relations between tourists and community members; development of a productive workforce and enhancement of career and employment opportunities in the visitor industry	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.
13	Transportation State Functional Plan (1991)	Department of Transportation	Development of a safer, more efficient transportation system that also is consistent with planned physical and economic growth of the state; construction of facility and infrastructure improvements; develop a transportation system balanced with new alternatives; pursue land use initiatives which help reduce travel demand	The proposed action is not anticipated to contravene the objectives and policies of this functional plan.

E. 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 forgoing Charter provision through enabling legislation which calls for a Countywide Policy Plan.

1. 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. 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 a general guideline 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.

Table 5 below summarizes the relationship between the proposed action and the 11 goals of the Countywide Policy Plan. The relationship between the action and the goals are categorized into the following groups. More detailed analysis and discussion, including the methodology used, is presented in **Appendix "H-2"**.

1. **Directly applicable:** the action and its potential effects directly advances, promotes or affects the relevant goal, objective, or policy.

2. **Indirectly applicable:** the action and its potential effects indirectly supports, advances or affects the objective, policy or priority guideline.

3. **Not applicable:** the action and its potential effects have no direct or indirect relationship to the objectives and policies of the Countywide Policy Plan.

In general, a proposed action's applicability to the goals, objectives, policies and implementing actions of the Countywide Policy Plan is judged on the basis of the action's direct or indirect relationship to the respective objectives, policies and priority directions. It is recognized that the categorization of "applicability" is subject to interpretation and should be appropriately considered in the context of local and regional conditions. The analysis presented in **Table 5** and summarized below focuses on key elements of the proposed action's relationship to the Countywide Policy Plan. Detailed discussion on the applicability of the proposed action to each goal and related objectives, policies, and implementing actions of the Countywide Policy Plan is provided in **Appendix "H-2"**.

Table 5. Countywide Policy Plan

COUNTYWIDE POLICY PLAN Key: DA = Directly Applicable, IA = Indirectly Applicable, NA = Not Applicable		DA	IA	NA
A.	**PROTECT THE NATURAL ENVIRONMENT**			
Goal:	Maui County's natural environment and distinctive open spaces will be preserved, managed, and cared for in perpetuity.	**X**		
B.	**PRESERVE LOCAL CULTURES AND TRADITIONS**			
Goal:	Maui County will foster a spirit of pono and protect, perpetuate, and reinvigorate its residents multi-cultural values and traditions to ensure that current and future generations will enjoy the benefits of their rich island heritage.	**X**		
C.	**IMPROVE EDUCATION**			
Goal:	Residents will have access to lifelong formal and informal educational options enabling them to realize their ambitions.			**X**
D.	**STRENGTHEN SOCIAL AND HEALTHCARE SERVICES**			
Goal:	Health and social services in Maui County will fully and comprehensively serve all segments of the population.		**X**	
E.	**EXPAND HOUSING OPPORTUNITIES FOR RESIDENTS**			
Goal:	Quality, island-appropriate housing will be available to all residents.	**X**		
F.	**STRENGTHEN THE LOCAL ECONOMY**			
Goal:	Maui County's economy will be diverse, sustainable, and supportive of community values.	**X**		
G.	**IMPROVE PARKS AND PUBLIC FACILITIES**			

COUNTYWIDE POLICY PLAN Key: DA = Directly Applicable, IA = Indirectly Applicable, NA = Not Applicable		DA	IA	NA
Goal:	A full range of island-appropriate public facilities and recreational opportunities will be provided to improve the quality of life for residents and visitors.			**X**
H.	**DIVERSIFY TRANSPORTATION OPTIONS**			
Goal:	Maui County will have an efficient, economical, and environmentally sensitive means of moving people and goods.			**X**
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.	**X**		
J.	**PROMOTE SUSTAINABLE LAND USE AND GROWTH MANAGEMENT**			
Goal:	Community character, lifestyles, economies, and natural assets will be preserved by managing growth and using land in a sustainable manner.	**X**		
K.	**STRIVE FOR GOOD GOVERNANCE**			
Goal:	Government services will be transparent, effective, efficient, and responsive to the needs of residents.	**X**		
L.	**MITIGATE CLIMATE CHANGE AND WORK TOWARD RESILIENCE**			
Goal:	Minimize the causes and negative effects of climate change.			**X**

The proposed project is directly supportive of the County's goals for protecting the natural environment and preserving local cultures and traditions. The EA prepared for this project thoroughly evaluated the proposed action's potential impacts on the environment, and, where applicable, advances measures aimed at reducing impacts to the environment. The EA is subject to agency and public review and promotes transparency in government decision-making. The proposed action will also benefit native Hawaiian beneficiaries for generations and will provide homestead opportunities, thereby increasing opportunities to experience the natural environment and supports the perpetuation of Hawaiian culture. In addition, the CIA prepared as part of the environmental review process fosters increased knowledge of Native Hawaiian cultural practices, as well as the history of the project area.

Additionally, the proposed action is directly supportive of the County's goal, objective, and policies for a diversified and sustainable economy through the promotion of agriculture, indigenous agricultural practices, and the provision of land to native Hawaiians that is suitable for agricultural use. Furthermore, the DHHL partners with the University of Hawai'i's College of Tropical Agriculture and Human Resources (CTAHR) to provide technical assistance and training to DHHL agricultural lessees, which supports the County's goal for improving informal educational opportunities, enabling DHHL beneficiaries to realize their ambitions.

F. MOLOKA‘I ISLAND COMMUNITY PLAN

The project site is located within the Moloka‘i Island 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 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 Community Plan was adopted by the County of Maui through Ordinance Number 4920, and became effective on October 29, 2018. The Community Plan land use map designates the project sites as “Agriculture”. However, as previously discussed, the lands on which the proposed project will be developed are under the jurisdiction of the DHHL, which has vested authority to develop its lands at its discretion.

The proposed project is consistent with the following goals, policies, and actions of the Moloka‘i Island Community Plan as outline below.

NATURAL RESOURCES

Goal:

Preserve, protect, and manage Moloka‘i’s exceptional natural land and water resources to ensure that future generations may continue to enjoy and protect the island environment.

Objective and Policies:

- *Require all grading and grubbing permits on Molokai to comply with Title 20, Chapter 20.08 MCC.*
- *Ensure the design and construction of new development protect surface water, groundwater, and coastal water quality from nonpoint and point source pollution.*

Discussion and Response: All grading and grubbing permits for the proposed project will comply with Title 20, Chapter 20.08, Maui County Code and all other County regulations. In addition, mitigation measures, such as the use of swales and infiltration trenches will be implemented to prevent runoff or pollution from affecting natural land and water resources for the benefit of future generations.

HERITAGE RESOURCES

Goal:

Moloka'i's cultural, historic and archaeological sites, and cultural practices will be protected and perpetuated for their cultural and historical value, and for enjoyment of and sustainable use by future generations.

Policies:

- *Encourage proper management of and appropriate interpretation of significant cultural resources and sites.*
- *Ensure that permits for any project that may affect historic property are provided to SHPD for review, and that SHP's recommendations are issued as permit conditions.*

Discussion and Response: The CIAs conducted as part of the environmental review process for the proposed project encourages proper management of significant cultural resources and sites, and demonstrates an effort to protect Hawai'i's ethnic and cultural heritage. In addition, SHPD has been consulted and the DHHL presumed concurrence with the "no historic properties affected" determination in January 2026. Ka Pa'akai Analysis (KPA) was also completed for the project and included as a supplement to the project's CIA report. Refer to **Appendix "F-2"**. As previously noted, the KPA found that no cultural, historical or natural resources were found in the project area.

ECONOMIC DEVELOPMENT

Goal:

- *A stable, balanced, diversified, and sustainable economy, respecting cultural and natural resources, that is compatible with Moloka'i's rural island lifestyle.*

Policies:

- *Support the development of agriculture and value-added agricultural products and support traditional systems.*
- *Support subsistence as a sector of Moloka'i's economy.*

Discussion and Response: The proposed project will support a more sustainable economy that is compatible with Moloka'i's rural island lifestyle. The provision of subsistence agricultural homesteads to DHHL beneficiaries encourages agricultural activity and the subsistence economic sector of Moloka'i.

LAND USE

Goal:

- *Molokaʻi's land use pattern will protect agricultural lands, open space, and natural and cultural resources, and support livable small towns and rural communities.*
- *Consult with and solicit input from community members with generational knowledge, early and often about how to minimize the impact of proposed changes to the use of land on cultural practices, cultural sites, and culturally significant areas, including burials.*

Discussion and Response: The CIAs conducted for this project evaluated the impact of the proposed project on cultural resources and cultural practices. Through the CIA process, community members with generational knowledge of historical and traditional practices of the project area were consulted to assess the cultural impacts of the project. As previously mentioned, SHPD has been consulted to determine impacts on cultural sites, culturally significant areas and burials. The project presumed SHPD's concurrence with a no historic properties affected" determination. A KPA was also completed and included as a supplement to the project's CIA report. The KPA concluded that no impacts on traditional or customary practices are anticipated because they were not found within the project area.

GOVERNMENT

Goal:

Government that demonstrates the highest standards of fairness; responsiveness to the needs of the community; fiscal integrity; effectiveness in planning and implementation of programs and projects; a fair and equitable approach to taxation and regulation; and efficient, results-oriented management.

Objective and Policy:

- *Ensure that adequate infrastructure is or will be available to accommodate planned development.*

Discussion and Response: The proposed project will be implemented in an area of Molokaʻi serviced by basic infrastructure. The project also involves the building of waterlines to connect the subdivided lots to water infrastructure.

G. COUNTY ZONING

The land underlying the proposed project site is zoned "Agriculture" by the Maui County Zoning Ordinance. Refer to **Figure 4.** The proposed action is consistent with this designation. However, as previously discussed, the lands on which the proposed project

will be developed are under the jurisdiction of the DHHL, which has vested authority to develop its lands at its discretion. The subdivided lots from the proposed project will be maintained for agricultural use.

H. HAWAIʻI COASTAL ZONE MANAGEMENT PROGRAM

The Hawaiʻi Coastal Zone Management Program (HCZMP), as formalized in Chapter 205A-2, HRS, establishes objectives and policies for the preservation, protection, and restoration of natural resources of Hawaiʻi's coastal zone. The applicability of coastal zone management considerations applies to all lands in the State of Hawaiʻi and, as such, has been reviewed and assessed as follows.

1. Recreational Resources

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

a. Improve coordination and funding of coastal recreational planning and management; and

b. Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

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

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

Response: The project sites are located inland and away from the coastline. The proposed action is not anticipated to impact coastal recreational opportunities or affect existing public access to and along the shoreline.

2. Historic Resources

Objective:

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

Policies:

a. Identify and analyze significant archaeological resources;

b. Maximize information retention through preservation of remains and artifacts or salvage operations; and

c. Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: The project sites are not located within the coastal zone management area. However, investigations were conducted to identify and suggest measures to protect archaeological and historic resources. As previously noted, the DHHL consulted with SHPD and issued a letter of presumed concurrence that no historic properties would be affected by the proposed project. A Ka Pa'akai Analysis was completed for the project and included as part of the CIA report.

3. Scenic and Open Space Resources

Objective:

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

Policies:

a. Identify valued scenic resources in the coastal zone management area;

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

c. Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

d. Encourage those developments that are not coastal dependent to locate in inland areas.

Response: As indicated previously, the project is located inland and not on or near the shoreline. The proposed project will be implemented at the ground-level and will not impede lines of sight to scenic and open space resources. It is not anticipated to adversely impact coastal scenic and open space resources.

4. Coastal Ecosystems

Objective:

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

Policies:

a. Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

b. Improve the technical basis for natural resource management;

c. Preserve valuable coastal ecosystems of significant biological or economic importance, including reefs, beaches, and dunes;

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

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

Response: 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 and marine resources. Appropriate BMPs will be utilized to ensure that construction runoff is appropriately detained, minimizing any impact on coastal waters.

5. Economic Uses

Objective:

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

Policies:

a. Concentrate coastal dependent development in appropriate areas;

b. Ensure that coastal dependent development and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area; and

c. Direct the location and expansion of coastal development to areas designated and used for that development and permit reasonable long-term growth at those areas, and permit coastal development outside of designated areas when:

i. Use of designated locations is not feasible;

ii. Adverse environmental effects and risks from coastal hazards are minimized; and

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

Response: The proposed project is not a coastal dependent development. The project site is located inland from the shoreline. The proposed project can stimulate economic activity through construction activity

and the promotion of agricultural activity. The proposed project does not contravene the objective and policies for economic use.

6. Coastal Hazards

Objective:

Reduce hazard to life and property from coastal hazards.

Policies:

a. Develop and communicate adequate information about the risk of coastal hazards;

b. Control development, including planning and zoning control, in areas subject to coastal hazards;

c. Ensure that developments comply with requirements of the National Flood Insurance Program; and

d. Prevent coastal flooding from inland projects.

Response: According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the area, the project sites fall within Zone X (shaded), an area of minimal flooding. In addition, the project sites are not located within the tsunami evacuation zone or projected 3.2-foot sea level rise exposure area. Drainage improvements will be designed to ensure that the project will not adversely affect downstream properties from the effects of flooding and erosion. Adverse impacts to hazard-sensitive areas are not anticipated.

7. Managing Development

Objective:

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

Policies:

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

b. Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and

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

Response: Opportunities for agency and public review of the proposed action are provided pursuant to Chapter 343, HRS. In addition, the DHHL actively engages with its beneficiaries on projects it intends to develop. The public will also have an opportunity to provide comments on the EA during the HHC's review of the document.

8. Public Participation

Objective:

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

Policies:

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

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

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

Response: Opportunities for public participation were provided through the Chapter 343, HRS EA process, through the 30-day public comment period for the Draft EA, a beneficiary information meeting held in November 2025 on Molokaʻi as well as during the HHC's review of the Final EA document.

9. Beach and Coastal Dune Protection

Objective:

A. Protect beaches and coastal dunes for:

(i) Public use and recreation;

(ii) The benefit of coastal ecosystem; and

(iii) Use as natural buffers against coastal hazards; and

B. Coordinate and fund beach management and protection.

Policies:

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

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

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

d. Minimize grading of and damage to coastal dunes;

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

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

Response: The project sites are located inland, away from the shoreline and is not anticipated to impact coastal and shoreline processes.

10. Marine and Coastal Resources

Objective:

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

Policies:

a. Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

b. Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

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

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

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

Response: The project sites are located inland, away from the ocean and is, therefore, not anticipated to have an impact on marine or coastal resources.

IV. ALTERNATIVES TO THE PROPOSED ACTION

IV. ALTERNATIVES TO THE PROPOSED ACTION

A. PREFERRED ALTERNATIVE

The preferred alternative is the proposed subdivision of five (5) parcels within the Hoʻolehua area on Molokaʻi into twelve (12) smaller lots, including related improvements described in Chapter I of this document. A contemplated alternative involved the subdivision of two (2) parcels into ten (10) lots. The preferred alternative represents a use which will serve to advance the DHHL efforts to provide additional needed homestead opportunities for their beneficiaries.

The mission of the DHHL is to effectively manage the Hawaiian Home Lands trust and to develop and deliver land to Native Hawaiians. The HHHCA, codified within the constitution of the State of Hawaiʻi, states as its purpose:

> *(a) The Congress of the United States and the State of Hawaii declare that the policy of this Act is to enable native Hawaiians to return to their lands in order to fully support self-sufficiency for native Hawaiians and the self-determination of native Hawaiians in the administration of this Act, and the preservation of the values, traditions, and culture of native Hawaiians.*
>
> *(b) The principal purposes of this Act include but are not limited to:*
>
> *(1) Establishing a permanent land base for the benefit and use of native Hawaiians, upon which they may live, farm, ranch, and otherwise engage in commercial or industrial or any other activities as authorized in this Act;*
>
> *(2) Placing native Hawaiians on the lands set aside under this Act in a prompt and efficient manner and assuring long-term tenancy to beneficiaries of this Act and their successors;*
>
> *(3) Preventing alienation of the fee title to the lands set aside under this Act so that these lands will always be held in trust for continued use by native Hawaiians in perpetuity;*

The proposed project directly supports these stated purposes.

Also as previously discussed, the DHHL Molokaʻi Island Plan (MIP), adopted in 2005 as the comprehensive resource for planning and managing Molokaʻi lands and establishes land use designations to encourage orderly social, physical, and economic development on the island, also provides data from a beneficiary survey conducted in 2004 to assess the preferences of DHHL beneficiaries on Molokaʻi. The results of the survey show that most beneficiaries applying for agricultural and pastoral homesteads indicated a desire to reside on their homesteads. Lessees are allowed to reside on their subsistence

agricultural lots so long as the lands are in active agricultural cultivation. Additionally, the survey indicated a preference for smaller agricultural lots between three (3) to five (5) acres for subsistence or supplemental agricultural use. The proposed project is in line with beneficiary preferences as discussed in the MIP.

Furthermore, the location of the proposed project is in an area of Molokaʻi with agricultural lands of a similar nature and a handful of residential homesteads within a rural agricultural community.

For these reasons, the preferred alternative is considered to be the most viable alternative which meets the stated purposes of DHHL and the HHCA, meets stated preferences of DHHL beneficiaries and which will be developed with adequate infrastructure to complement surrounding land uses.

B. ALTERNATIVE CONFIGURATIONS

In addition to the proposed action, alternative lot configuration options are being considered by DHHL. These include minor reconfigurations consisting of lots of different sizes and locations in the Hoʻolehua area. The preferred alternative represents the most feasible mix of lot sizes and use of developable properties, accommodates the DHHL beneficiary preferences, and is consistent with adjacent agricultural lots. During the subdivision plan review process, there may be additional minor modifications to the lot configurations. In addition, the locations of the access roads off of Farrington Avenue were reviewed by the State Department of Transportation and provides for safe ingress and egress points given the topography of the land, locations of horizontal and vertical sight distance constraints in the roadway. After reviewing alternative design concepts and costs of development, the lot configuration and product mix selected as the preferred alternative proved to be the optimal option in meeting the goals of the DHHL.

C. NO ACTION ALTERNATIVE

Under the “no action” alternative, the project site would remain “as is”. The “no action” alternative is not considered to be in the best interest of DHHL beneficiaries as the “no action” alternative would not provide new homestead opportunities. The “no action” alternative is in direct conflict with the stated purposes of the DHHL and HHCA. In this context, the proposed project is considered the most appropriate alternative.

D. DEFERRED ACTION ALTERNATIVE

A deferral of the proposed action means that the development proposal would be pursued at a later point in time. The deferral alternative is not considered viable from a project implementation standpoint. The DHHL’s current commitment to planning, design, and construction allows for the project to proceed at this time. Delays in project implementation

will likely result in higher development costs and greater uncertainty with respect to infrastructure systems adequacy. In addition, economic impacts resulting from delays in the project may also result in a longer waiting time for those of the DHHL homestead waiting list thereby not allowing the DHHL to fulfill its mission of providing homestead opportunities for its beneficiaries. The DHHL believes that the project can be viably developed under current market and financing conditions. With this in mind, the “deferred action alternative” is not considered appropriate.

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

An assessment of construction-related and post construction-related impacts on the physical and socio-economic environment were carried out as part of the environmental assessment documentation process. The proposed development may result in limited, unavoidable construction-related impacts on the environment, as described in Chapter II.

In the short term, construction associated with the proposed project will have a temporary impact on air quality from dust generation and discharge of exhaust from construction equipment during ground altering activities and site grading. Appropriate Best Management Practices will be incorporated to mitigate adverse construction-related impacts including, but not limited to, watering of exposed surfaces, installing dust screens, and regular maintenance of construction equipment.

Construction of the proposed project will also generate unavoidable short-term noise impacts. The use of properly maintained construction equipment will mitigate noise impacts caused by equipment. The incorporation of State Department of Health construction noise limits and curfew times are measures to mitigate noise impacts caused by construction activities.

Furthermore, the State Historic Preservation Division (SHPD) has been consulted for the project and DHHL will implement mitigation measures, as may be needed.

In summary, the proposed action is not anticipated to create any significant, long-term adverse environmental effects.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed action will not entail a substantial commitment of public services or facilities. Existing offsite infrastructure systems have been determined to have adequate capacity to address additional demands generated by the proposed project. Development of the proposed project will involve a commitment of energy, labor, fiscal, and material resources by the DHHL. The use of these resources, when weighed against the expected benefit to be derived from the subsistence agricultural lots to be created and made available for DHHL beneficiaries and the construction-related employment and agricultural activity that will be generated through implementation of the project, is not considered an adverse commitment.

VII. LIST OF PERMITS AND APPROVALS

VII. LIST OF PERMITS AND APPROVALS

The following permits and approvals may be required prior to the implementation of the project:

State of Hawai‘i

1. Chapter 343, Hawai‘i Revised Statutes, Environmental Assessment
2. Chapter 11-46, Community Noise Control, as applicable
3. Chapter 11-60.1-33, Fugitive Dust, as applicable
4. National Pollutant Discharge Elimination System (NPDES) Permit

County of Maui

1. Construction permits (i.e., grading and demolition permits)
2. Lot consolidation and subdivision approval

VIII. SIGNIFICANCE CRITERIA ASSESSMENT

VIII. SIGNIFICANCE CRITERIA ASSESSMENT

The “Significance Criteria”, defined in Chapter 11-200.1-13 of the Hawai‘i Administrative Rules (HAR), were reviewed and analyzed to determine whether the proposed project will have significant effect on the environment. As defined under Chapter 343, Hawai‘i Revised Statutes (HRS), “significant effect” means the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State’s environmental policies or long-term environmental goals as established by law, or adversely affect the economic welfare, social welfare, or cultural practices of the community and State. The analysis required to determine whether a proposed action may have a significant effect requires that every aspect of the proposed action, expected primary and secondary consequences, and the cumulative as well as the short-term and long-term effects are evaluated in accordance with the Significance Criteria of Section 11-200.1-13, HAR. The following criteria and analyses are provided.

1. <u>Irrevocably commit a natural, cultural, or historic resource.</u>

There are no known rare, threatened, or endangered species of flora, fauna, avifauna, or important habitats located within the project site. As mentioned previously, an archaeological literature review and field inspection (LRFI) report was conducted in September 2021 and was submitted to the State Historic Preservation Division (SHPD) for review. A supplemental field survey was done in December 2023 and a second archaeological LRFI and field inspection was carried out for the project and submitted in February 2023.

The reports concluded that no historic properties have been previously identified in the project areas or within 500 meters of either project area. The field inspections did not find evidence of historic properties in or near Parcel 31. However, two (2) terrace alignments were identified on the eastern parcel, Parcel 14. Due to the lack of historic properties and previous pineapple cultivation, it was determined that there is no potential for archaeological historical properties on this parcel. The potential archaeological historic properties in or near Parcel 14 is limited to the two (2) terrace alignments. The 2021 LRFI report recommended that mitigation measures, including avoidance and protection of terrace alignments for their passive preservation are implemented. The SHPD concurred with the assessment and mitigation measures for Parcels 14 and 31. The DHHL presumed concurrence by SHPD for “no historic properties affected” for parcels 3, 16 and 17. In addition, a Cultural Impact Assessment (CIA) report and a Ka Pa‘akai Analysis (KPA) were completed for the project and did not identify ongoing cultural practices in the project area, specifically. Furthermore, recommendations and mitigation from the CIA and KPA will be implemented, such as avoidance of significant cultural sites and establishment of protocol for addressing potential inadvertent cultural finds or burials.

With the implementation of recommended mitigation measures identified through cultural and archaeological consultation and investigations, the proposed project is not anticipated to involve an irrevocable commitment to loss or destruction of any natural, cultural, or historic resources.

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

The proposed action will be implemented on lands designated for agriculture, adjacent to existing agricultural lots and homesteads of a similar nature, and the commitment of land resources for the proposed action will not curtail the range of beneficial uses of the environment. The proposed use of the sites for subsistence agricultural lots is compatible with surrounding uses.

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

The proposed action does not conflict with the policies and guidelines of Chapter 343, HRS. An environmental assessment (EA) has been carried out to ensure the proposed project will not have adverse impacts on the environmental resources. While this project may cause temporary adverse impacts related to construction activities, based on the analysis conducted and mitigation measures presented in this EA, the adverse impacts are not anticipated to be significant.

Where mitigation measures are required due to potential impacts attributed to the project, DHHL will implement those applicable measures to further reduce adverse impacts.

4. Have a substantial adverse effect on the economic welfare, social welfare, and cultural practices of the community and State.

The proposed action will have a beneficial effect on the local economy during the short and long term. As previously discussed, positive economic and social impacts are anticipated as a result of the project, including construction-related jobs and by encouraging sustainable agricultural activity. In addition, A CIA and KPA were prepared for the project and noted that based on historical research and consultation, there is evidence of cultural practices for Hawaiian rights for agricultural pursuits, access to resources, and other customary activities presently occurring in the vicinity of the proposed project. However, no impacts on traditional or customary practices are anticipated because the CIA report concluded that none were occurring within the project area. As previously mentioned, mitigation measures will be implemented to protect and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups.

5. Have a substantially adverse effect on public health.

The project is not anticipated to result in long-term air or noise impacts. Furthermore, the proposed action is not anticipated to create significant direct or indirect foreseeable greenhouse gas (GHG) emissions, and does not fall within the threshold of mandatory GHG reporting. As such, no adverse impact to public health or welfare is anticipated as a result of the proposed action.

6. Involve adverse secondary impacts, such as population changes or effect on public facilities.

The proposed project will provide needed additional homestead lots on Molokaʻi for DHHL beneficiaries. Beneficiaries of these subsistence agricultural homesteads are expected to relocate from other areas on Molokaʻi. As such, the project is not anticipated to involve substantial secondary impacts due to population change. Secondary impacts on public facilities are not anticipated.

The DHHL will provide the necessary onsite and offsite infrastructure to support the proposed project. No substantial changes or effects on public facilities are expected with project implementation.

While DHHL is not subject to State or County land use plans and regulations, it is noted that this development is in line with County long-range development and population growth projections.

7. Involve a substantial degradation of environmental quality.

No substantial degradation of environmental quality resulting from the action is anticipated. Best Management Practices (BMPs) and appropriate erosion control measures will be utilized during the construction period. Drainage system improvements will be constructed in accordance with applicable regulatory design standards to ensure that surface runoff will not have an adverse effect on adjacent or downstream properties.

Any potential short-term impacts to air and noise quality during the construction phase of the project, will be mitigated through employing BMPs. In the long term, the project will not adversely impact air quality and ambient noise.

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

The proposed action is limited to the subdivision of the proposed ten (10) subsistence agricultural lots, and development of access driveways and waterline improvements. The project is not a phase or increment of a larger total undertaking; a necessary precedent for a larger project; or a commitment to some larger project. The proposed project will

stand on its own and is not reliant upon or a trigger for any other development. The cumulative impacts of the proposed project, together with other reasonably foreseeable actions, will include infrastructural demands, but this will not have a considerable effect on the environment. The DHHL will provide the necessary infrastructure to serve the proposed project. Drainage, water, and roadway improvements will be designed to meet applicable local, State, and Federal regulations. The engineering report prepared for the proposed project has assessed potential impacts and designed infrastructure systems in the context of future planned regional growth. Given the foregoing, the proposed project is not anticipated to cumulatively have considerable effect upon the environment, nor does it involve a commitment for larger actions.

9. Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat.

No rare, threatened, or endangered species of flora, fauna, avifauna, or important habitats are anticipated to be present in the vicinity of the project area. Nonetheless, BMPs will be implemented to minimize harm to potential rare, threatened or endangered species which may be present in the project area. The project site is located adjacent to disturbed agricultural lots of a similar nature. The project is not anticipated to substantially affect rare, threatened, or endangered species, or its habitat.

10. Have a substantial adverse effect on air or water quality or ambient noise levels.

Construction activities will result in short-term air quality and noise impacts. BMPs, including erosion control and dust control measures (such as regular watering and sprinkling and installation of dust screens and timely revegetation of graded areas), will be implemented to minimize wind-blown emissions. In the short term, noise impacts will occur primarily from construction equipment. Equipment mufflers or other noise attenuating equipment, as well as proper vehicle maintenance and limiting construction to daylight hours, will be used during construction activities. Construction noise impacts will be mitigated through compliance with the provisions of the State of Hawai‘i, DOH Administrative Rules Title 11, Chapter 46, “Community Noise Control.” These rules require a noise permit if the noise levels from construction activities are expected to exceed the allowable levels set forth in Chapter 46. In the long term, the proposed subsistence agricultural lots are not anticipated to significantly impact ambient noise levels.

As such, with implementation of foregoing mitigation measures, the proposed project is not anticipated to detrimentally affect air or water quality or ambient noise levels.

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

The project site is situated inland and is not anticipated to have any adverse impact upon coastal waters or resources, beaches, estuaries, or other fresh water bodies.

According to the Federal Emergency Management Agency's Flood Insurance Rate Maps currently in effect, the project site falls within Zone X (unshaded), an area of minimal flooding. The project site is located outside of the tsunami inundation zone. In addition, the project site is located outside of the 3.2-foot projected sea level rise exposure area.

Drainage improvements will be designed to mitigate runoff in accordance with County drainage and stormwater rules and regulations. During construction, recommended BMPs will be implemented for erosion and sedimentation control to minimize potential impacts to water quality.

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

The proposed project has been designed to complement the surrounding rural agricultural community of Hoʻolehua. Careful consideration has been given during the planning process to formulate a site plan that is both sensitive and appropriate to Hoʻolehua by maintaining the lands for agricultural use.

13. Requires substantial energy consumption or emit substantial greenhouse gases.

The proposed action will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this use is not anticipated to result in a substantial consumption of energy resources or substantial emission of greenhouse gasses. In the long term, the project will create an additional demand for electricity. However, this demand will not be substantially or excessively more than the energy consumed by similar homesteads throughout the region.

The project's technical characteristics and related impact considerations were thoroughly evaluated by the DHHL and the HHC. In accordance with HAR, Section 11-200.1-13, "Significance Criteria" every phase of the proposed action, the anticipated impacts, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action were considered. The analysis contained in this EA was supported through in-depth technical studies that were prepared by qualified professionals, and which were then reviewed by agencies having jurisdiction and expertise in their respective fields of authority.

Each section of the EA included a discussion and analysis of the impacts related to the respective environmental, infrastructural, public services and socio-economic parameters. While this project may cause impacts, based on the analysis conducted in the EA, the impacts are not anticipated to be significant. Where mitigation measures are required due to potential impacts attributed to the project, DHHL will implement those applicable measures to further reduce adverse impacts. Furthermore, the project will also result in positive impacts for DHHL beneficiaries, many of whom are long-time Molokaʻi residents seeking homestead opportunities for themselves and their families.

In summary, the project site is situated amongst agricultural lands and homesteads. This project will be developed in an area with existing infrastructure systems, and will not extend County service areas. The proposed project is not anticipated to have a significant adverse impact on the physical, cultural and socio-economic environments. Based on the preceding analysis in this EA document, and in accordance with the significance criteria set forth in 11-200.1-13, HAR, the proposed project is requesting a finding of no significant impact (FONSI) determination from the HHC.

IX. PARTIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

IX. PARTIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were consulted during preparation of the Draft Environmental Assessment (EA). It is noted that initial consultation proposed improvements to TMKs (2)5-2-005:031 and (2)5-2-026:014. Additional consultation was conducted to include TMKs (2)5-2-026:003, 016, and 017. Agency comments and responses to substantive comments are included herein.

2021 AGENCIES CONSULTED

Federal Agencies

1. Ms. Linda Speerstra, Chief
   U.S. Department of the Army
   U.S. Army Engineer District
   Regulatory Branch, Bldg. 230
   Fort Shafter, HI 96858-5440
   (CEPOH-RO@usace.army.mil)

2. Mr. Larry Yamamoto, State Conservationist
   Natural Resources Conservation Service
   U.S. Department of Agriculture
   P.O. Box 50004
   Honolulu, HI 96850-0001

3. Ms. Chelsie Javar-Salas, Acting Island Team Leader
   U.S. Fish and Wildlife Service
   300 Ala Moana Blvd., Rm. 3-122
   Honolulu, HI 96850

State Agencies

4. Ms. Patti Kitkowski, District Environmental Health Program Chief
   State of Hawai'i
   Department of Health
   Maui Sanitation Branch
   54 South High Street, Room 300
   Wailuku, HI 96793

5. Mr. Jade Butay, Director
   State of Hawai'i
   Department of Transportation
   869 Punchbowl Street
   Honolulu, HI 96813

6. Dr. Sylvia Hussey, Chief Executive Officer
   State of Hawai'i
   Office of Hawaiian Affairs
   560 N. Nimitz Highway, Suite 200
   Honolulu, HI 96817

7. Dr. Elizabeth Char, PhD., Director State of Hawai'i
   Department of Health
   1250 Punchbowl St., Room 325
   Honolulu, HI 96813

8. Mr. Curt Otaguro, Comptroller
   State of Hawai'i
   Dept. of Accounting and General Services
   1151 Punchbowl Street, #426
   Honolulu, HI 96813

9. Ms. Phyllis Shimabukuro-Geiser, Chair
   State of Hawai'i
   Department of Agriculture
   1428 South King Street
   Honolulu, HI 96814-2512

10. Ms. Suzanne Case, Chairperson
    State of Hawai'i
    Dept. of Land and Natural Resources
    P. O. Box 621
    Honolulu, HI 96809

11. Ms. Mary Alice Evans, Director
    State of Hawai'i
    Office of Planning and Sustainable Development
    P. O. Box 2359
    Honolulu, HI 96804

Maui County Agencies

12. Mr. Eric Nakagawa, Director
County of Maui
Department of Environmental Management
2050 Main Street, Suite 2B
Wailuku, HI 96793

13. Brad Ventura, Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, HI 96732

14. Ms. Lori Tsuhako, Director
County of Maui
Dept. of Housing and Human Concerns
2200 Main Street, Suite 546
Wailuku, HI 96793

15. Ms. Karla Peters, Director
County of Maui
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2F
Wailuku, HI 96793

16. Mr. Dean Rickard, Acting Chief
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Maui Police Department
55 Mahalani Street
Wailuku, HI 96793

17. Ms. Michele Chouteau McLean, Director
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Department of Planning
2200 Main Street, Suite 315
Wailuku, HI 96793

18. Ms. Rowena Dagdag-Andaya, Director
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Department of Public Works
200 South High Street
Wailuku, HI 96793

19. Mr. Marc Takamori, Director
County of Maui
Department of Transportation
110 Alaʻihi Street, Suite 210
Kahului, HI 96732

20. Mr. Jeffrey Pearson, Director
County of Maui
Department of Water Supply
200 South High Street, 5th Floor
Wailuku, HI 96793

21. Honorable Keani Rawlins-Fernandez Maui County Council
200 South High Street
Wailuku, HI 96793

Maui County Organizations

22. Mr. Marc Prince, Supervisor
Hawaiian Electric
P.O. Box 398
Kahului, HI 96733

23. Mr. Keʻeaumoku Kapu, Poʻo
Aha Moku o Maui Inc.
(kapukapuakea@gmail.com)

24. Ms. Blossom Feiteira
Maui Mokupuni Council
(blossom96708@yahoo.com)

25. Ms. Lily Napoleon, President
Nāʻiwa Homestead Association
(mkk.naiwa.ha@gmail.com)

26. Ms. Cora Schnackenberg, President
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P.O. Box 417
Hoʻolehua, HI 96729

27. Mr. Robert “Bob” Danner, President
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P.O. Box 60
Hoʻolehua, HI 96729

28. Ms. Rosie Davis
Molokaʻi Homestead Farmers Alliance
P.O. Box 290613
Hoʻolehua, HI 96729

29. Ms. Beverly Pauʻole-Moore
Molokaʻi Hawaiian Home Lands Kupuna Committee
P.O. Box 290613
Hoʻolehua, HI 96729

2023 AGENCIES CONSULTED

Federal Agencies

1. Gerald Gregory, District Conservationist
   U.S. Department of Agriculture
   Natural Resources Conservation Service
   77 Hoʻokele Street, Suite 202
   Kahului, Hawaiʻi 96732

2. U.S. Department of the Army
   U.S. Army Engineer District Regulatory
   Branch, Bldg. 230
   Fort Shafter, Hawaiʻi 96858-5440
   (CEPOH-RO@usace.army.mil)

3. U.S. Department of the Interior
   Fish and Wildlife Service
   Pacific Islands Fish and Wildlife Office
   300 Ala Moana Boulevard, Room 3-122
   Honolulu, Hawaiʻi 96850
   (pifwo_admin@fws.gov)

State of Hawaiʻi Agencies

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6. Kenneth S. Fink, Director
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7. Dawn N.S. Chang, Chairperson
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10. Mary Alice Evans, Acting Director
    State of Hawaiʻi
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    200 S. High Street
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12. Shayne Agawa, P.E., Director
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13. Brad Ventura, Chief
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    Dairy Road
    Kahului, Hawaiʻi 96732

14. Lori Tsuhako, Director
    County of Maui
    Department of Housing and Human
    Concerns
    2200 Main Street, Suite 546
    Wailuku, Hawaiʻi 96793

15. Patrick McCall, Director
    County of Maui
    Department of Parks and Recreation 700
    Halia Nakoa Street, Unit 2F Wailuku,
    Hawaiʻi 96793

16. Kathleen Ross Aoki, Director
County of Maui
Department of Planning
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Wailuku, Hawai‘i 96793

17. Jordan Molina, Director
County of Maui
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200 South High Street, 4th Floor Wailuku,
Hawai‘i 96793

18. Marc Takamori, Director
County of Maui
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110 Ala‘ihi Street, Suite 210
Kahului, Hawai‘i 96732

19. John Stufflebean, Director
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200 S. High Street, 5th Floor
Wailuku, Hawai‘i 96793

20. Darryl Oliveira, Interim Director County of Maui
Maui Emergency Management Agency
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21. Keani Rawlins-Fernandez, Council Vice Chair
Maui County Council
200 S. High Street, 8th Floor
Wailuku, Hawai‘i 96793

22. John Pelletier, Chief
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Maui Police Department
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Maui County Organizations

23. Ke‘eaumoku Kapu, CEO
‘Aha Moku O Maui
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24. Cora Schnackenberg, President
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25. Marc Grider, Manager, Engineering
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26. Robert “Bob” Danner, President
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27. Blossom Feiteira
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28. Beverly Pau‘ole-Moore
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29. Rosie Davis
Moloka‘i Homestead Farmers Alliance
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Ho‘olehua, Hawai‘i 96729

30. Moloka‘i Nā‘iwa Homestead Association
P.O. Box 482152
Kaunakakai, Hawai‘i 96748
(mkk.naiwa.ha@gmail.com)

From: Morgan, Jeremy K CIV USARMY CEPOH (USA) <Jeremy.K.Morgan@usace.army.mil>
Sent: Tuesday, September 19, 2023 4:26 PM
To: General eMail
Subject: Early consultation comments on the proposed Department of Hawaiian Home Lands' Hoʻolehua Scattered Lots Subdivision and Related Improvements

Aloha Emily Murai,

The US Army Corps of Engineers (Corps) received your request for comments on the proposed Hoʻolehua Scattered Lots Subdivision and Related Improvements project located in Hoʻolehua, Island of Molokaʻi, Hawaii. After review of the provided information, it appears that a Corps permit may not be required for the proposed work. However, there appears to be a streambed present on the Southwest corner of parcel (2)5-2-026:017 (Parcel 17). If this streambed or potential wetlands would be affected, you should reach out to us because a Corps permit may be required.

The Corps' regulatory authorities are based on Section 10 of the Rivers and Harbors Act (RHA) of 1899 and Section 404 of the Clean Water Act. Section 10 of the RHA of 1899 prohibits the obstruction or alteration of any navigable water of the U.S. (WOTUS) without a Department of the Army (DA) permit. Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into WOTUS without a DA permit. For projects that are being developed, we ask that you identify areas that may fall within the Corps jurisdiction as WOTUS such as streams, rivers, and wetlands.

If you determine that the proposed project would involve a discharge of fill into WOTUS and a permit is needed from the Corps, then we would require an application to be provided. We must also evaluate the project for any impacts to resources such as threatened or endangered species, historic properties, and/or essential fish habitat, and consult if necessary. If applying for a permit, include detailed plans/drawings of the proposed project where streams or wetlands are present. Include a clear line indicating the ordinary high water mark (OHWM) in your plans and also include the amount and type of fill that would be placed below the OHWM.

A permit is not required if all work being done is located in uplands.

Please visit https://www.poh.usace.army.mil/Missions/Regulatory/Permits/Nationwide-Permits/ to find more information about our program and to apply for a permit. Email permit applications to CEPOH-RO@usace.army.mil, as we have gone paperless.

Feel free to contact me with any further questions.

Mahalo,

Jeremy Morgan
Biologist
Regulatory Office
U.S. Army Corps of Engineers
Honolulu District
Building 252 Fort Shafter, HI 96858-5440
Phone: (808) 835-4308
Jeremy.K.Morgan@usace.army.mil

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September 20, 2024

Via email: jeremy.k.morgan@usace.army.mil

Jeremy Morgan, Biologist
U.S. Army Corps of Engineers
Honolulu District
Building 252
Fort Shafter, Hawai'i 96858

SUBJECT: Response to Comments Regarding the State of Hawai'i, Department of Hawaiian Home Lands Proposed Ho'olehua Scattered Lots Project, Ho'olehua, Moloka'i

Dear Mr. Morgan:

Thank you for your email dated September 19, 2023, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands (DHHL), we offer the following information in response to the comments received.

- We acknowledge that there is a streambed present at the southwest corner of Tax Map Key (TMK) (2)5-2-026:01 (Parcel 17). However, the proposed project is not anticipated to affect the streambed or wetlands. DHHL will inform the beneficiaries who are awarded lots within Parcel 17, that no work may occur within the unnamed riverine or streambed. It is also noted that the terrain in the area of the stream bed and riverine are steep, and as such, would not be suitable for farming activities.

- We acknowledge that a DA permit is required should there be any obstruction or alteration of any navigable water of the United States. As previously mentioned, the stream bed is located at the southwest corner of Parcel 17, however, no work is proposed within the stream.

- Thank you for the information related to the need for a permit from the Corps. As previously noted, no work is proposed in the vicinity of the stream bed on Parcel 17. In addition, a stream setback will be notated on the subdivision map to discourage lessees from working in that area.

Thank you again for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. A copy of your email and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Gordon Ring, R.M. Towill Corporation
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Resp Ltrs\USACE.docx

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai‘i 96850

In Reply Refer To:
01EPIF00-2022-TA-0062

November 5, 2021

Bryan Esmeralda
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawai‘i 96793

Subject: Response to Request for Technical Assistance on the Department of Hawaiian Homelands' Proposed Ho‘olehua Scattered Lots Subdivision, Moloka‘i

Thank you for your recent correspondence requesting technical assistance on species biology, habitat, or life requisite requirements. The Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service) appreciates your efforts to avoid or minimize effects to protected species associated with your proposed actions. We provide the following information for your consideration under the authorities of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 *et seq*.), as amended.

Due to significant workload constraints, PIFWO is currently unable to specifically address your information request. The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area, in the '**Occurs In or Near Project Area'** column. Please note this list is not comprehensive and should only be used for general guidance. We have added to the PIFWO website, located at https://www.fws.gov/pacificislands/promo.cfm?id=177175840 recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality. If your project occurs on the island of Hawai‘i, we have also enclosed our biosecurity protocol for activities in or near natural areas.

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO https://www.fws.gov/pacificislands/articles.cfm?id=149489558. You can find out if your project occurs in or near designated critical habitat here: https://ecos.fws.gov/ipac/.

Under the ESA, it is the Federal agency's (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project "may affect" federally listed species or designated critical habitat. A "may affect, not likely to adversely affect" determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a "may affect, likely to adversely affect" determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have "no effect" on federally listed species and/or critical habitat do not require additional coordination or consultation.

Implementing the avoidance, minimization, or conservation measures for the species that may occur in your project area will normally enable you to make a "may affect, not likely to adversely affect" determination for your project. If it is determined that the proposed project may affect federally listed species, we recommend you contact our office early in the planning process so that we may assist you with the ESA compliance. If the proposed project is funded, authorized, or permitted by a Federal agency, then that agency should consult with us pursuant to section 7(a)(2) of the ESA. If no Federal agency is involved with the proposed project, the applicant should apply for an incidental take permit under section 10(a)(1)(B) of the ESA. A section 10 permit application must include a habitat conservation plan that identifies the effects of the action on listed species and their habitats and defines measures to minimize and mitigate those adverse effects.

We appreciate your efforts to conserve endangered species. We regret that we cannot provide you with more specific protected species information for your project site. If you have questions that are not answered by the information on our website, you can contact PIFWO at (808) 792-9400 and ask to speak to the lead biologist for the island where your project is located.

Sincerely,

CADE LONDON

Digitally signed by CADE LONDON
Date: 2021.11.05 21:01:44 -04'00'

Acting Island Team Manager
Pacific Islands Fish and Wildlife Office

Enclosures (3): Federal Status of Animal Species
Federal Status of Plant Species
Aquatic Best Management Practices

The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. For your guidance, we have marked species that may occur in the vicinity of your project, this list is not comprehensive and should only be used for general guidance.

Enclosure 1. Federal Status of Animal Species

Scientific Name	Common Name / Hawaiian Name	Federal Status	May Occur In Project Area
Mammals			
Lasiurus cinereus semotus	Hawaiian hoary bat/ʻōpeʻapeʻa	E	☒
Reptiles			
Chelonia mydas	green sea turtle/honu - Central North Pacific distinct population segment (DPS)	T	☐
Eretmochelys imbricata	hawksbill sea turtle/ honu ʻea or ʻea	E	☐
Birds			
Anas wyvilliana	Hawaiian duck/koloa	E	☐
Branta sandvicensis	Hawaiian goose/nēnē	T	☐
Fulica alai	Hawaiian coot/ʻalae keʻokeʻo	E	☒
Gallinula galeata sandvicensis	Hawaiian gallinule/ʻalae ʻula	E	☐
Himantopus mexicanus knudseni	Hawaiian stilt/aeʻo	E	☒
Oceanodroma castro	band-rumped storm-petrel Hawaiʻi DPS/ʻakēʻakē	E	☒
Pterodroma sandwichensis	Hawaiian petrel/ʻuaʻu	E	☒
Puffinus auricularis newelli	Newell's shearwater/ʻaʻo	T	☒
Ardenna pacificus	wedge-tailed shearwater/ʻuaʻu kani	MBTA	☐
Buteo solitarius	Hawaiian hawk/ʻio	MBTA	☐
Gygis alba	white tern/manu-o-kū	MBTA	☐
Insects			
Manduca blackburni	Blackburn's sphinx moth	E	☒
Megalagrion pacificum	Pacific Hawaiian damselfly	E	☐
Megalagrion xanthomelas	orangeblack Hawaiian damselfly	E	☐
Megalagrion nigrohamatum nigrolineatum	blackline Hawaiian damselfly	E	☐

Enclosure 2. Federal Status of Plant Species

Plants				
Scientific Name	**Common Name or Hawaiian Name**	**Federal Status**	**Locations**	**May Occur In Project Area**
Abutilon menziesii	koʻoloaʻula	E	O, L, M, H	☐
Achyranthes splendens var. *rotundata*	ʻewa hinahina	E	O	☐
Bonamia menziesii	no common name	E	K, O, L, M, H	☐
Canavalia pubescens	ʻāwikiwiki	E	Ni, K, L, M	☐
Colubrina oppositifolia	kauila	E	O, M, H	☐
Cyperus trachysanthos	puʻukaʻa	E	K, O	☐
Gouania hillebrandii	no common name	E	Mo, M	☐
Hibiscus brackenridgei	maʻo hau hele	E	O, Mo, L, M, H	☐
Ischaemum byrone	Hilo ischaemum	E	K, O, Mo, M, H	☐
Isodendrion pyrifolium	wahine noho kula	E	O, H	☐
Marsilea villosa	ʻihiʻihi	E	Ni, O, Mo	☐
Mezoneuron kavaiense	uhiuhi	E	O, H	☐
Nothocestrum breviflorum	ʻaiea	E	H	☐
Panicum fauriei var. *carteri*	Carter's panicgrass	E	Molokini Islet (O), Mo	☐
Panicum niihauense	lauʻehu	E	K	☐
Peucedanum sandwicense	makou	E	K, O, Mo, M	☐
Pleomele (Chrysodracon) hawaiiensis	halapepe	E	H	☐
Portulaca sclerocarpa	ʻihi	E	L, H	☐
Portulaca villosa	ʻihi	E	Le, Ka, Ni, O, Mo, M, L, H, Nihoa	☐
Pritchardia affinis (maideniana)	loulu	E	H	☐
Pseudognaphalium sandwicensium var. *molokaiense*	ʻenaʻena	E	Mo, M	☐
Scaevola coriacea	dwarf naupaka	E	Mo, M	☐
Schenkia (*Centaurium*) *sebaeoides*	ʻāwiwi	E	K, O, Mo, L, M	☐
Sesbania tomentosa	ʻōhai	E	Ni, Ka, K, O, Mo, M, L, H, Necker, Nihoa	☐
Tetramolopium rockii	no common name	T	Mo	☐
Vigna o-wahuensis	no common name	E	Mo, M, L, H, Ka	☐

Location key: O=Oʻahu, K=Kauaʻi, M=Maui, H=island of Hawaiʻi, L=Lānaʻi, Mo=Molokaʻi, Ka=Kahoʻolawe, Ni=Niʻihau, Le=Lehua

Enclosure 3.

U.S. Fish and Wildlife Service
Recommended Standard Best Management Practices

The U.S. Fish and Wildlife Service (USFWS) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.

2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.

3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.

4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see https://www.fws.gov/policy/A1750fw1.html) can help to prevent attraction and introduction of non-native species.

5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to aquatic habitats and should be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person

responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.

7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

From: Javar-Salas, Chelsie <chelsie_javar-salas@fws.gov>
Sent: Monday, September 11, 2023 9:13 AM
To: General eMail
Subject: Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Hoʻolehua Scattered Lots Subdivision and Related Improvements
Attachments: IPaC Info Letter_Species List Instructions_PIFWO_20Apr2022_Final.pdf

Aloha,

Thank you for reaching out to us. Please obtain an Official Species List from our Information for Planning and Consultation (IPaC) online tool (https://ipac.ecosphere.fws.gov/). Species lists are available online through our IPaC system. I have attached instructions on how to acquire a species list and avoidance and minimization measures to avoid adverse effects to federally listed species.

We highly recommend paying particular attention to the avoidance and minimization measures called "General project design guidelines" in the species list produced. Implementing these avoidance and minimization measures will avoid adverse effects for listed species likely to be present within the action area.

A few IPAC tips:

- If you are uploading a polygon and have more than one TMK in the project area, make sure all TMKs are in one polygon. Otherwise, you will get a project code for every TMK. Drawing on the map works best if there is one continuous project site vs distinct, separate project areas for the same reason.
- You can ignore any requests or links regarding additional document uploads or continuing your consultation in IPaC (e.g., Dkeys or Consultation Builder). The only thing you need to do is enter your basic project information and submit for an Official Species List.
- While the attached pdf of instructions will direct you to **https://ipac.ecosphere.fws.gov/**, several partners have gotten stuck at "create a Login.gov account." Our IT suggested accessing IPAC through ECOS may help reduce this issue by accessing IPaC by first visiting **https://ecos.fws.gov/ecp/**.
    - Your official IPaC species list is based on species' ranges. IPaC generates a list of all federally listed species and other trust resources that could potentially be in the project area.
    - If the IPaC species list includes a species you do not think occur in the project area, explain why not in your consultation letter.
    - Implementing surveys is a good way to determine if a species present or not.
    - We recommend our partners incorporate all the species and their associated avoidance and minimization measures in their impacts analysis.

Please feel free to contact me if you need additional assistance.

Mahalo,
Chelsie Javar-Salas

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai‘i 96850

Subject: IPaC generated official species list for the Pacific Islands Fish and Wildlife Office

Dear Action Agency or Applicant:

The Pacific Islands Fish and Wildlife Office (PIFWO) is transitioning to the Information for Planning and Consultation (IPaC) online portal, https://ipac.ecosphere.fws.gov/ for federal action agencies and non-federal agencies or individuals to obtain official species lists, including threatened and endangered species, designated critical habitat, and avoidance and minimization measures to consider in your general project design. IPaC has been used by continental USFWS offices to provide official species lists and avoidance and minimization guidance since 2017. Using IPaC expedites the process for species list distribution. Obtaining a species list in IPaC is relatively straightforward and takes minimal time to complete. Step by step instructions are included below.

Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of your species list should be verified after 90 days. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change the species list. Verification can be completed by visiting the IPaC website at regular intervals during project planning and implementation. An updated list may be requested through the IPaC system by completing the same process used to obtain the initial species list.

We hope this process provides efficiencies to our partners in obtaining a species list. For federal action agencies, it also opens additional IPaC functionality that the PIFWO office is still working on, such as the use of Determination Keys for informal section 7 programmatic consultations. We will let our agency partners know when that functionality becomes available.

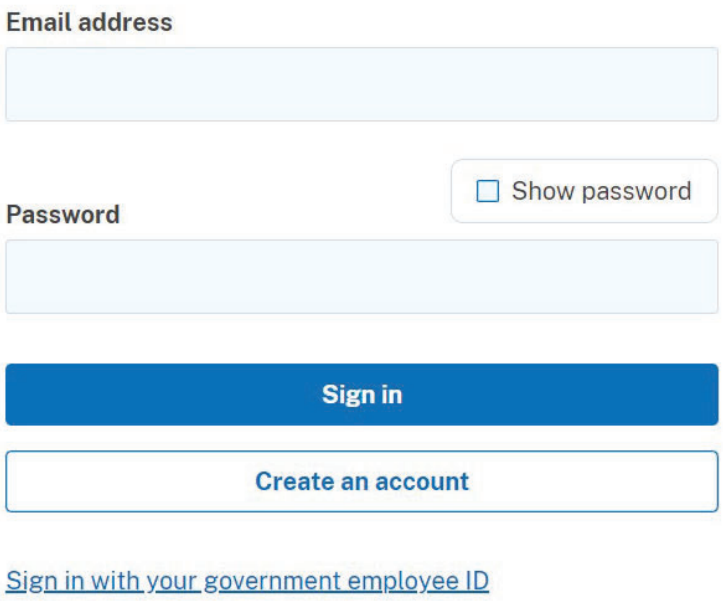
If you have questions about a species list obtained through the IPaC system or need assistance in completing an IPaC species list request, please contact the Service at 808-792-9400 or via email at pifwo_admin@fws.gov. We appreciate your efforts to conserve listed species across the Pacific Islands.

Instructions for Action Agencies and partners to obtain an official species list in IPaC

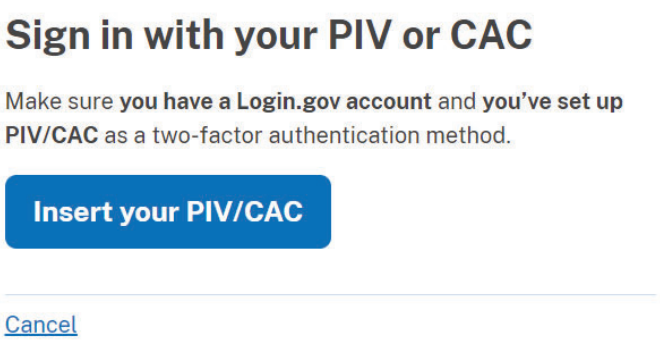
- Navigate to https://ipac.ecosphere.fws.gov/
- You can get an unofficial species list without logging in. However, if you want an official species list you will need to log in first using your Login.gov account. If you don't have an IPaC account, they are easy to create.



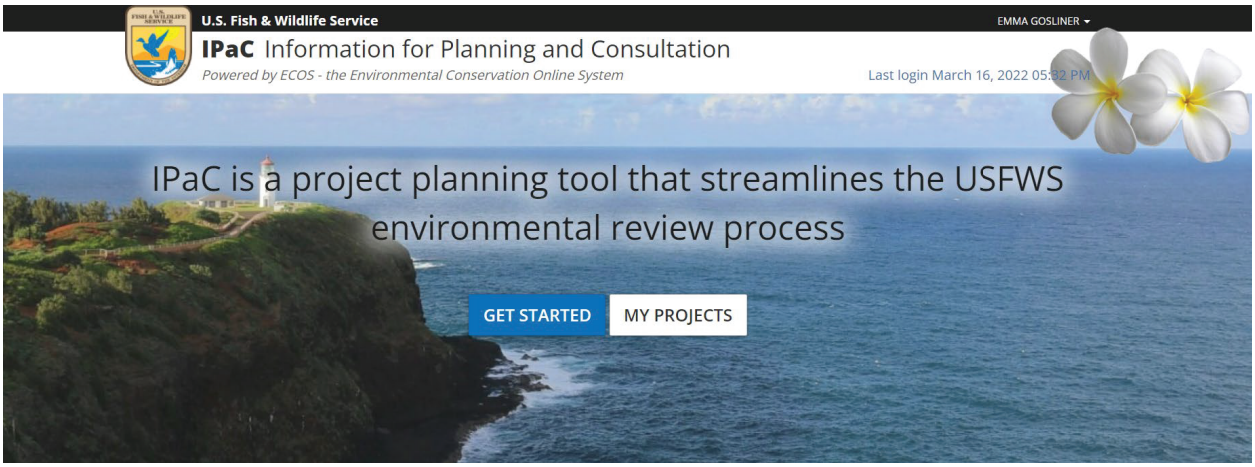
Select Log in with Login.gov and sign in using your email and password.



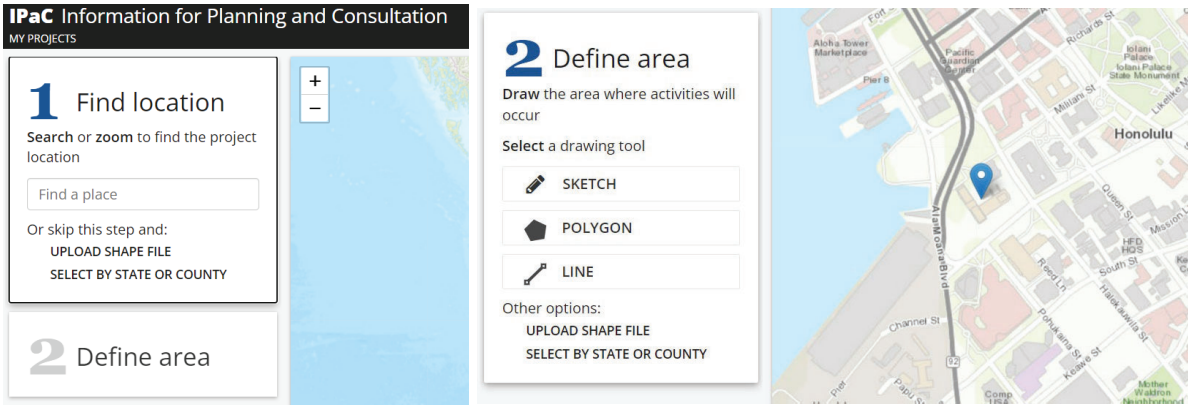
If you have a PIV or CAC card, you can sign in using that method as well.

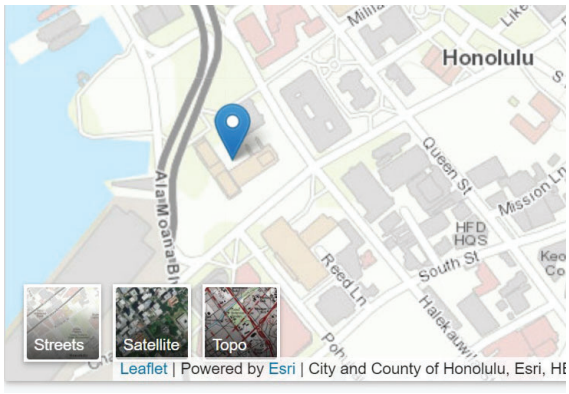


- Once you log in, select "Get Started".

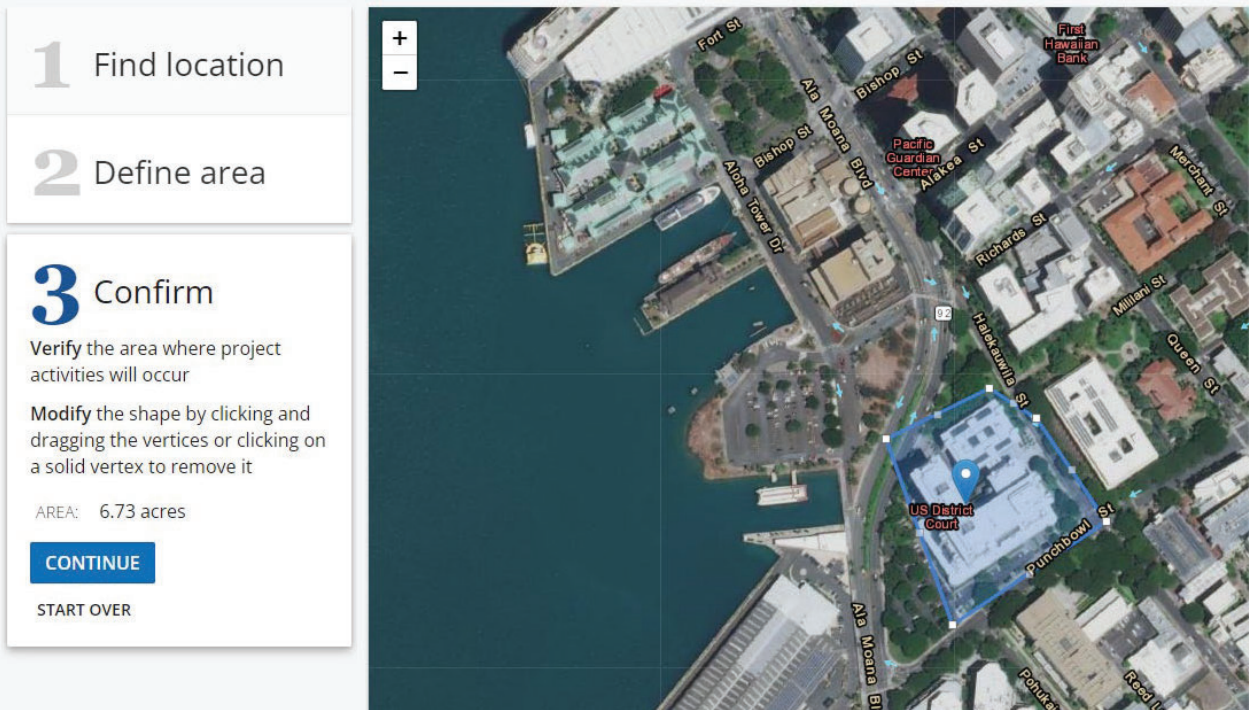


- Define the action area: Identify the location of the proposed action by uploading an existing shapefile or by entering an address or coordinates of the action area. Once identified on the map, you can manually draw the action area using the drawing tools.



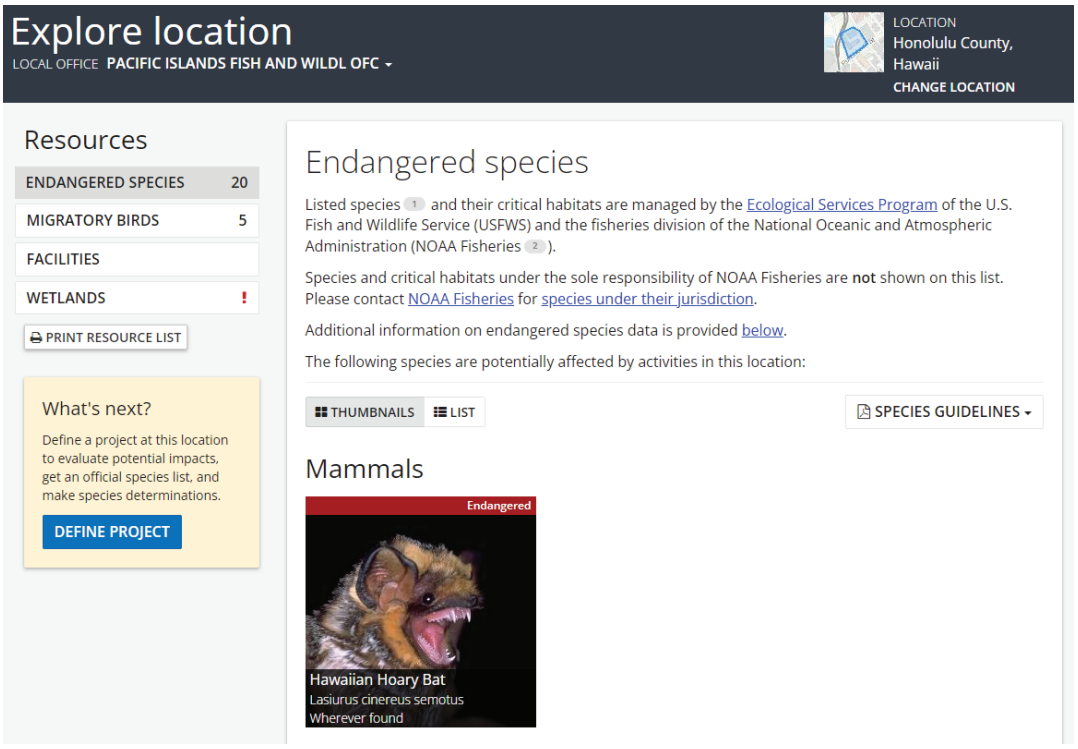


To help identify your action area you can choose between multiple base maps available.

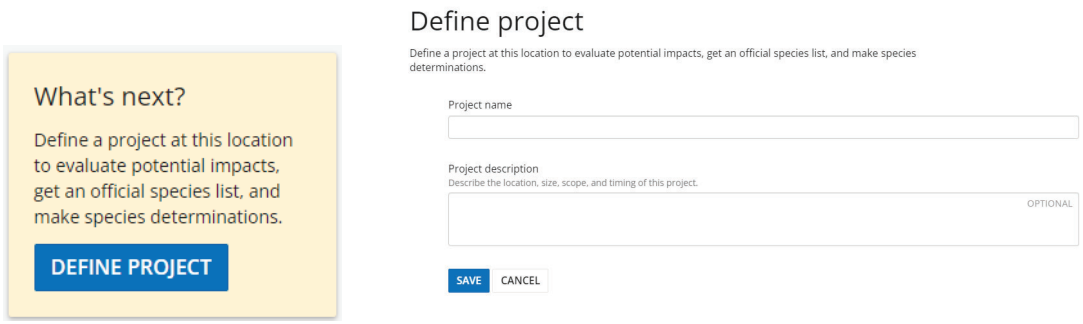


Press continue when you have finished drawing or uploading the action area location.

- The species information on the page that follows is not official. However, it identifies the project County, local Fish and Wildlife Field Office, species covered under NOAA Fisheries as well as Migratory Bird Treaty Act species. The list can be viewed in Thumbnail or List format.
- Once the species list populates you will see images of the species that may occur on, near, or transgress across your project. Click on SPECIES GUIDELINES on your top right to see Avoidance and Minimization measures to incorporate into your General Project Design Guidelines.

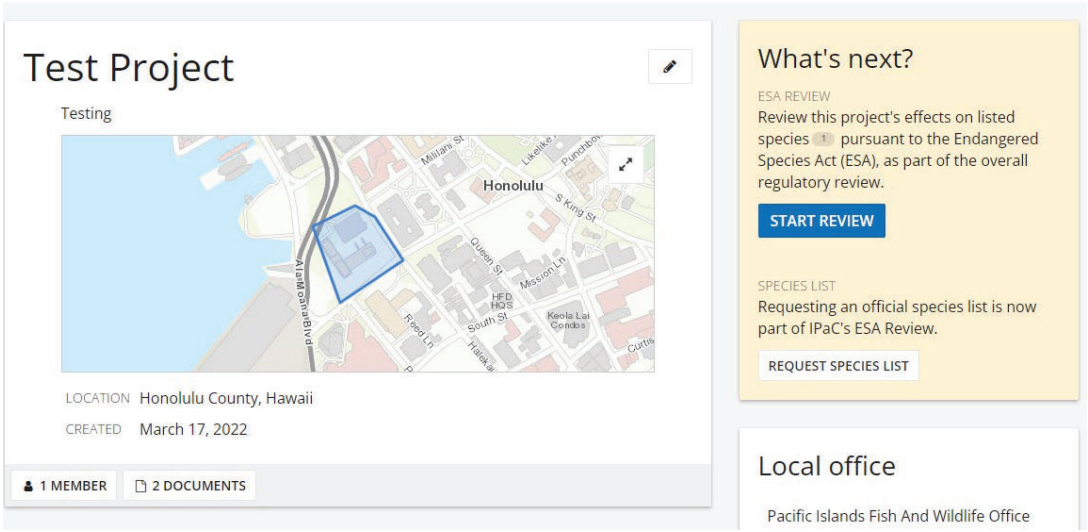


- Continue with the following steps to comply with the requirements of ESA section 7 to obtain an **official species list**.
- Select Define Project

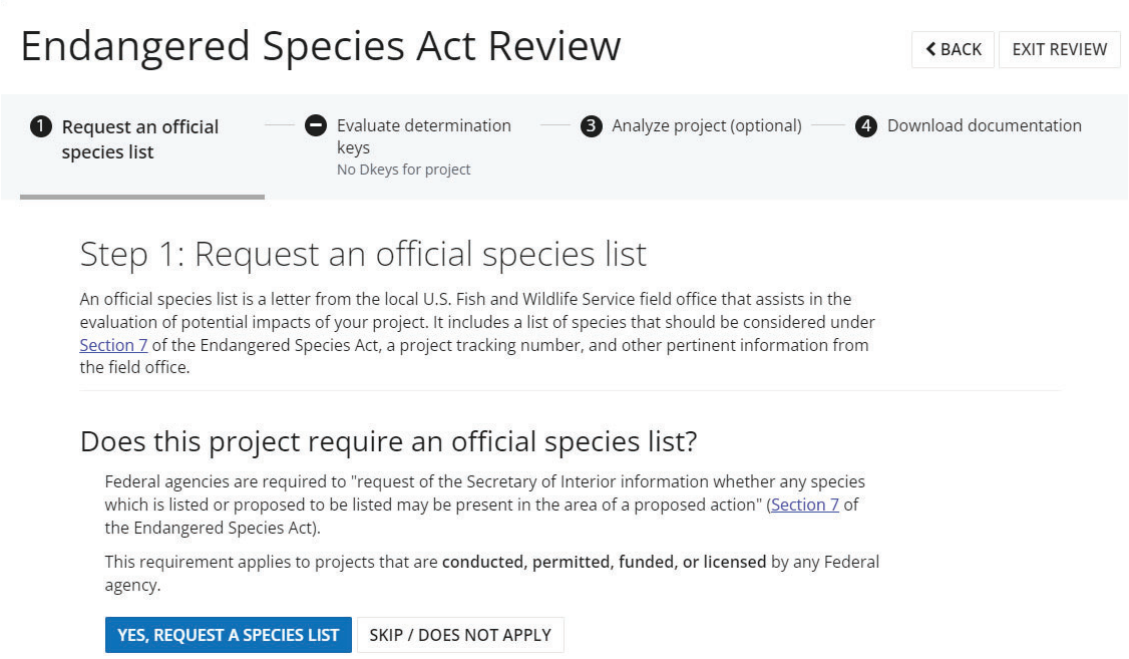


Enter the Project Name and a brief description of the project (a description is not mandatory, but recommended for future coordination with the Service). Click SAVE at bottom of page.

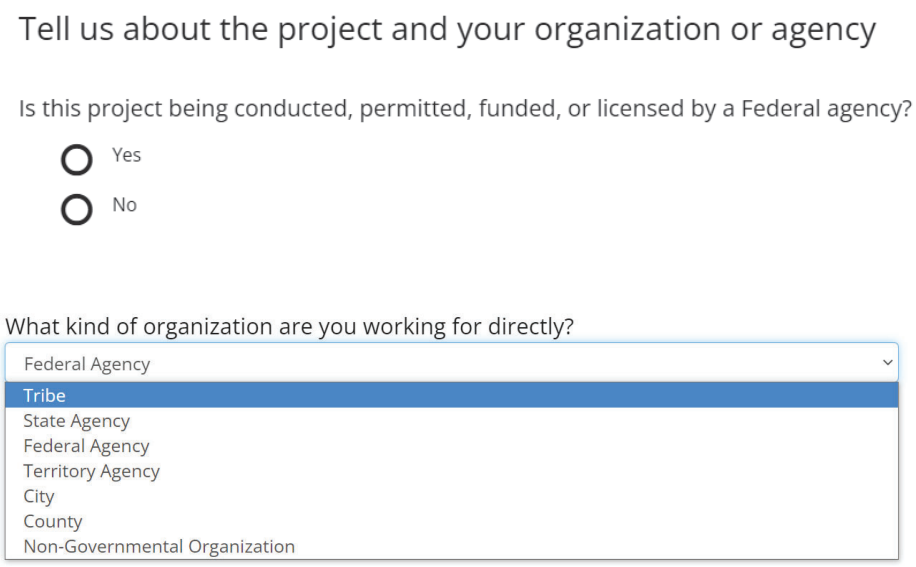
- At the bottom of the What's next box on the right, click Request Species List



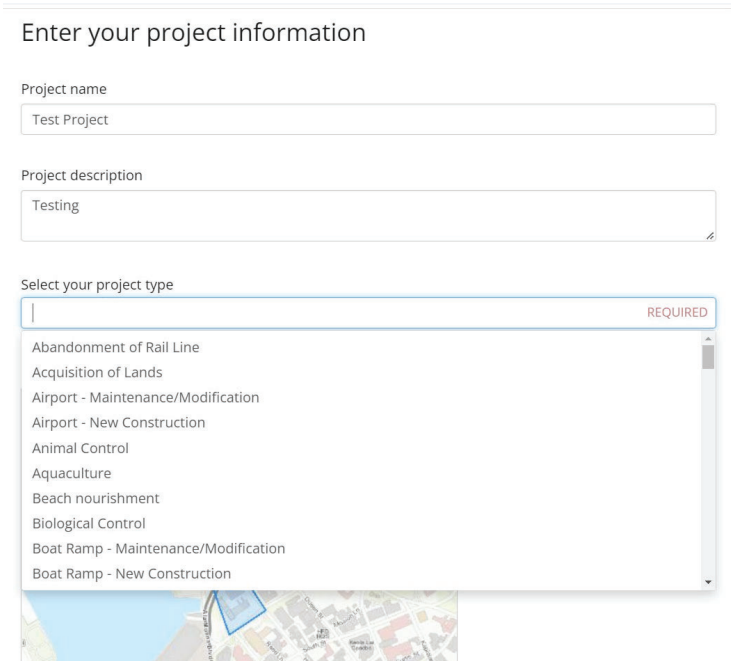
- on the following screen, click Yes, Request Species List



- Fill out the contact information for yourself or your agency. Contractors, state partners, and any other project proponents may request a species list and should be covered using the dropdown menus.



- From the pull-down menu for Classify Type of Project, select the project type that best fits the proposed action.

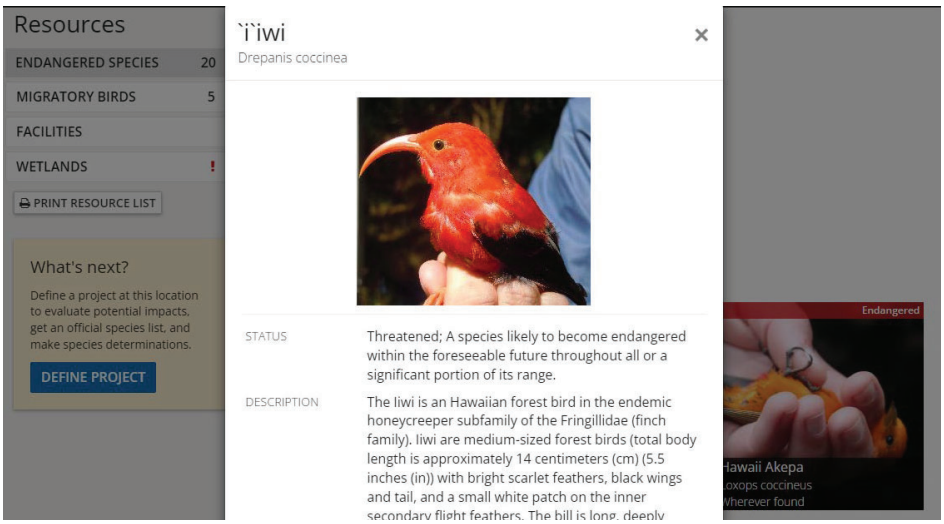


- Once all required sections are filled out, press SUBMIT OFFICIAL SPECIES LIST REQUEST



- An Official Species List should be generated and available for download in a couple of seconds.

- If you need additional information on a species, click on their name that is hot-linked to their species information page. A brief overview of the species' status, description and critical habitat will appear as well as a link to their ECOS species profile.



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Karlynn K. Fukuda
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VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Via email: pifwo_admin@fws.gov

U.S. Fish and Wildlife Service
Pacific Island Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

SUBJECT: Response to Comments Regarding the State of Hawai'i, Department of Hawaiian Home Lands Proposed Ho'olehua Scattered Lots Project, Ho'olehua, Moloka'i 01EPIF00-2022-TA-0062

Dear Sir/Madame:

Thank you for your comments, dated November 5, 2021 and September 11, 2023, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands (DHHL), we offer the following information in response to the comments received.

Response to November 5, 2021 Comments:

We thank you for the information provided on protected species most likely to occur within the project vicinity. We have consulted the Pacific Islands Fish and Wildlife Office (PIFWO) website regarding recommended conservation measures to avoid or minimize adverse effects to federally protected species and Best Management Practices (BMPs) to minimize and avoid sedimentation and erosion impacts to water quality. As such, the following conservation measures and BMPs will be forwarded to the project team for incorporation into the project, as practicable, to avoid or minimize adverse effects to protected species most likely to occur in the project area:

Hawaiian hoary bat or 'Ōpe'ape'a (Lasiurus cinereus semotus)

- Do not disturb, remove or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15)
- Do not use barbed wire for fencing
- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within three (3) days of project initiation and after any subsequent delay of work of three (3) or more days (during which the birds may attempt to nest).

Hawaiian coot or ʻalae (Fulica alai) and the Hawaiian stilt or aeʻo (Himantopus mexicanus knuseni)

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site or nearby

- If water resources are located within or adjacent to the project site, incorporate the applicable BMPs regarding work in aquatic environments into the project design.

- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within three (3) days of project initiation and after any subsequent delay of work of three (3) or more days (during which the birds may attempt to nest).

- If a nest or active brood is found:

  - Contact the Service within 24 hours for further guidance.

  - Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.

  - Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

Hawaiian petrel or ʻuaʻu (Pterodroma sandwichensis), Band-Rumped Storm-Petrel (Oceanodroma castro), and the threatened Newell's shearwater or ʻaʻo (Puffinus auricularis newelli)

- *Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.*

- *Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.*

- *Avoid nighttime construction during the seabird fledging period, September 15 through December 15.*

- *It is noted that the proposed project does not involve the construction of a tower or antennae and is not located near a known seabird colony.*

Blackburn's sphinx moth (Manduca blackburni)

- *A biologist familiar with the species should survey areas of proposed activities for Blackburn's sphinx moth and its larval host plants prior to work initiation.*
- *Surveys should include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).*
- *If moths or the native aiea or tree tobacco over three (3) feet tall are found during the survey, please contact the Service for additional guidance to avoid take.*

In addition, we offer the following in response to comments in your letter.

- We note that the project is located on Molokaʻi and not on the island of Hawaiʻi.
- The applicant for the project is the DHHL, which is not a federal agency.
- Should it be determined that the proposed project may affect federally listed species, the U.S. Fish and Wildlife Service will be contacted for assistance with Endangered Species Act compliance as soon as possible.

Response to September 11, 2023 Comments:

- An official species list has been generated through the IPaC online tool. This species list will be included in the Draft Environmental Assessment (EA) being prepared for this project.
- The "*General project design guidelines*" from the species list have been reviewed for guidance. Applicable avoidance and minimization measures will be discussed in the Draft EA.

Thank you again for your participation in the Chapter 343, Hawaiʻi Revised Statutes environmental review process. Copies of the emails and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Gordon Ring, R.M. Towill Corporation
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Resp Ltrs\USFWS.docx

OCT 27 2021

DAVID Y. IGE
GOVERNOR OF HAWAII

ELIZABETH A. CHAR, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
Maui District Health Office
54 South High St. Rm. #301
Wailuku, HI 96793

Lorrin W. Pang, M.D., M.P.H.
District Health Officer

October 20, 2021

Mr. Bryan K. Esmeralda, AICP
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

Subject: **Chapter 343, Hawaii Revised Statutes Early Consultation Request for the Proposed Department of Hawaiian Homes Lands Ho'olehua Scattered Lots Subdivision and Related Improvements**
TMK: (2) 5-2-005:031 & (2) 5-2-026:014

Thank you for the opportunity to review this project. We have the following comments to offer:

We were not able to make comments because the wastewater disposal system was not satisfactorily addressed for our review. Please provide wastewater disposal method site plan for the proposed subdivision for review. If you have any questions, please contact Roland Tejano, Environmental Engineer, at 808 984-8232.

It is strongly recommended that you review the department's website at https://health.hawaii.gov/epo/landuse/ and contact the appropriate program that concerns your project.

Should you have any questions, please contact me at 808 984-8230 or email me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c Joanna L. Seto, EMD Chief

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Patti Kitkowski, District Environmental Health Program Chief
State of Hawai'i
Department of Health
Maui District Health Office
54 South High Street, Room 301
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding Proposed Department of Hawaiian Home Lands' Ho'olehua Scattered Lots Subdivision and Related Improvements

Dear Ms. Kitkowski:

On behalf of the Department of Hawaiian Home Lands (DHHL), thank you for your letter dated October 20, 2021, regarding the proposed Ho'olehua Scattered Lots Subdivision and Related Improvements project. We offer the following information in response to the comments received.

- The proposed project will not involve wastewater system improvements. We note that the installation of a wastewater system on the subject lots will be the responsibility of individual lessees.

- Thank you for providing information regarding the DOH Land Use Contact List. The contact list has been reviewed and the appropriate branch will be contacted for additional guidance should it concern the project.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,

Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Gordon Ring, R.M. Towill Corporation
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Resp Ltrs\DOH.docx

DAVID Y. IGE
GOVERNOR

JADE T. BUTAY
DIRECTOR

Deputy Directors
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

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

IN REPLY REFER TO:
DIR 0984
STP 8.3286

October 26, 2021

VIA EMAIL: planning@munekiyohiraga.com

Mr. Bryan K. Esmeralda, AICP
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

Subject: Chapter 343, Hawaii Revised Statutes Early Consultation
Department of Hawaiian Home Lands' (DHHL) Ho'olehua Scattered Lots Subdivision and Related Improvements
Ho'olehua, Molokai, Hawaii
Tax Map Key: (2) 5-2-005:031 and (2) 5-2-026:014

Thank you for your letter dated October 6, 2021 requesting the State of Hawaii Department of Transportation's (HDOT) review and comments on the Ho'olehua Scattered Lots Subdivision and Related Improvements project. HDOT understands DHHL is proposing to subdivide two (2) noncontiguous lots into ten (10) smaller lots within Ho'olehua area on Molokai. The lots will be designated for subsistence agriculture use and made available to beneficiaries to construct homes. Improvements will include new access driveways to each of the lots with connections for domestic and irrigation water from neighboring roadways.

HDOT has the following comments:

Airports Division (HDOT-A)

1. The Hoolehua Scattered Lots Subdivision and Related Improvements Project is approximately 1.63 miles from the airport boundary of the Molokai Airport (MKK). All projects within 5 miles from Hawaii State airports are advised to read the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM can be viewed at this link: http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf.

2. The proposed project is approximately 8,465 feet from the end of Runway 17 at MKK. The Federal Aviation Administration (FAA) regulation requires the submittal of the FAA Form 7460-1 Notice of Proposed Construction or alteration pursuant to the Code of Federal Regulations, Title 14, Part 77.9, if the construction or alteration is within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet. Construction equipment and staging area heights, including heights of temporary construction cranes, shall be included in the submittal. The form and criteria for submittal can be found at the following website: https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

3. Due to the project's proximity to MKK, the developer and future residents should be aware of potential single event noise from aircraft operations. There is also a potential for fumes, smoke, vibrations, odors, etc., resulting from occasional aircraft flight operations over or near the development. These impacts may increase or decrease over time depending on airport operations.

4. The HDOT-A requires that the proposed development does not provide landscape and vegetation that will create a wildlife attractant. Please review the FAA Advisory Circular 150/5200-33C, Hazardous Wildlife Attractants On Or Near Airports for guidance. If the development creates a wildlife attractant that can potentially become a hazard to aircraft operations, the developer shall immediately mitigate the hazard upon notification by the HDOT-A and/or FAA.

5. If a photovoltaic (PV) system is going to be installed, be aware that PV systems located in or near the approach path of aircrafts can create a hazardous condition for pilots due to possible glint and glare reflected form the PV array. If glint or glare from the PV array creates a hazardous condition for pilots, the owner of the PV system shall be prepared to immediately mitigate the hazard upon notification by the HDOT-A and/or FAA.

   PV systems have also been known to emit radio frequency interference (RFI) to aviation-dedicated radio signals, thereby disrupting the reliability of air-to-ground communications. Again, the owner of the PV system shall be prepared to immediately mitigate the RFI hazard upon notification by the HDOT-A and/or FAA.

   The HDOT-A recommends that the developer submit a separate FAA Form 7460-1 for the site of the proposed PV system. Note that you will need latitude, longitude, ground elevation and the above ground elevation data for the installation site to fully complete this form.

   A glint and glare analysis must be attached to your submittal of FAA Form 7460-1. The following website may assist you with the preparation of a glint and glare analysis: www.sandia.gov/glare. When you have received the FAA determination from your submittal of FAA Form 7460-1, please provide a copy for our files.

The HDOT-A may have more comments when the Draft EA is published for public review.

Highways Division (HDOT-HWY)

Based on the project description and location, HDOT does not anticipate direct or indirect impact to the State highway system, therefore we have no comments or objections on the Subdivision.

If there are any questions, please contact Mr. Blayne Nikaido of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

JADE T. BUTAY
Director of Transportation

JOSH GREEN, M.D.
GOVERNOR

EDWIN H. SNIFFEN
DIRECTOR

Deputy Directors
FORD N. FUCHIGAMI
DREANALEE K. KALILI
TAMMY L. LEE
ROBIN K. SHISHIDO

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

IN REPLY REFER TO:

STP00303.23
STP 8.3664

September 29, 2023

VIA EMAIL: planning@munekiyohiraga.com

Ms. Emily Y.K. Murai, Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Murai:

Subject: Chapter 343, Hawaii Revised Statutes Early Consultation
Department of Hawaiian Home Lands' Hoolehua Scattered Lots Subdivision and Related Improvements
Hoolehua, Molokai, Hawaii
Tax Map Key: (2) 5-2-005: 031; 5-2-026: 003, 014, 016, 017

Thank you for your letter dated September 8, 2023, requesting the Hawaii Department of Transportation's (HDOT) review and comments on the subject project. HDOT understands the Department of Hawaiian Home Lands (DHHL) is proposing to revise the original project scope, which HDOT had previously reviewed, from the subdivision of 2 lots to 5 lots in the Hoolehua area on Molokai. The project entails subdividing into 12 lots to be designated for subsistence agriculture use and made available to DHHL beneficiaries to construct homes.

HDOT has the following comments:

1. The proposed development is approximately 1.45 miles from the property boundary of Molokai Airport (MKK). All projects within 5 miles from Hawaii State airports are advised to read the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM can be viewed at this link: http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf.

2. The project site is approximately 7,759 feet from the end of Runway 17 at MKK. Federal Aviation Administration (FAA) regulation requires the submittal of FAA

Form 7460-1 Notice of Proposed Construction or Alteration pursuant to the Code of Federal Regulations, Title 14, Part 77.9, if the construction or alteration is within 20,000 feet of a public use or military airport that exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet. Construction equipment and staging area heights, including heights of temporary construction cranes, shall be included in the submittal. The form and criteria for submittal can be found at the following website: https://oeaaa.faa.gov/oeaaa/external/portal.jsp. Please provide a copy of the FAA response to the Part 77 analysis to the HDOT Airport Planning Section.

3. Due to the project's proximity to MKK, the applicant and future residents should be aware of potential single-event noise from aircraft operations. There is also a potential for fumes, smoke, vibrations, odors, etc., resulting from occasional aircraft flight operations over or near the project. These incidences may increase or decrease over time and are dependent on airport operations.

4. The proposed project shall not provide landscape and vegetation that will create a wildlife attractant, which can potentially become a hazard to aircraft operations. Please review the FAA Advisory Circular 150/5200-33C, Hazardous Wildlife Attractants On Or Near Airports for guidance. If the project's landscaping creates a wildlife attractant, the developer shall immediately mitigate the hazard upon notification by the HDOT and/or FAA.

5. If a solar energy photovoltaic (PV) system is going to be installed, be aware that PV systems located in or near the approach path of aircrafts can create hazardous conditions for pilots due to possible glint and glare reflected from the PV panel array. If glint or glare from the PV array creates a hazardous condition for pilots, the owner of the PV system shall be prepared to immediately mitigate the hazard upon notification by the HDOT and/or FAA.

   The FAA requires a glint and glare analysis for all solar energy PV systems near airports. The www.sandia.gov/glare website has information and guidance with the preparation of a glint and glare analysis. A separate FAA Form 7460-1 will be necessary for the solar energy PV system. A copy of the FAA response to the glint and glare analysis shall be provided to the HDOT Planning Section by the owner of the solar energy PV system.

   Solar energy PV systems have also been known to emit radio frequency interference (RFI) to aviation-dedicated radio signals, thereby disrupting the reliability of air-to-ground communications. Again, the owner of the solar energy PV system shall be prepared to immediately mitigate the RFI hazard upon notification by the HDOT and/or FAA.

6. Based on the project description and location, HDOT does not anticipate a direct or indirect impact to the State highway system, therefore we have no comments or objections on the Subdivision.

Please submit any subsequent land use entitlement-related requests for review or correspondence to the HDOT Land Use Intake email address at DOT.LandUse@hawaii.gov.

If there are any questions, please contact Mr. Blayne Nikaido, Planner, Land Use Section of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

EDWIN H. SNIFFEN
Director of Transportation

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Via email: DOT.LandUse@hawaii.gov

Edwin H. Sniffen, Director
State of Hawai'i
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

SUBJECT: Response to Comments Regarding the State of Hawai'i Department of Hawaiian Home Lands Proposed Ho'olehua Scattered Lots Project, Ho'olehua, Moloka'i (DIR 0984 STP 8.3286) and (STP00303.23 STP 8.3664)

Dear Mr. Sniffen:

Thank you for your comment letters, dated October 26, 2021 and September 29, 2023, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands (DHHL), we offer the following information in response to the comments received.

Response to Comment No. 1:

We acknowledge that the proposed proejct is within five (5) miles from the Molokai Airport. As such, the TAM will be reviewed for guidance. It is noted that no vertical structures are proposed at this time. The proposed project involves the subdivision of property for use by DHHL Homesteaders.

Response to Comment No. 2:

We confirm that due to the proximity of the proposed project to the Molokai Airport runway, a Federal Aviation Administration (FAA) Form 7460-1 Notice of Proposed Construction or Alteration will be submitted pursuant to the Code of Federal Regulations, Title 14, Part 77, if required.

Response to Comment No. 3

We acknowledge that the project's proximity to the Moloka'i Airport may result in single event noise from aircraft operations and that there is potential for fumes, smoke, vibrations and odors from fluctuating aircraft operations. DHHL will inform potential beneficiaries for the project of these potential events.

Response to Comment No. 4

We acknowledge the HDOT-A comment regarding the proposed project and the potential for landscape vegetation that will create a wildlife attractant. As such, the FAA Advisory Circular 150/5200-33C, Hazardous Wildlife Attractants On it Or Near Airports will be reviewed by DHHL for guidance. The proposed project will provide for subsistence lots for use by DHHL beneficiaries. It is anticipated that future activities may involve farming activities by the beneficiaries.

Response to Comment No. 5

The proposed project will not involve the installation of a photovoltaic (PV) system, however, we thank you for the information regarding requirements for PV systems in or near the approach path of aircrafts and the potential hazards associated with PV systems. We do note, however, that individual lessees would have the option to install PV panels in their individual homes.

Response to Comment No. 6

Thank you for confirming that impacts to the State highway system are not anticipated.

Thank you again for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. Copies of the letters and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Blayne Nikaido, Department of Transportation
Gordon Ring, R.M. Towill Corporation
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Resp Ltrs\SDOT.docx

OCT 22 2021

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)21.166

OCT 14 2021

Bryan K. Esmeralda, AICP, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96703

Dear Mr. Esmeralda:

Subject: Chapter 343, Hawaii Revised Statutes Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Hoolehua Scattered Lots Subdivision and Related Improvements
Hoolehua, Molokai, Hawaii
TMKs: (2) 5-2-005:031 and 5-2-026:014

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 (808) 586-0584.

Sincerely,

CHRISTINE L. KINIMAKA
Public Works Administrator

GT:mo
c: DAGS MDO

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Christine L. Kinimaka, Public Works Administrator
State of Hawai'i
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai'i 96810-0119

SUBJECT: Response to Early Consultation Comments Regarding Proposed Department of Hawaiian Home Lands' Ho'olehua Scattered Lots Subdivision and Related Improvements.

Dear Ms. Kinimaka:

On behalf of the Department of Hawaiian Home Lands, thank you for your letter dated October 14, 2021, regarding the proposed Ho'olehua Scattered Lots Subdivision and Related Improvements project. We acknowledge that the Department of Accounting and General Services (DAGS) has no comments to provide at this time as the project does not impact any DAGS projects or existing facilities.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Resp Ltrs\DAGS.docx

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 27, 2021

Munekiyo Hiraga
Attn: Mr. Bryan Esmeralda
Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

via email: planning@munekiyohiraga.com

Dear Mr. Esmeralda:

SUBJECT: Early Consultation Request for the Proposed DHHL's **Ho'olehua Scattered Lots Subdivision and Related Improvements** located at Ho'olehua, Island of Molokai; TMK: (2) 5-2-005:031 and (2) 5-2-026:014 on behalf of Department of Hawaiian Home Lands

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

At this time, enclosed are comments from the (a) Engineering Division and (b) Land Division-Maui District on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: darlene.k.nakamura@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosures
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 14, 2021

MEMORANDUM

FROM:

TO:

~~TO:~~ **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
_X_ Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
_X_ Land Division – Maui District (daniel.l.ornellas@hawaii.gov)

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

SUBJECT: Early Consultation Request for the Proposed DHHL's **Ho'olehua Scattered Lots Subdivision and Related Improvements**

LOCATION: Ho'olehua, Island of Molokai; TMK: (2) 5-2-005:031 and (2) 5-2-026:014

APPLICANT: Munekiyo Hiraga on behalf of Department of Hawaiian Home Lands

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **October 26, 2021.**

If no response is received by the above date, we will assume your agency has no comments. Should you have any questions about this request, please contact Darlene Nakamura at darlene.k.nakamura@hawaii.gov. Thank you.

BRIEF COMMENTS:

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

Signed: *[signature]*
Print Name: Carty S. Chang, Chief Engineer
Division: Engineering Division
Date: Oct 22, 2021

Attachments
cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji

Ref: Early Consultation Request for the Proposed DHHL's Ho'olehua Scattered Lots Subdivision and Related Improvements
Location: Ho'olehua, Island of Molokai
TMK(s): (2) 5-2-005:031 and (2) 5-2-026:014
Applicant: Munekiyo Hiraga on behalf of Department of Hawaiian Home Lands

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR, Chapter 1, Subchapter B, part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT) could also be used to research flood hazard information.

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

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4896.

The applicant should include water demands and infrastructure required to meet project needs. Please note that all State projects requiring water service from their local Department/Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

The applicant is required to provide water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update projections.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: Oct 22, 2021

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 14, 2021

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
_X_ Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
_X_ Land Division – Maui District (daniel.l.ornellas@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Early Consultation Request for the Proposed DHHL's **Ho'olehua Scattered Lots Subdivision and Related Improvements**
LOCATION: Ho'olehua, Island of Molokai; TMK: (2) 5-2-005:031 and (2) 5-2-026:014
APPLICANT: Munekiyo Hiraga on behalf of Department of Hawaiian Home Lands

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **October 26, 2021.**

If no response is received by the above date, we will assume your agency has no comments. Should you have any questions about this request, please contact Darlene Nakamura at darlene.k.nakamura@hawaii.gov. Thank you.

BRIEF COMMENTS:

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

Signed: _____
Print Name: Daniel Ornellas
Division: Land Div. MDLO
Date: 10/21/21

Attachments
cc: Central Files

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Via email: dlnr@hawaii.gov and dlnr.land@hawaii.gov

Russell Tsuji, Land Administrator
State of Hawai'i
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809

SUBJECT: Response to Early Consultation Comments Regarding Proposed Department of Hawaiian Home Lands' Ho'olehua Scattered Lots Subdivision and Related Improvements

Dear Mr. Tsuji:

On behalf of the Department of Hawaiian Home Lands (DHHL), thank you for your letter dated October 27, 2021, regarding the proposed Ho'olehua Scattered Lots Subdivision and Related Improvements project. We offer the following information in response to the comments received.

Engineering Division:

- Thank you for the confirmation that according to FEMA's Flood Insurance Rate Maps (FIRM), the project is located within Flood Zone X, in an area of minimal flooding outside of the Special Flood Hazard Area.

- We note that the Draft Environmental Assessment (EA) will include a Preliminary Engineering and Drainage Report (PEDR) which will address water demands, calculations and infrastructure needed for the project. The PEDR will be appended to and discussed in the Draft EA. A copy of the Draft EA, including the PEDR, will be provided to the Engineering Division.

Land Division - Maui District

- We acknowledge that the Land Division - Maui District has no comments to provide at this time.

Thank you for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for this project. Should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Gordon Ring, R. M. Towill Corporation
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Resp Ltrs\DLNR.docx

MICHAEL P. VICTORINO
Mayor

BRADFORD K. VENTURA
Fire Chief

GAVIN L.M. FUJIOKA
Deputy Fire Chief

DEPARTMENT OF FIRE & PUBLIC SAFETY
FIRE PREVENTION BUREAU
COUNTY OF MAUI
313 MANEA PLACE
WAILUKU, HI 96793

October 20, 2021

Munekiyo Hiraga
Attn: Bryan K. Esmeralda, AICP
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Chapter 343, Hawai'i Revised Statues Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Ho'olehua Scattered Lots Subdivision and Related Improvements

Dear Bryan K. Esmeralda,

Thank you for the opportunity to review your project. At this time Fire Prevention Bureau would recommend a minimum of 500 GPM water supply for fire protection in alignment with the land use requirements.

Our office does reserve the right to comment on the proposed project during the building permit review process when detailed plans for this project are routed to our office for review. At that time, fire apparatus access, water supply for the fire protection, and fire and life safety requirements associated with the subject project will be formally reviewed.

Note: All one and two family dwelling building permits that may come under fire department review will be required to be within 500ft of a fire hydrant along an approved route, other building may be subject to additional fire protection requirements.

Should you have any specific fire related public safety concerns please identify those to us on this or any future projects you would like us to review.

If there are any questions or comments, please feel free to contact Plans Review at (808) 876-4690 or by email at fire.prevention@mauicounty.gov.

Thank you,
Plans Review – Fire Prevention Bureau

RICHARD T. BISSEN, JR.
Mayor

KEKUHAUPIO R. AKANA
Acting Managing Director

BRADFORD K. VENTURA
Fire Chief

GAVIN L.M. FUJIOKA
Deputy Fire Chief



DEPARTMENT OF FIRE & PUBLIC SAFETY
COUNTY OF MAUI
313 Manea Place
Wailuku, Maui, Hawai'i 96732
www.mauicounty.gov

October 10, 2023

Munekiyo Hiraga
Attn: Emily Y.K. Murai
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Chapter 343, Hawai'i Revised Statues Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Ho'olehua Scattered Lots Subdivision and Related Improvements

Dear Emily Y.K. Murai,

Thank you for the opportunity to review your project. At this time Fire Prevention Bureau would recommend a minimum of 500 GPM water supply for fire protection in alignment with the land use requirements.

Our office does reserve the right to comment on the proposed project during the building permit review process when detailed plans for this project are routed to our office for review. At that time, fire apparatus access, water supply for the fire protection, and fire and life safety requirements associated with the subject project will be formally reviewed.

Note: All one- and two-family dwelling building permits that may come under fire department review will be required to be within 600ft of a fire hydrant along an approved route, other buildings may be subject to additional fire protection requirements.

Should you have any specific fire related public safety concerns please identify those to us on this or any future projects you would like us to review.

If there are any questions or comments, please feel free to contact Plans Review at (808) 876-4690 or by email at fire.prevention@mauicounty.gov.

Thank you,
Plans Review – Fire Prevention Bureau

MUNEKIYO HIRAGA
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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Via email: fire.prevention@mauicounty.gov

Fire Prevention Bureau- Plans Review
County of Maui
Department of Fire and Public Safety
313 Manea Place
Wailuku, Hawai'i 96732

SUBJECT: Response to Comments Regarding the State of Hawai'i, Department of Hawaiian Home Lands Proposed Ho'olehua Scattered Lots Project, Ho'olehua, Moloka'i

Dear Sir or Madame:

Thank you for your comment letters dated October 20, 2021 and October 10, 2023, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands (DHHL), we offer the following information in response to the comments received.

Response to Comment No 1:

We confirm that the minimum 500 gallons per minute of water supply will be provided for fire protection.

Response to Comment No 2:

We acknowledge that the Department of Fire and Public Safety may comment on the project during the building permit review process. It is noted that building permits are not anticipated in the near future. The proposed project would subdivide the properties for future use by DHHL beneficiaries.

Response to Comment No. 3:

We acknowledge that during the review of building permits for one (1) and two (2) family dwellings will be required to be located within 600 feet of a fire hydrant along an approved route. We note that dwelling units are not proposed as part of the project. However, DHHL lessees will be made aware of these requirements should they choose to construct dwellings on the subject properties. Additionally, DHHL will be installing a fire hydrant on Pu'u Kapele Road as part of the project improvements.

Thank you again for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. Copies of the letters and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Gordon Ring, R.M. Towill Corporation
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0DEA\EC resp ltrs\2023\MFD.docx

MICHAEL P. VICTORINO
Mayor

LORI TSUHAKO
Director

LINDA R. MUNSELL
Deputy Director



DEPARTMENT OF HOUSING
& HUMAN CONCERNS
COUNTY OF MAUI
2200 MAIN STREET, SUITE 546
WAILUKU, MAUI, HAWAI'I 96793
PHONE: (808) 270-7805

October 11, 2021

Bryan K. Esmeralda, AICP, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

SUBJECT: CHAPTER 343, HAWAII REVISED STATUTES EARLY CONSULTATION REQUEST FOR THE PROPOSED DEPARTMENT OF HAWAIIAN HOME LANDS' HO`OLEHUA SCATTERED LOTS SUBDIVISION AND RELATED IMPROVEMENTS

The Department has reviewed the information submitted for the above subject project. Based on our review, we have determined that the project is not subject to Chapter 2.96, Maui County Code. At the present time, the Department has no additional comments to offer.

Please contact Mr. Buddy Almeida, Housing Administrator at (808) 270-7351 if you have any questions.

Sincerely,

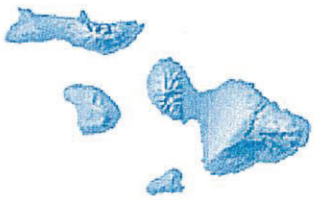
LORI TSUHAKO, LSW, ACSW
Director of Housing and Human Concerns

xc: Buddy Almeida, Housing Administrator

RICHARD T. BISSEN, JR.
Mayor

LORI TSUHAKO
Director

SAUMALU MATA'AFA
Deputy Director



DEPARTMENT OF HOUSING
& HUMAN CONCERNS
COUNTY OF MAUI
2200 MAIN STREET, SUITE 546
WAILUKU, MAUI, HAWAI'I 96793
PHONE: (808) 270-7805

September 12, 2023

Emily Y. K. Murai, Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Murai:

SUBJECT: CHAPTER 343, HAWAII REVISED STATUTES EARLY CONSULTATION REQUEST FOR THE PROPOSED DEPARTMENT OF HAWAIIAN HOME LANDS' HOOLEHUA SCATTERED LOTS SUBDIVISION AND RELATED IMPROVEMENTS

The Department has reviewed the information submitted for the above subject project. Based on our review, we have determined that the project is not subject to Chapter 2.96, Maui County Code, and does not require a residential workforce housing agreement. At the present time, the Department has no additional comments to offer.

Please contact Mr. Buddy Almeida, Housing Administrator, at (808) 270-7351 if you have any questions.

Sincerely,

LORI TSUHAKO, LSW, ACSW
Director of Housing and Human Concerns

cc: Buddy Almeida, Housing Administrator

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Lori Tsuhako, LSW, ACSW, Director
County of Maui
Department of Human Concerns
2200 Main Street, Suite 546
Wailuku, Hawai'i 96793

SUBJECT: Response to Comments Regarding the State of Hawai'i, Department of Hawaiian Home Lands Proposed Ho'olehua Scattered Lots Project, Ho'olehua, Moloka'i

Dear Ms. Tsuhako:

Thank you for your comment letters, dated October 11, 2021 and September 12, 2023**,** regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, thank you for confirming that the project is not subject to Chapter 2.96, Maui County Code, and does not require a residential workforce housing agreement.

Thank you again for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. Copies of the letters and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Buddy Almeida, Housing Administrator
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0DEA\EC resp ltrs\2023\DOHC.docx

MICHAEL P. VICTORINO
Mayor

KARLA H. PETERS
Director

MARCI M. SATO
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

October 15, 2021

Bryan K. Esmeralda, AICP, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda:

SUBJECT: CHAPTER 343, HAWAII REVISED STATUTES EARLY CONSULTATION REQUEST FOR THE PROPOSED DEPARTMENT OF HAWAIIAN HOME LANDS' HO'OLEHUA SCATTERED LOTS SUBDIVISION AND RELATED IMPROVEMENTS, LOCATED IN HO'OLEHUA, MOLOKA'I, HAWAI'I, TMK (2) 5-2-005:031 AND (2) 5-2-026:014

Thank you for the opportunity to review and comment on the subject project. In accordance with Maui County Code 18.16.320 Parks and Playgrounds, this project is exempt from park assessment fees. The Department of Parks and Recreation has no further comments 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: Samual Marvel, Chief of Planning and Development

KHP:SM:as

RICHARD T. BISSEN, JR.
Mayor

KEKUHAUPIO R. AKANA
Managing Director

PATRICK S. MCCALL
Director

SHANE T. DUDOIT
Deputy Director

DEPARTMENT OF PARKS AND RECREATION
COUNTY OF MAUI
700 HALI'A NAKOA STREET, UNIT 2
WAILUKU, MAUI, HAWAI'I 96793
www.mauicounty.gov



September 19, 2023

Emily Y.K. Murai, Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Murai:

SUBJECT: CHAPTER 343, HAWAII REVISED STATUTES EARLY CONSULTATION REQUEST FOR THE PROPOSED DEPARTMENT OF HAWAIIAN HOME LANDS' HO'OLEHUA SCATTERED LOTS SUBDIVISION AND RELATED IMPROVEMENTS, LOCATED IN HO'OLEHUA, MOLOKA'I, HAWAI'I, TMK (2) 5-2-005:031 AND (2) 5-2-026:014

Thank you for the opportunity to review and comment on the revised subject project. In accordance with Maui County Code 18.16.320 Parks and Playgrounds, this project is exempt from park assessment fees. The Department of Parks and Recreation is in support of the increased number of agricultural homestead lots proposed and has no further comments 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,

PATRICK S. MCCALL
Director of Parks and Recreation

c: Samual A. Marvel, Chief of Planning and Development

PSM:SAM:as

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Patrick S. McCall, Director
County of Maui
Department of Parks and Recreation
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawai'i 96793

SUBJECT: Response to Comments Regarding the State of Hawai'i, Department of Hawaiian Home Lands Proposed Ho'olehua Scattered Lots Project, Ho'olehua, Moloka'i

Dear Mr. McCall:

Thank you for your comment letters, dated October 15, 2021 and September 19, 2023, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, thank you for confirming that the project is exempt from park assessment fees. We appreciate the Department of Parks and Recreation's support of the project.

Thank you again for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. Copies of the letters and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Samual Marvel, Department of Parks and Recreation
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Resp Ltrs\DPR.docx

OCT 30 2021

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

CHIEF OF POLICE

DEAN M. RICKARD
DEPUTY CHIEF OF POLICE

October 25, 2021

Mr. Bryan K. Esmeralda, AICP
Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Re: Chapter 343, Hawaii Revised Statutes Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Hoolehua Scattered Lots Subdivision and Related Improvements

Dear Mr. Esmeralda:

This is in response to your letter dated October 6, 2021 requesting early consultation comments on the proposed Department of Hawaiian Home Lands' Hoolehua Scattered Lots Subdivision project.

In review of the submitted documents, we have no objections to the upcoming construction project if efforts are made to minimize noise, dust and debris so not to inhibit those whose health and well-being may be affected. We also request proper precautions be taken to address the ingress and egress of any construction materials or equipment onto public roadways.

Thank you for giving us the opportunity to comment on this project.

Sincerely,

Assistant John Jakubczak
for: DEAN M. RICKARD
Acting Chief of Police

OCT 02 2023

POLICE DEPARTMENT
COUNTY OF MAUI
55 MAHALANI STREET
WAILUKU, MAUI, HAWAII 96793
TELEPHONE: (808) 244-6400
FAX: (808) 244-6411

RICHARD T. BISSEN, JR.
MAYOR

OUR REFERENCE

YOUR REFERENCE

JOHN PELLETIER
CHIEF OF POLICE

WADE M. MAEDA
DEPUTY CHIEF OF POLICE

September 25, 2023

Ms. Emily Y.K. Murai
Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Re: Chapter 343, Hawaii Revised Statutes Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Hoolehua Scattered Lots Subdivision and Related Improvements

Dear Ms. Murai:

This is in response to your letter dated September 8, 2023 requesting early consultation comments on the proposed Department of Hawaiian Home Lands' Hoolehua Scattered Lots Subdivision project.

In review of the submitted documents, we have no objections to the upcoming construction project if efforts are made to minimize noise, dust and debris so not to inhibit those whose health and well-being may be affected. We also request proper precautions be taken to address the ingress and egress of any construction materials or equipment onto public roadways.

Thank you for giving us the opportunity to comment on this project.

Sincerely,

Assistant Chief Keola Tom
for: JOHN PELLETIER
Chief of Police

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Planning. Project Management. Sustainable Solutions.

Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

John Pelletier, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawai'i 96793

SUBJECT: Response to Comments Regarding the State of Hawai'i, Department of Hawaiian Home Lands Proposed Ho'olehua Scattered Lots Project, Ho'olehua, Moloka'i

Dear Chief Pelletier:

Thank you for your comment letters, dated October 25, 2021 and September 25, 2023, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, we offer the following information in response to the comment received.

- Appropriate construction Best Management Practices (BMPs) will be implemented in order to minimize construction-generated noise, dust and debris. In addition, all State and County regulations will be followed and coordination efforts with the appropriate agencies will be made to address ingress and egress of construction materials and equipment onto public roadways. Lastly, thank you for confirming that with the above mentioned precautions, the County of Maui Police Department has no objections to the project.

Thank you again for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. Copies of the letters and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
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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

October 28, 2021

Mr. Bryan K. Esmeralda, AICP, Senior Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, HI 96793
Email: planning@munekiyohiraga.com

SUBJECT: **Chapter 343, Hawaii Revised Statutes Early Consultation Request for the Proposed Department of Hawaiian Home Lands Ho'olehua Scattered Lots Subdivision and Related Improvements**

Dear Mr. Esmeralda,

Thank you for the opportunity to review and comment on this project. We have no comments to make at this time.

Please feel free to contact me if you have any questions.

Sincerely,

Marc Takamori
Director

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Marc Takamori, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawai'i 96793

SUBJECT: Response to Comments Regarding the State of Hawai'i, Department of Hawaiian Home Lands Proposed Ho'olehua Scattered Lots Project, Ho'olehua, Moloka'i

Dear Mr. Takamori:

Thank you for your comment letter, dated October 28 2021**,** regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, we acknowledge that the Department of Transportation has no comments to offer at this time.

Thank you again for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Cmt Resp Ltrs\MDOT.docx

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

October 27, 2021

Mr. Bryan K. Esmeralda, AICP, Sr. Associate
Munekiyo Hiraga
305 High St., Ste 104
Wailuku, Hawaii 96793

Dear Mr. Esmeralda,

Re: Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Ho`olehua Scattered Lots Subdivision and Related Improvements
TMKs: (2) 5-2-005:031 and (2) 5-2-026:014
Island of Moloka`i, Hawai`i

The County of Maui Department of Water Supply's (MDWS) Water Resources and Planning Division appreciates the opportunity to comment on this early consultation request for this project.

Source and Availability

According to the Commission on Water Resource Management (CWRM), the project overlies the Ho`olehua Aquifer, which has a sustainable yield of 2 million gallons per day. The MDWS System does not service the area within which the project is located.

Water Quality Pollution Prevention

Septic System Best Management Practices (BMPs)

The MDWS highly recommends that the applicant inform future homeowners to utilize these BMPs for septic systems:

- Have the septic system inspected annually and pumped out regularly.
- No chemical or other additive can be a substitute for regular pumping. Septic System chemicals can prevent the septic system from functioning properly.

- Use caution about what you put into the system. Substances like coffee grounds, cigarette butts, sanitary items, or fats do not break down easily in septic systems.
- Prevent strong chemicals like paints, solvents, oil, and pesticides from entering the system and potentially entering the groundwater.
- Practice water conservation to increase septic system life span. Limit the amount of water entering the system by using water-saving fixtures and appliances.
- Keep roof drains and storm water runoff away from the drain field area.
- Keep the leaching area free of vehicles, buildings, trees and shrubs.
- Keep accurate records of on-site maintenance activities.
- Keep an accurate map of the location of all system components.
- Please see the attached Agricultural BMPs.

Construction BMPs for Pollution Prevention

To protect ground and surface water resources, we recommend that in addition to required BMPs, the following measures designed to conserve water and minimize infiltration and runoff be implemented during construction:

- Prevent cement products, oil, fuel and other toxic substances from falling or leaching into the ground. Remove all construction debris and toxic substances daily.
- Properly install and maintain erosion control barriers such as silt fencing or straw bales.
- Disturb the smallest area possible.
- 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.
- Apply biocides only during dry periods of low rainfall to minimize chemical run-off.
- Keep runoff on-site.
- Maintain vehicles and equipment to prevent oil or other fluids from leaking. Concrete trucks and tools used for construction should be rinsed off-site.

Indoor Water Conservation BMPs

- Use EPA WaterSense labeled plumbing fixtures.
- Install flow reducers and faucet aerators in all plumbing fixtures wherever possible.
- Install dual flush toilets with high-efficiency models that use 1.28 gallons per flush or less.
- Install showerheads with a flow rate of 1.5 gallons per minute at 60 pounds per square inch (psi).
- Install bathroom sink faucets with fixtures that do not exceed 1 gpm at 60 psi.
- Laundry facilities and/or individual unit machines should use Energy Star-labeled washers.

Outdoor Water Conservation BMPs

- Use Smart Approved WaterMark irrigation products. Examples include evapotranspiration drip irrigation, and water saving spray heads.
- Use native Hawaiian climate-adapted plants for landscaping. Native Hawaiian plants adapted to the area conserve water and protect the watershed from degradation due to invasive species. For more information, please see https://www.ctahr.hawaii.edu/rnre/native_plants_water_conservation.asp.
- After plants are established, in order to avoid stimulating excessive growth, avoid fertilizing and pruning. Time watering to occur in the early morning or evening to limit evaporation. Limit turf to as small an area as possible.

Should you have any questions or comments, please contact staff planner Marti Buckner at (808) 463-3104 or marti.buckner@mauicounty.gov .

Sincerely,

Jeffrey T. Pearson, P.E.
Director
mlb

cc: MDWS Engineering
attachments: Agricultural BMPs

Agricultural BMPs

Contamination of ground water can occur when pesticides, herbicides, fertilizer, fungicides and/or other chemicals are spilled. Contamination can also happen when rinse water from containers or equipment cleaning is dumped on the ground or into surface waters such as streams or ponds. Improperly cleaned containers that are stockpiled or buried could also be potential sources of groundwater contamination.

- Locate operations as far as possible from groundwater wells and areas that may drain into surface water bodies such as streams, the ocean, or ponds.
- Know and comply with regulations governing the storage, handling and application, and disposal of hazardous substances.
- Adopt the "First in – First out" Principle. The "First in – First out" Principle directs you to use your oldest chemicals first, in order to ensure that they don't expire.
- Keep pesticides locked or inaccessible to the public in an area separate from areas used to store other materials, such as fertilizers, feed, and seed.
- Segregate and label herbicides, insecticides and fungicides to prevent cross-contamination.
- Keep a written pesticide inventory and Material Safety Data Sheet (MSDS) file for the chemicals used on-site of your operations.
- Arrange pesticide containers in the storage area, so that labels are clearly visible, and make sure the labels can be read.
- Place bags of DRY pesticides and other chemicals on raised, plastic pallets to ensure they do not get wet. Do not store any liquid materials above dry chemicals.
- Use shelving made of plastic or reinforced metal. Keep metal shelving painted or invest in and use stainless steel to avoid corrosion. NEVER use wood shelving! Wood shelving may absorb spilled pesticide and other chemical materials.
- Do not transport, handle, store, load, apply or dispose of any hazardous substance in a way that may pollute water supplies or cause damage or injury to land, including human, plants or animals.
- Isolate all potential contaminants from soil and water.
- Keep drip pans or containers under vehicles and/or equipment that may drip. Collect oil from drip pans and recycle.
- Do not discharge any waste material onto the ground.
- Clean up spills as soon as possible. The sooner you contain, absorb, and dispose of a spill, the less chance there is that it will contaminate our groundwater. Always use the appropriate personal protective equipment as indicated on the MSDS and chemical label.
- Always remember the 4 steps to preventing contamination:
    - CONTROL actively spilling or leaking materials by setting the container upright;
    - CONTAIN the spilled material using barriers and absorbent material;

    - COLLECT spilled material, absorbents, and leaking containers and place them in a secure and properly labeled container;
    - STORE the containers of spilled material until they can be applied as a pesticide or appropriately disposed.
- Report all spills to the Department of Health, Environmental Health Administration and/or Environmental Protection Agency as required by state and federal laws.
- Consider using Integrated Pest Management as an alternative to chemical use. Find more information and training at the State of Hawaii, Department of Health, Vector Control Branch's website http://health.hawaii.gov/vcb.

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Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

John Stufflebean, P. E., Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawai'i 96793

SUBJECT: Response to Early Consultation Comments Regarding Proposed Department of Hawaiian Home Lands' Ho'olehua Scattered Lots Subdivision and Related Improvements

Dear Mr. Stufflebean:

On behalf of the Department of Hawaiian Home Lands (DHHL), thank you for your Department's letter dated October 27, 2021, regarding the proposed Ho'olehua Scattered Lots Subdivision and Related Improvements project. We offer the following information in response to the comments received.

Source and Availability

- Thank you for confirming that the Maui Department of Water Supply (DWS) does not service the project area. We acknowledge that the project is within the Ho'olehua Aquifer, which has a two (2) million gallons per day sustainable yield according to the Commission on Water Resource Management (CWRM). We note that the Draft Environmental Assessment (EA) will include a Preliminary Engineering and Drainage Report (PEDR) which will address water demands, calculations and infrastructure needed for the project. The PEDR will be appended to and discussed in the Draft EA. A letter with a link to the Draft EA, inclusive of the PEDR will be provided to the DWS when the document is published.

Water Quality Pollution Prevention

- We acknowledge receipt of the Septic System Best Management Practices (BMPs) and Agricultural BMPs to prevent water pollution. These BMPs will be shared with the DHHL and future lessees for implementation, as may be applicable.

Construction BMPs for Pollution Prevention

- The Construction BMPs for Pollution Prevention have been forwarded to the engineering and design team for review and incorporation into the project, as may be practicable.

Water Conservation BMPs

- The indoor and outdoor Water Conservation BMPs have been forwarded to the engineering and design team for review and incorporation into the project, as may be practicable.

Thank you for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Draft EA being prepared for this project. Should you have any questions or require additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
Gordon Ring, R. M. Towill Corporation
\\MH03\Drive_F\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0ECL\2023-Resp Ltrs\DWS.docx

Moloka'i Na'iwa Homestead Association
PO Box 482152
Kaunakakai, Hawaii 96748
(808) 213-5180
mkk.naiwa.ha@gmail.com

7th October 2021

Munekiyo Hiraga
735 Bishop Street, Ste. 412
Honolulu, Hawaii 96813

Re: Early Consultation Request for Proposed DHHL Ho'olehua Scattered Lots Subdivision and Related Improvement.

On behalf of Moloka'i Na'iwa Homestead Association, serving as President and a lessee of the Na'iwa Agricultural Subdivision, my comments are expressed below.

The project entailing subdividing two (2) non contiguous lots within the Ho'olehua area on Moloka'i into ten (10) smaller lots to be designated for subsistence agriculture use and improving them for lease to DHHL beneficiaries is a prudent action item that supports agricultural sustainability and provides land to construct an adequate home for the chosen beneficiaries.

The Department of Hawaiian Home Lands (DHHL) and its constituents have the full support from Moloka'i Na'iwa Homestead Association to move forward on the project specified above with no objections.

Sincerely,

Liliana Napoleon

Liliana KI Napoleon, President

Moloka'i Na'iwa Homestead Association

Subject: FW: Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Hoʻolehua Scattered Lots Subdivision and Related Improvements

From: Nāʻiwa Agricultural Subdivision Alliance <mkk.nas.alliance@gmail.com>
Sent: Saturday, September 23, 2023 10:55 AM
To: Tracy Nakamoto <tracy@munekiyohiraga.com>
Cc: Emily Murai <emily@munekiyohiraga.com>; Karlynn Fukuda <karlynn@munekiyohiraga.com>; cornelius.f.nugent@hawaii.gov
Subject: Re: Early Consultation Request for the Proposed Department of Hawaiian Home Lands' Hoʻolehua Scattered Lots Subdivision and Related Improvements

All looks great. NASA continues to support this movement snd efforts for the Hoolehua scattered lots.

Mahalo.

On Fri, Sep 15, 2023 at 2:38 PM Tracy Nakamoto <tracy@munekiyohiraga.com> wrote:

To: Liliana KI Napoleon, President
Naʻiwa Agricultural Subdivision Alliance

From: Emily Murai, Associate
Munekiyo Hiraga

Attachment:

Quantity	Date	Description
1	09/15/23	Early Consultation Request for Proposed Department of Hawaiian Home Lands' Hoʻolehua Scattered Lots Subdivision and Related Improvements

Message: We are providing the attached early consultation letter for your review. Thank you!

Tracy Nakamoto, Administrative Officer
Email: tracy@munekiyohiraga.com

MUNEKIYO HIRAGA

Maui: 305 High Street, Suite 104, Wailuku, Hawaii 96793 **T:** 808.244.2015 **F:** 808.244.8729
Oahu: 735 Bishop Street, Suite 412, Honolulu, Hawaii 96813 **T:** 808.983.1233
Planning. Project Management. Sustainable Solutions. www.munekiyohiraga.com

CONFIDENTIAL AND PRIVILEGED COMMUNICATION: This message (including attachments) is intended for the use of the designated recipient(s) named above. The contents of this correspondence are considered privileged and confidential. If you have received this message in error, kindly notify us immediately by email or telephone, and delete this email from your computer system. Thank you.

MUNEKIYO HIRAGA
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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

September 20, 2024

Via email: mkk.nas.alliance@gmail.com

Liliana KI Napoleon, President
Nāʻiwa Agricultural Subdivision Alliance
Molokaʻi, Hawaiʻi

SUBJECT: Response to Comments Regarding the State of Hawaiʻi, Department of Hawaiian Home Lands Proposed Hoʻolehua Scattered Lots Project, Hoʻolehua, Molokaʻi

Dear Ms. Napoleon:

Thank you for your comments, dated October 7, 2021 and September 23, 2023, regarding the Proposed Hoʻolehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, thank you for expressing Nāʻiwa Agricultural Subdivision Alliance's support of the proposed project.

Thank you again for your participation in the Chapter 343, Hawaiʻi Revised Statutes environmental review process. A copy of your email and this response will be included in the Draft Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 983-1233.

Very truly yours,



Emily Y.K. Murai
Associate

EYKM:ab
cc: Neil Nugent, Department of Hawaiian Home Lands
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X. LETTERS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT REVIEW PERIOD; AND RESPONSES TO SUBSTANTIVE COMMENTS

X. LETTERS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT REVIEW PERIOD; AND RESPONSES TO SUBSTANTIVE COMMENTS

The Draft Environmental Assessment (EA) for the subject action was filled and published with the Office of Planning and Sustainable Development on October 23, 2024. The following agencies were sent a copy of the Draft EA. Comments on the Draft EA received as well as responses to substantive comments are included in this Chapter.

Federal Agencies

1. Jason Hew, District Conservationist
   U.S. Department of Agriculture
   Natural Resources Conservation Service
   77 Hoʻokele Street, Suite 202
   Kahului, Hawaiʻi 96732
   (Jason.Hew@usda.gov)

2. U.S. Department of the Army
   U.S. Army Engineer District
   Regulatory Branch, Bldg. 230
   Fort Shafter, Hawaiʻi 96858-5440
   (CEPOH-RO@usace.army.mil)

3. U.S. Department of the Interior
   Fish and Wildlife Service
   Pacific Islands Fish and Wildlife Office
   300 Ala Moana Blvd., Room 3-122
   Honolulu, Hawaiʻi 96850
   (pifwo_admin@fws.gov)

State of Hawaiʻi Agencies

4. Keith Regan, Comptroller
   State of Hawaiʻi
   Dept. of Accounting and General Services
   1151 Punchbowl Street
   Honolulu, Hawaiʻi 96813

5. Sharon Hurd, Chair
   State of Hawaiʻi
   Department of Agriculture
   1428 South King Street
   Honolulu, Hawaiʻi 96814-2512

6. Kenneth S. Fink, MD, MGA, MPH, Director
   State of Hawaiʻi
   Department of Health
   1250 Punchbowl St., Room 325
   Honolulu, Hawaiʻi 96813

7. Dawn N.S. Chang, Chairperson
   State of Hawaiʻi
   Dept. of Land and Natural Resources
   P. O. Box 621
   Honolulu, Hawaiʻi 96809
   (dlnr@hawaii.gov and
   dlnr.land@hawaii.gov)

8. Edwin H. Sniffen, Director
   State of Hawaiʻi
   Department of Transportation
   869 Punchbowl Street, Room 509
   Honolulu, Hawaiʻi 96813-5097
   (DOT.LandUse@hawaii.gov)

9. Stacy Kealohalani Ferreira, Chief Executive Officer
   State of Hawai'i
   Office of Hawaiian Affairs
   560 N. Nimitz Highway, Suite 200
   Honolulu, Hawaiʻi 96817

10. Mary Alice Evans, Director
    State of Hawaiʻi
    Office of Planning and Sustainable Development
    P. O. Box 2359
    Honolulu, Hawaiʻi 96804

Maui County Agencies

11. Rogerine "Kali" Arce, Director
County of Maui
Department of Agriculture
200 S. High Street
Wailuku, Hawai'i 96793

12. Shayne Agawa, P.E., Director
County of Maui
Department of Environmental Management
2145 Kaohu Street, Suite 102
Wailuku, Hawai'i 96793
(MAPPS No. WWMR2024-00159)

13. Brad Ventura, Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawai'i 96732
(fire.planreview@mauicounty.gov)

14. Richard E. Mitchell, Esq., Director
County of Maui
Department of Housing
2065 Main Street, Suite 108
Wailuku, Hawai'i 96793

15. Lori Tsuhako, Director
County of Maui
Department of Human Concerns
2200 Main Street, Suite 546
Wailuku, Hawai'i 96793

16. Kapono'ai Molitau, Director
County of Maui
Department of 'Ōiwi Resources
Kalani O Maui Building
200 S. High Street
Wailuku, Hawai'i 96793

17. Patrick McCall, Director
County of Maui
Department of Parks and Recreation
P.O Box 1405
Wailuku, Hawai'i 96793-6405

18. Kate Blystone, Director
County of Maui
Department of Planning
2200 Main Street, Suite 315
Wailuku, Hawai'i 96793

19. Jordan Molina, Director
County of Maui
Department of Public Works
200 South High Street, 4th Floor
Wailuku, Hawai'i 96793

20. Marc Takamori, Director
County of Maui
Department of Transportation
110 Ala'ihi Street, Suite 210
Kahului, Hawai'i 96732

21. John Stufflebean, Director
County of Maui
Department of Water Supply
200 S. High Street, 5th Floor
Wailuku, Hawai'i 96793

22. Amos Lonokailua-Hewitt, Administrator
County of Maui
Maui Emergency Management Agency
200 S. High Street, 1st Floor
Wailuku, Hawai'i 96793

23. Keani Rawlins-Fernandez, Council Vice Chair
Maui County Council
200 S. High Street, 8th Floor
Wailuku, Hawai'i 96793

24. John Pelletier, Chief
County of Maui
Maui Police Department
55 Mahalani Street
Wailuku, Hawai'i 96793

Maui County Organizations

25. Kamalu Poepoe
'Aha Moku
Moloka'i Pule O'o
(karenpoepoe@yahoo.com)

26. Cora Schnackenberg, President
Ahonui Homestead Association
P.O. Box 417
Ho'olehua, Hawai'i 96729

27. Michael Grider, Manager, Engineering
Hawaiian Electric Company, Inc.
P.O. Box 398
Kahului, Hawai'i 96733

28. Robert "Bob" Danner, President
Ho'olehua Homestead Agriculture Association
P.O. Box 60
Ho'olehua, Hawai'i 96729

29. Blossom Feiteira
Maui Mokupuni Council
(blossom96708@yahoo.com)

30. Beverly Pauʻole-Moore
Molokaʻi Hawaiian Home Lands
Kupuna Committee
P.O. Box 290613
Hoʻolehua, Hawaiʻi 96729

31. Rosie Davis
Molokaʻi Homestead Farmers Alliance
P.O. Box 290613
Hoʻolehua, Hawaiʻi 96729

32. Molokaʻi Nāʻiwa Homestead Association
P.O. Box 482152
Kaunakakai, Hawaiʻi 96748
(mkk.naiwa.ha@gmail.com)

Public Libraries

33. State of Hawaiʻi
Department of Education
Hawaiʻi State Library
Hawaiʻi Documents Center
478 South King Street
Honolulu, Hawaiʻi 96813

34. Molokaʻi Public Library
P.O. Box 395
Kaunakakai, Hawaiʻi 96748

From: Harrington, Carrie <carrie_harrington@fws.gov>
Sent: Thursday, November 21, 2024 10:12 AM
To: cornelius.f.nugent@hawaii.gov; General eMail <planning@munekiyohiraga.com>
Cc: Javar-Salas, Chelsie <chelsie_javar-salas@fws.gov>
Subject: 2024-0010818 DHHL Hoʻolehua Scattered Lots Subdivision on Molokaʻi

This is an EXTERNAL e-mail.
Only open links and attachments from a Trusted Sender.

Dear Emily Murai (Munekiyo Hiraga) and Neil Nugent (DHHL):

Please find the U.S. Fish and Wildlife Service's (Service) comments on the draft Environmental Assessment (EA) for the proposed Department of Hawaiian Home Lands' Hoʻolehua Scattered Lots Subdivision and Related Improvements Project on Molokaʻi, Hawaiʻi, below:

Thank you for obtaining an Official Species List through our Information for Planning and Consultation online tool and for including the Service's avoidance and minimization measures (AMMs) for the endangered ʻōpeʻapeʻa into the project description. We recommend you also include all of our AMMs for nēnē, seabirds, waterbirds, and the Blackburn's sphinx moth. Including all of our AMMs for these species helps the on the ground construction team be prepared to protect these species should any of them enter the project area and it helps avoid or minimize long term impacts on species associated with the project (e.g., ensuring all permanent outdoor lights are shielded downward, placed on timers when possible, and other seabird related lighting AMMs).

For nēnē and seabirds, the draft EA includes a revised version of our AMMs but it is unclear if the project will follow all of our AMMs for these species. We recommend including all of our AMMs for nēnē and seabirds. Further, we recommend following the Maui Dark Skies Ordinance 5434. Regarding waterbirds, while the project area does not currently provide suitable habitat for waterbirds, earth moving activities associated with the project may create temporary ponding that attracts waterbirds, especially aeʻo. Additionally, the draft EA discusses the creation of ponds to collect rainwater runoff which may also attract waterbirds. Lastly, for Blackburn sphinx moth, we recommend monitoring the project area to ensure any existing or new tree tobacco plants stays under 3 feet tall. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet after surveys have been completed, the plants may become a host plant for Blackburn's sphinx moth larvae.

Please contact me if you have any questions pertaining to our recommendations.

mahalo nui loa,
carrie

Carrie L. Harrington (she/her)
Endangered Species Biologist, Hawaiʻi Island and Maui Nui Team
Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm 3-122
Honolulu, Hawaiʻi 96850

Telephone: (808) 207-4698
Email: carrie_harrington@fws.gov
https://www.fws.gov/office/pacific-islands-fish-and-wildlife

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Via email: carrie_harrington@fws.gov

Carrie L. Harrington, Endangered Species Biologist
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Blvd., Room 3-122
Honolulu, Hawai'i

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho'olehua Scattered Lots Project; Ho'olehua, Moloka'i

Dear Ms. Harrington:

Thank you for your emailed comments dated November 21, 2024, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, we offer the following information in response to the comments received.

We note that an updated Official Species List has been generated and will be included in the Final Environmental Assessment (EA) being prepared for this project. We also confirm that U.S. Fish and Wildlife Service (USFWS) avoidance and minimization measures (AMMs) for the nēnē, seabirds, waterbirds and the Blackburn's sphinx moth will be included in the Final Environmental Assessment (EA) being prepared for this project, to avoid and minimize impacts to endangered species.

As previously noted the USFWS AMMs will be included for the nēnē and seabirds. In addition, the Maui Dark Skies Ordinance 5434 will be followed, as may be applicable, and will be noted in the Final EA. We also acknowledge that earth moving activities during construction and detention basins may attract waterbirds and, as such, AMMs for waterbirds will be incorporated into the project's Final EA. Finally, the AMMs for the Blackburn's sphinx moth, including monitoring for tree tobacco will be included as mitigation measures in the project's Final EA.

Thank you again for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. A copy of your letter and this response will be also included in the Final EA for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,



Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
Gordon Ring, R.M. Towill Corporation
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\USFWS.docx

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)24.223

OCT 30 2024

RECEIVED
LAND DEVELOPMENT
DIVISION
2024 OCT 31 AM 11:15

Emily Y.K. Murai
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Emily Murai:

Subject: Draft Environmental Assessment for
Department of Hawaiian Home Lands
Proposed Hoolehua Scattered Lots Subdivision and Related Improvements Project
Molokai, Hawaii
TMKs: (2)5-2-005:031, (2)5-2-026:003, :014, :016 and :017

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 Dora Choy-Johnson of the Planning Branch at (808) 586-0488.

Sincerely,

GORDON S. WOOD
Public Works Administrator

DC:mo
c: Neil Nugent, PE, DHHL-Land Dev. Div.
Jeff Pearson, MDO

MUNEKIYO HIRAGA
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Karlynn K. Fukuda
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Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Gordon S. Wood, Public Works Administrator
State of Hawai‘i
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai‘i 96810-0119

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho‘olehua Scattered Lots Project; Ho‘olehua, Moloka‘i

Dear Mr. Wood

Thank you for your comment letter dated October 30, 2024, regarding the Proposed Ho‘olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, we acknowledge that the State of Hawai‘i, Department of Accounting and General Services (DAGS) has no comments to offer at this time, as the proposed project does not impact DAGS’ projects or existing facilities.

Thank you again for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Final Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,

Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\DAGS.docx

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

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

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

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

P.O. BOX 621
HONOLULU, HAWAII 96809

November 21, 2024

State of Hawaii
Department of Hawaiian Home Lands
Land Development Division
Attn: Mr. Neil Nugent, Engineer
P.O. Box 1879
Honolulu, Hawaii 96805

via email: cornelius.f.nugent@hawaii.gov

Munekiyo Hiraga
Attn: Ms. Emily Y.K. Murai, Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

via email: planning@munekiyohiraga.com

SUBJECT: Draft Environmental Assessment for the Proposed **Ho'olehua Scattered Lots Subdivision and Related Improvements located at Ho'olehua, Island** of Molokai; TMKs: (2) 5-2-005:031 & (2) 5-2-026:003, 014, 016, & 017

Dear Mr. Nugent and Ms. Murai:

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

At this time, enclosed are comments from the Engineering Division on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: darlene.k.nakamura@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosure
cc: Central Files

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

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

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

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

P.O. BOX 621
HONOLULU, HAWAII 96809

October 23 2024

MEMORANDUM

FROM: ~~TO:~~

DLNR Agencies:
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands
_X_ Land Division – Maui District (dlnr.land.maui@hawaii.gov)
_X_ Aha Moku Advisory Committee (leimana.k.damate@hawaii.gov)

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

SUBJECT: Draft Environmental Assessment for the Proposed **Ho'olehua Scattered Lots Subdivision and Related Improvements**

LOCATION: Ho'olehua, Island of Molokai; TMKs: (2) 5-2-005:031, (2) 5-2-026: 003, 014, 016, and 017

APPLICANT: Munekiyo Hiraga on behalf of State Department of Hawaiian Home Lands

Transmitted for your review and comment is information on the above-referenced subject matter. The DEA was published on October 23, 2024, by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

https://files.hawaii.gov/dbedt/erp/The_Environmental_Notice/2024-10-23-TEN.pdf

Please submit any comments by **November 21, 2024**. If no response is received by this date, we will assume your agency has no comments. Should you have any questions, please contact Darlene Nakamura directly via email at darlene.k.nakamura@hawaii.gov. Thank you.

BRIEF COMMENTS:

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

Signed: *[signature]*
Print Name: Carty S. Chang, Chief Engineero
Division: Engineering Division
Date: Nov 20, 2024

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Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Seiji Ogawa, Land Administrator
State of Hawai‘i
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai‘i 96809

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho‘olehua Scattered Lots Project; Ho‘olehua, Moloka‘i

Dear Mr. Ogawa:

Thank you for your comment letters dated November 21, 2024 and January 7, 2025 regarding the Proposed Ho‘olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, we offer the following information in response to comments received.

Engineering Division

- We acknowledge that the State of Hawai‘i, Department of Land and Natural Resources (DLNR) Engineering Division previously provided comments in October 2021 and has no further comments to offer at this time.

Division of Forestry and Wildlife

- Thank you for you providing concurrence with the Draft Environmental Assessment (EA) mitigation measures to avoid impacts to State-listed species. We note that lighting is not currently proposed. However, potential lighting features would need to be shielded and downward facing in accordance with Maui County Code.

- We confirm that temporary and permanent Best Management Practices will be employed for the project in order to contain soil and sediment, preventing damage to near-shore waters and marine ecosystems. In addition, drainage improvements will be implemented in accordance with County of Maui standards to maintain existing drainage conditions.

- We acknowledge the recommendation to minimize the movement of plant or soil material between worksites to prevent the spread of pathogens or species that could harm native species and ecosystems. We also acknowledge the recommendation to clean equipment, materials and personnel of excess soil and debris to minimize the risk of spreading invasive species. These recommendations along with the contact information for the Invasive Species Committee has been shared with the project team for implementation, as feasible.

- We note that there are no ōhiʻa trees in the project vicinity.

- We also note that use of imported soil and plant material is not proposed as part of the project. Thank you for the information regarding the Hawaiʻi Interagency Biosecurity Plan. This resource has been shared with the project team.

- Thank you for providing guidance regarding native plants, however, we note that landscaping is not proposed as part of the project.

- We acknowledge that birds are vulnerable to nonnative predators such as cats, rodents and mongooses. These nonnative predators were not recorded during the field survey for the project and the project area is currently vacant. The recommendations to deter nonnative predators has been shared with the project team for implementation, as necessary.

- The Hawaiʻi Wildfire Management Organization's website was reviewed and their *Molokaʻi Community Wildfire Protection Plan* has been reviewed and is discussed in the EA. Wildfire hazard mitigation measures will be incorporated into the project.

Thank you again for your participation in the Chapter 343, Hawaiʻi Revised Statutes environmental review process. A copy of your letter and this response, in addition to previous comments on this project, will be included in the Final EA being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,



Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
Dina U. Lau, DLNR Engineering Division
Jason D. Omick, DOFAW Wildlife Program Manager
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\DLNR.docx

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

EDWIN H. SNIFFEN
DIRECTOR
KA LUNA HO'OKELE

Deputy Directors
Nā Hope Luna Ho'okele
DREANALEE K. KALILI
TAMMY L. LEE
CURT T. OTAGURO
ROBIN K. SHISHIDO

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF TRANSPORTATION | KA 'OIHANA ALAKAU
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO

DIR0001026
STP 8.3855

November 21, 2024

VIA EMAIL: planning@munekiyohiraga.com
cornelius.f.nugent@hawaii.gov

Ms. Emily Y.K. Murai
Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Murai:

Subject: Draft Environmental Assessment (EA)
Department of Hawaiian Home Lands (DHHL) Hoolehua Scattered Lots Subdivision and Related Improvements Project
Hoolehua, Molokai, Hawaii
Tax Map Key: (2) 5-2-005: 031, 5-2-026: 003, 014, 016, and 017

Thank you for your letter requesting the Hawaii Department of **Transportation's (HDOT) review** and comments on the Draft EA for the subject project. HDOT understands the DHHL proposes to subdivide 5 parcels into 12 lots within the Hoolehua area on Molokai to be leased to DHHL beneficiaries.

HDOT has the following comments:

1. The **HDOT's early consultation comments**, numbers 1 through 5 of letter STP 8.3664 dated September 29, 2023, as included in the Draft EA, are still valid and applicable to the **proposed project. Please include a copy of the HDOT's comments and appropriate** responses in the Final EA.

2. HDOT encourages strategies to reduce carbon emissions from the project, if any. Suggestions include:

    a. Incorporate elements that encourage and enhance the use of multiple types of transportation to reduce carbon emissions.

    b. Implement energy-efficient technologies and practices, such as light-emitting diode lighting.

c. Use sustainable, recycled, or low-emission materials in construction and manufacturing.

Please submit any subsequent land use entitlement-related requests for review or correspondence to the HDOT Land Use Intake email address at DOT.LandUse@hawaii.gov.

If there are any questions, please contact Mr. Blayne Nikaido, Planner, Land Use Section of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

EDWIN H. SNIFFEN
Director of Transportation

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Via email: DOT.LandUse@hawaii.gov

Edwin H. Sniffen, Director
State of Hawai'i
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho'olehua Scattered Lots Project; Ho'olehua, Moloka'i DIR 00001026, STP 8.3855

Dear Mr. Sniffen:

Thank you for your comment letter dated November 21, 2024, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, we offer the following information in response to the comments received.

We acknowledge that comments previously provided by the State of Hawai'i, Department of Transportation (HDOT) on September 29, 2023 are still valid and applicable to the proposed project. A copy of these comments and responses will be included in the Final Environmental Assessment (EA) being prepared for this project.

Thank you for the suggestions to reduce carbon emissions from the project. These measures will be reviewed and incorporated into the project, as applicable. The proposed project is not anticipated to create significant direct and indirect foreseeable carbon emissions.

Thank you again for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Final EA for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,



Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
Blayne Nikaido, Department of Transportation
Gordon Ring, R.M. Towill Corporation
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\HDOT.docx

STATE OF HAWAIʻI
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

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

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

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LT. GOVERNOR

MARY ALICE EVANS
INTERIM DIRECTOR

DTS202410281152NA

Coastal Zone Management Program

Environmental Review Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented Development

Statewide Geographic Information System

Statewide Sustainability Program

November 22, 2024

To: Kali Watson, Chairperson
Hawaiian Homes Commission

From: Mary Alice Evans, Director
Office of Planning and Sustainable Development

Attention: Neil Nugent, Engineer
Land Development Division

Subject: Draft Environmental Assessment (DEA) for
Hoʻolehua Scattered Lots Subdivision and Related Improvements, Hoʻolehua, Island of Molokaʻi; Tax Map Key: (2)5-2-005:031; (2) 5-2-026:003; (2)5-2-026:014; (2)5-2-026:016; and (2)5-2-026:017

Thank you for the opportunity to provide comments on the DEA for the Hoʻolehua Scattered Lots Subdivision and Related Improvements proposed by the Department of Hawaiian Home Lands. Our office received notice that the DEA was available for review via memo dated October 21, 2024.

The Office of Planning and Sustainable Development (OPSD) has the following comments to offer:

1. Issues of Programmatic Concern
We note that the DEA adequately addresses issues of programmatic concern of OPSD. These include project alignment with the objectives and supporting policies of the Hawaiʻi Coastal Zone Management Program, Hawaiʻi Revised Statutes (HRS) § 205A-2; State Land Use Compatibility HRS § 205; Hawaiʻi State Planning Act, HRS Chapter 226; Vulnerability to natural disasters such as Flood, Tsunami, and Sea Level Rise; Drainage; Erosion Controls; and the protection of Surface Water Resources.

2. Coastal Zone Management Act (CZMA) - Federal Consistency
We note that based on consultation with the U.S. Army Corps, letter dated September 19, 2023, Jeremy Morgan of their Regulatory Office, states: "there appears to be a streambed present on the Southwest corner of parcel (2) 5-2-026:017 (Parcel 17). If this streambed or potential wetlands would be affected, you should reach out to us because a Corps permit may be required."

If it is determined that a federal approval such as a Department of the Army (DA) permit is needed, then this proposed action may be subject to CZMA federal consistency. Our office is the lead state agency with the authority to conduct CZMA federal consistency reviews. If a DA permit is deemed necessary, please contact our office regarding the applicable rules and procedures involving CZMA federal consistency.

If you wish to respond to this comment letter, please include DTS202410281152NA in the subject line. For any questions regarding this comment letter, please contact Joshua Hekekia at (808) 587-2845 or by email to joshua.k.hekeia@hawaii.gov.

c: Emily Murai, Munekiyo Hiraga, planning@munekiyohiraga.com

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Mary Alice Evans, Director
State of Hawai‘i
Office of Planning and Sustainable Development
P.O. Box 2359
Honolulu, Hawai‘i 96804

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho‘olehua Scattered Lots Project; Ho‘olehua, Moloka‘i DTS202410281152NA

Dear Ms. Evans:

Thank you for your comment letter dated November 22, 2024, regarding the Proposed Ho‘olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands (DHHL), we offer the following information in response to the comments received.

Thank you for confirming that the Draft Environmental Assessment (EA) adequately addresses issues of programmatic concern for the Office of Planning and Sustainable Development (OPSD) and project alignment with the objectives and supporting policies of the Hawai‘i Coastal Zone Management Program, § 205A-2; State Land Use Compatibility HRS § 205; Hawai‘i State Planning Act, HRS Chapter 226; Vulnerability to natural disasters such as Flood, Tsunami, and Sea Level Rise; Drainage; Erosion Controls; and the protection of Surface Water Resources

On May 22, 2025, the U.S. Army Corps of Engineers (USACE) completed their review of the Jurisdictional Determination request and concluded that the homestead parcels did not contain waters of the U.S., including wetlands or navigable waters. Thus, a U.S. Department of Army permit under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899 was not required for the homestead areas. On July 22, 2025, DHHL requested a second Jurisdictional Determination for a portion of Anahaki Gulch in relation to offsite roadway and drainage improvements located along portions of Mo‘omomi Avenue, Farrington Avenue, and Pu‘u Kapele Avenue in Ho‘olehua, Moloka‘i. On December 29, 2025, the USACE completed their review of the additional Jurisdictional Determination request for the project and concluded that the offsite roadway and drainage improvements located along portions of the cited roadways, did not contain waters of the U.S., including wetlands or navigable waters. Thus, a Department of Army permit under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899 was not required for the offsite areas. Based on the USACE determination that no permit is required for all proposed improvements, we understand that OPSD consultation for Coastal Zone Management Act federal consistency is not required.

Thank you again for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Final EA for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,



Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
Joshua Hekekia, Office of Planning and Sustainable Development
Gordon Ring, R.M. Towill Corporation
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\OPSD.docx

RICHARD T. BISSEN, JR.
Mayor

SHAYNE R. AGAWA, P.E.
Director

ROBERT SCHMIDT
Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

ERIC A. NAKAGAWA, P.E.
Wastewater Reclamation Division

Environmental Protection &
Sustainability Division



COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAI'I 96793

October 28, 2024

Neil Nugent, Engineer
Land Development Division
Department of Hawaiian Home Lands
via email: cornelius.f.nugent@hawaii.gov

Emily Y.K. Murai
Munekiyo Hiraga
via email: planning@munekiyohiraga.com

SUBJECT: Draft Environmental Assessment (EA) for the Proposed Department of Hawaiian Home Lands' Hoʻolehua Scattered Lots Subdivision and Related Improvements Project
Hoʻolehua, Molokaʻi
TMK: (2) 5-2-005:031, 5-2-026:003, 014, 016 & 017

Dear Mr. Nugent and Ms. Murai:

Thank you for the opportunity to comment on the Draft EA for the proposed DHHL Hoʻolehua Scattered Lots Subdivision and Related Improvements Project which entails subdivision of 5 parcels for agricultural use. We note that the project is not within the County's sewer service area nor will it affect our wastewater system. Therefore, the Department of Environmental Management's Wastewater Reclamation Division does not have any comments on the Draft EA.

Please contact Tammy Yeh in our Wastewater Reclamation Division ((808) 270-7417) should you have any questions.

Sincerely,

Scott R. Rollins

Digitally signed by Scott R. Rollins
Date: 2024.10.28 17:33:28 -10'00'

for ERIC A. NAKAGAWA, P.E.
Division Chief

MUNEKIYO HIRAGA
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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Eric A. Nakagawa, P.E, Division Chief
County of Maui
Department of Environmental Management
Wastewater Reclamation Division
2145 Kaohu Street, Suite 102
Wailuku, Hawai‘i 96793

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho‘olehua Scattered Lots Project; Ho‘olehua, Moloka‘i

Dear Mr. Nakagawa:

Thank you for your comment letter dated October 28, 2024, regarding the Proposed Ho‘olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, thank you for confirming that the project is not located within the County of Maui’s sewer service area and that the project will not affect the County wastewater system.

Thank you again for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Final Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,

Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
Scott R. Rollins, Department of Environmental Management, Wastewater Reclamation Division (DEM, WWRD)
Tammy Yeh, DEM, WWRD
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\DEM.docx

NOV 04 2024

RICHARD T. BISSEN, JR.
Mayor

RICHARD E. MITCHELL, ESQ.
Director

SAUMALU MATA'AFA
Deputy Director



DEPARTMENT OF HOUSING
COUNTY OF MAUI
2065 MAIN STREET, SUITE 108
WAILUKU, MAUI, HAWAI'I 96793
PHONE: (808) 270-7110
FAX: (808) 270-6284

October 30, 2024

Emily Y. K. Murai, Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawai'i 96793

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED DEPARTMENT OF HAWAIIAN HOMELANDS HOOLEHUA SCATTERED LOT SUBDIVISION AND RELATED IMPROVEMENTS PROJECT, MOLOKA'I, HAWAI'I

Dear Ms. Murai:

Thank you for providing the Department of Housing with the draft environmental assessment for the above-referenced project (Project), which was received on October 28, 2024. The Department reviewed the information and determined, in accordance with Subsection 2.96.030(B)(8), Maui County Code, that the Project is not subject to Chapter 2.96, Maui County Code, because the Department of Hawaiian Homelands is exempt from compliance with the Chapter. Therefore, the Project does not require a residential workforce housing agreement.

If you have any additional questions, please contact the Department at (808) 270-7110 or housing@co.maui.hi.us.

Sincerely,

RICHARD E. MITCHELL, ESQ.
Director of Housing

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Richard E. Mitchell, Esq., Director
County of Maui
Department of Housing
2065 Main Street, Suite 108
Wailuku, Hawai'i 96793

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho'olehua Scattered Lots Project; Ho'olehua, Moloka'i

Dear Mr. Mitchell:

Thank you for your comment letter dated October 30, 2024, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, thank you for confirming that the project is exempt from Maui County Code Chapter 2.96 and does not require a residential workforce housing agreement.

Thank you again for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Final Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,

Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\Housing.docx

RICHARD T. BISSEN, JR.
Mayor

JOSIAH K. NISHITA
Managing Director

PATRICK S. MCCALL
Director

SHANE T. DUDOIT
Deputy Director

DEPARTMENT OF PARKS AND RECREATION
COUNTY OF MAUI
700 HALI'A NAKOA STREET, UNIT 2
WAILUKU, MAUI, HAWAI'I 96793
www.mauicounty.gov



November 6, 2024

Emily Y.K. Murai, Associate
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Murai:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED DEPARTMENT OF HAWAIIAN HOME LANDS' HO'OLEHUA SCATTERED LOTS SUBDIVISION AND RELATED IMPROVEMENTS, , MOLOKA'I, HAWAI'I, TMK (2) 5-2-005:031, (2) 5-2-026:003, 014, 016 AND 017

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,

PATRICK S. MCCALL
Director of Parks and Recreation

c: Neil Nugent, DHHL, Land Development Division
Samual A. Marvel, Chief of Planning and Development

PSM:SAM:csa

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Patrick S. McCall, Director
County of Maui
Department of Parks and Recreation
P.O. Box 1405
Wailuku, Hawai‘i 96793

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho‘olehua Scattered Lots Project; Ho‘olehua, Moloka‘i

Dear Mr. McCall:

Thank you for your comment letter dated November 6, 2024, regarding the Proposed Ho‘olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, we acknowledge that the County of Maui, Department of Parks and Recreation has no comments to offer at this time.

Thank you again for your participation in the Chapter 343, Hawai‘i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Final Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,

Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
Samual Marvel, Department of Parks and Recreation
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\DPR.docx

MEMO

Department of Water Supply Water
Resources & Planning Division
County of Maui
One Main Plaza
2200 Main Street, Suite 102 Wailuku, Maui,
Hawaii 96793

PROJECT TITLE: Draft Environmental Assessment & Anticipated Finding of No Significant Impact (DEA-AFNSI) for the Proposed Dept. of Hawaiian Homelands Ho`oleahua Scattered Lots Subdivision and Related Improvements Project, Molokai

PROJECT ADDRESS:
1. Between Farrington Avenue and Mo`omomi Avenue, Ho`olehua, Molokai
2. Between Pu`u Kapele Avenue and Farrington Avenue, Ho`olehua, Molokai

PROJECT TMK: (2) 5-2-005:031; (2)5-026:003, 014,16,17
(5 parcels into 12 agricultural lots)

APPLICATION NO.:

(X) We previously commented on this date: 10/27/2021

(___) We have no comments

Division Head Signature: Eva Blumenstein Digitally signed by Eva Blumenstein Date: 2024.11.19 19:17:24 -10'00'

Date: 11/18/2024

cc: Emily Murai, Munekiyo & Hiraga, planning@munekiyohiraga.com
Neil Nugent, Department of Hawaiian Homelands, cornelius.f.nugent@hawaii.gov

MUNEKIYO HIRAGA
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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

Via email: Eva.Blumenstein@co.maui.hi.us

Eva Blumenstein, Planning Program Administrator
County of Maui
Department of Water Supply
One Main Plaza
2200 Main Street, Suite 102
Wailuku, Hawai'i 96793

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho'olehua Scattered Lots Project; Ho'olehua, Moloka'i

Dear Ms. Blumenstein:

Thank you for your comment letter dated November 18, 2024, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, we acknowledge that the County of Maui, Department of Water Supply previously provided early consultation comments on October 27, 2021. These comments from 2021 and responses to comments are included in the Draft Environmental Assessment (EA) and the Final EA being prepared for this project.

Thank you again for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will also be included in the Final EA. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,

Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
Ellen Kraftsow, Department of Water Supply
Gordon Ring, R.M. Towill Corporation
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\DWS.docx

POLICE DEPARTMENT
COUNTY OF MAUI
55 MAHALANI STREET
WAILUKU, MAUI, HAWAII 96793
TELEPHONE: (808) 244-6400
FAX: (808) 244-6411

RICHARD T. BISSEN, JR.
MAYOR

JOHN PELLETIER
CHIEF OF POLICE

WADE M. MAEDA
DEPUTY CHIEF OF POLICE

November 12, 2024

Munekiyo Hiraga
Attention: Emily Murai, Consultant
305 High Street, Suite 104
Wailuku, HI 96793

RE: Draft Environmental Assessment for the Proposed Department of Hawaiian Home Lands' Ho'olehua scattered Lots Subdivision and Related Improvements Project; Moloka'I, Hawai'i

Dear Ms. Murai,

We are writing in response to the letter dated October 29, 2024, regarding the Draft Environmental Assessment (EA) for the Proposed Ho'olehua Scattered Lots Subdivision and Related Improvements Project on Moloka'i.

On November 6, 2024, at approximately 0955 hours, Officer S. Caparida conducted a follow-up assessment of the proposed project site. The assessment found that the conditions observed during this site visit were consistent with those noted during Officer Caparida's initial evaluation on September 18, 2023. At this time, we foresee no concerns regarding the project's potential impact on the surrounding area.

We would like to confirm that the proposed project will not affect any County Roads or State Highway closures. Additionally, the proposed development runs parallel to existing Department of Hawaiian Home Lands (DHHL) homestead properties, and therefor no disruptions to adjacent communities or infrastructure are anticipated.

We appreciate the opportunity to provide input on this project and will continue to monitor any developments. Should further assessments or actions be necessary, please feel free to reach out.

Sincerely,

Assistant Chief Keola Tom
For: JOHN PELLETIER
Chief of Police

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Karlynn K. Fukuda
PRESIDENT
Mark Alexander Roy AICP, LEED AP
VICE PRESIDENT
Tessa Munekiyo Ng AICP
VICE PRESIDENT

Michael T. Munekiyo AICP
FOUNDER

March 23, 2026

John Pelletier, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawai'i 96793

SUBJECT: Response to Draft Environmental Assessment Comments Regarding the Proposed Ho'olehua Scattered Lots Project; Ho'olehua, Moloka'i

Dear Chief Pelletier:

Thank you for your comment letter dated November 12, 2024, regarding the Proposed Ho'olehua Scattered Lots Project. On behalf of the Department of Hawaiian Home Lands, thank you for confirming that the County of Maui, Police Department does not foresee concerns regarding the project's potential impact on the surrounding area. In addition, thank you for confirming that the proposed project will not affect County Roads or State Highway closures, and that the project is not anticipated to disrupt adjacent communities or infrastructure.

Thank you again for your participation in the Chapter 343, Hawai'i Revised Statutes environmental review process. A copy of your letter and this response will be included in the Final Environmental Assessment being prepared for this project. Should you have any questions or need additional information, please feel free to contact me at (808) 244-2015.

Very truly yours,

Patrick McCormic
Associate

PM:de
cc: Robert Ing, Department of Hawaiian Home Lands
Gordon Ring, R.M. Towill Corporation
K:\DATA\SOH DHHL\Hoolehua Scattered Lots\Apps\0FEA\DEA cmt.resp\MPD.docx

XI. REFERENCES

XI. REFERENCES

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APPENDIX A.

PRELIMINARY DEVELOPMENT PLANS

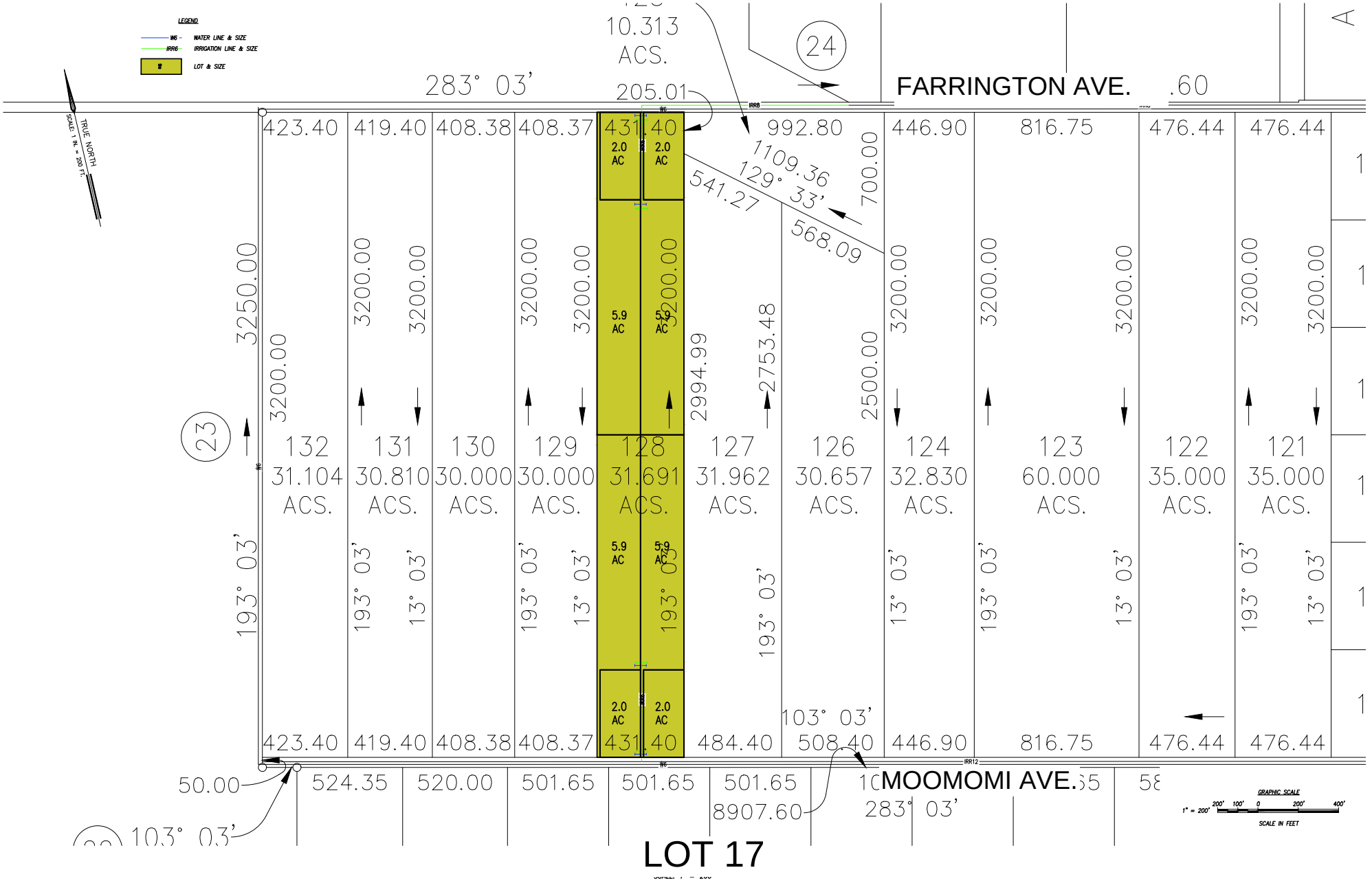
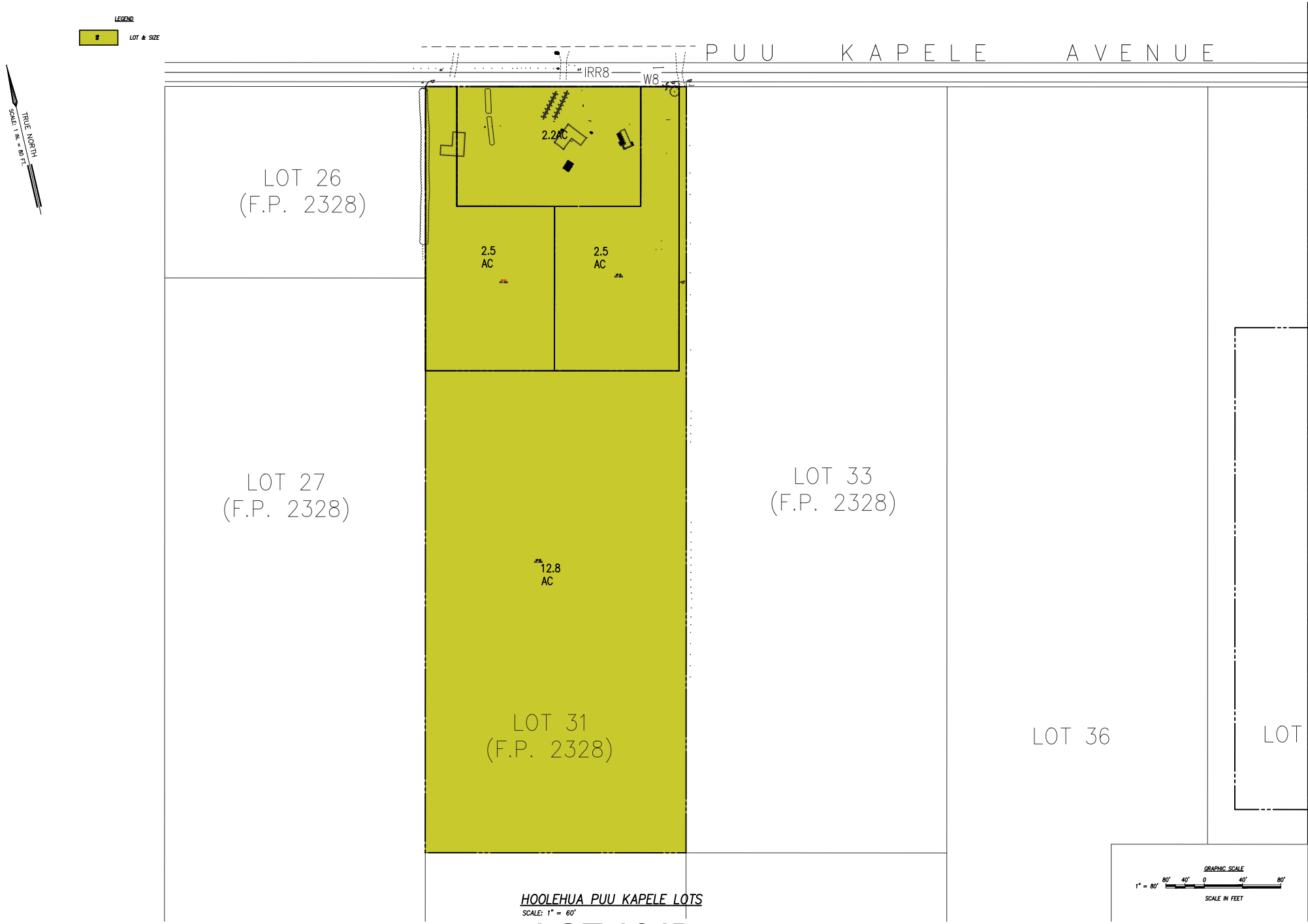

LEGEND
W6 - WATER LINE & SIZE
IRR6 - IRRIGATION LINE & SIZE
LOT & SIZE
TRUE NORTH
SCALE: 1 IN. = 200 FT.
10.313 ACS.
283° 03'
205.01
FARRINGTON AVE.
.60
24
992.80
1109.36
129° 33'
541.27
568.09
700.00
423.40
419.40
408.38
408.37
431.40
446.90
816.75
476.44
476.44
2.0 AC
5.9 AC
3250.00
3200.00
2994.99
2753.48
2500.00
23
132
31.104 ACS.
131
30.810 ACS.
130
30.000 ACS.
129
30.000 ACS.
128
31.691 ACS.
127
31.962 ACS.
126
30.657 ACS.
124
32.830 ACS.
123
60.000 ACS.
122
35.000 ACS.
121
35.000 ACS.
193° 03'
13° 03'
103° 03'
484.40
508.40
50.00
524.35
520.00
501.65
501.65
501.65
8907.60
MOOMOMI AVE.
GRAPHIC SCALE
1" = 200'
200' 100' 0 200' 400'
SCALE IN FEET
LOT 17

FIGURE 2



LOT 104D

FIGURE 3

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

TRUE NORTH
1" = 500'

200

400

400

PUU KAPELE AVE.

EXISTING UNPAVED ROADWAY

2722.5'
(NEW PAVED ROADWAY)

EXISTING PAVED ROADWAY

PUU KAPELE AVE.

LOT 104D

4 LOTS

ANAKAHI AVE.

HAUAKEA AVE.

NENEHANAUPO AVE.

EXISTING UNPAVED ROADWAY

3443.86'
(NEW PAVED ROADWAY)

EXISTING PAVED ROADWAY

FARRINGTON AVE.

FARRINGTON AVE.

PROPOSED FARRINGTON AVE.
CULVERT CROSSING
11'x8' BOX CULVERT (2-BARREL)

LOT 17

8 LOTS

HAUAKEA AVE.

NENEHANAUPO AVE.

MOOMOMI AVE.

MOOMOMI AVE.

EXISTING UNPAVED ROADWAY

3629.15'
(NEW PAVED ROADWAY)

EXISTING PAVED ROADWAY

OVERALL ROAD LAYOUT PLAN

SCALE: 1" = 500'

GRAPHIC SCALE:
500' 250' 0 500' 1000'
1" = 500'
SCALES IN FEET

REVISION | DATE | BRIEF | BY | APPROVED

APPROVED BY

ENGINEER

DRAFTSMAN

CHECKED BY

SCALE AS SHOWN

DATE

DPP FILE NO.

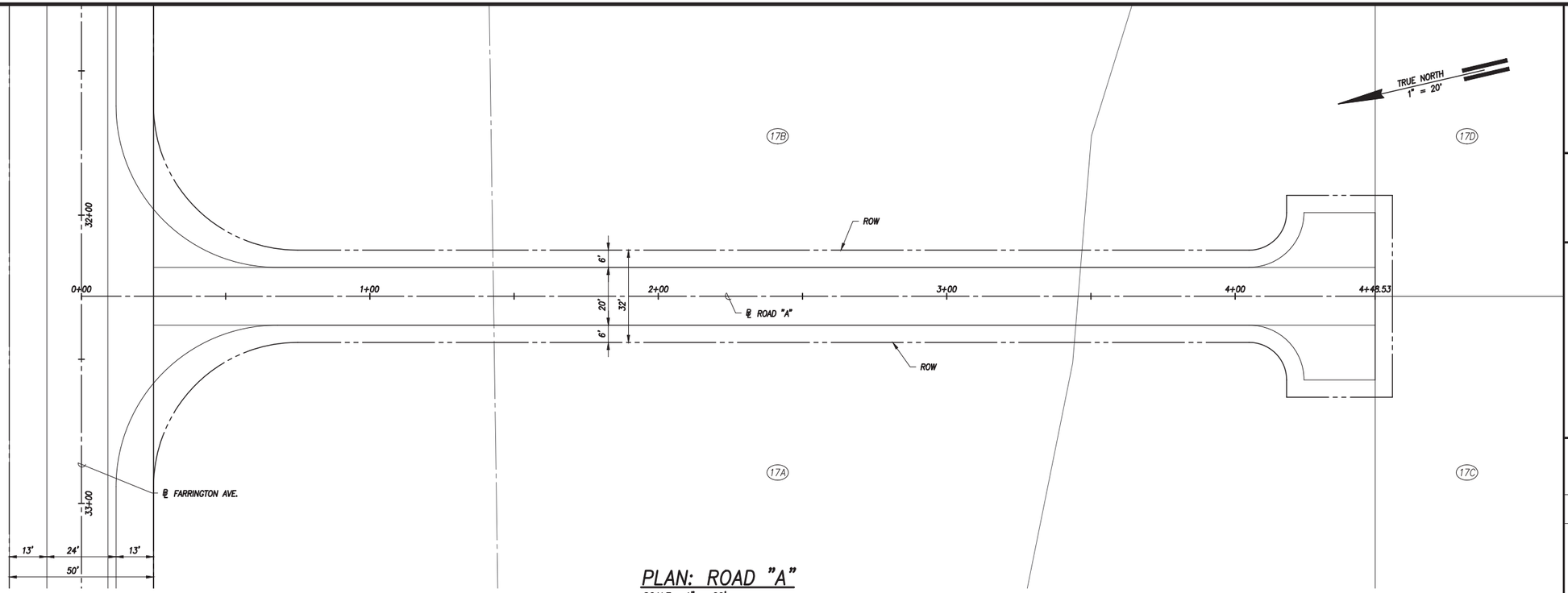
OVERALL
ROAD LAYOUT PLAN

RMTC JOB NO.: 1-23452-0E

K:\civil\23375 Hoolehua Naiwa\PER\Hoolehua\04 Roads\CAD files\C100_Overall Road Layout Plan.dwg October 26, 2023

C100 SHEET OF SHEETS

FILE	POCKET	FOLDER	NO.



PLAN: ROAD "A"

SCALE: 1" = 20'

HOOLEHUA

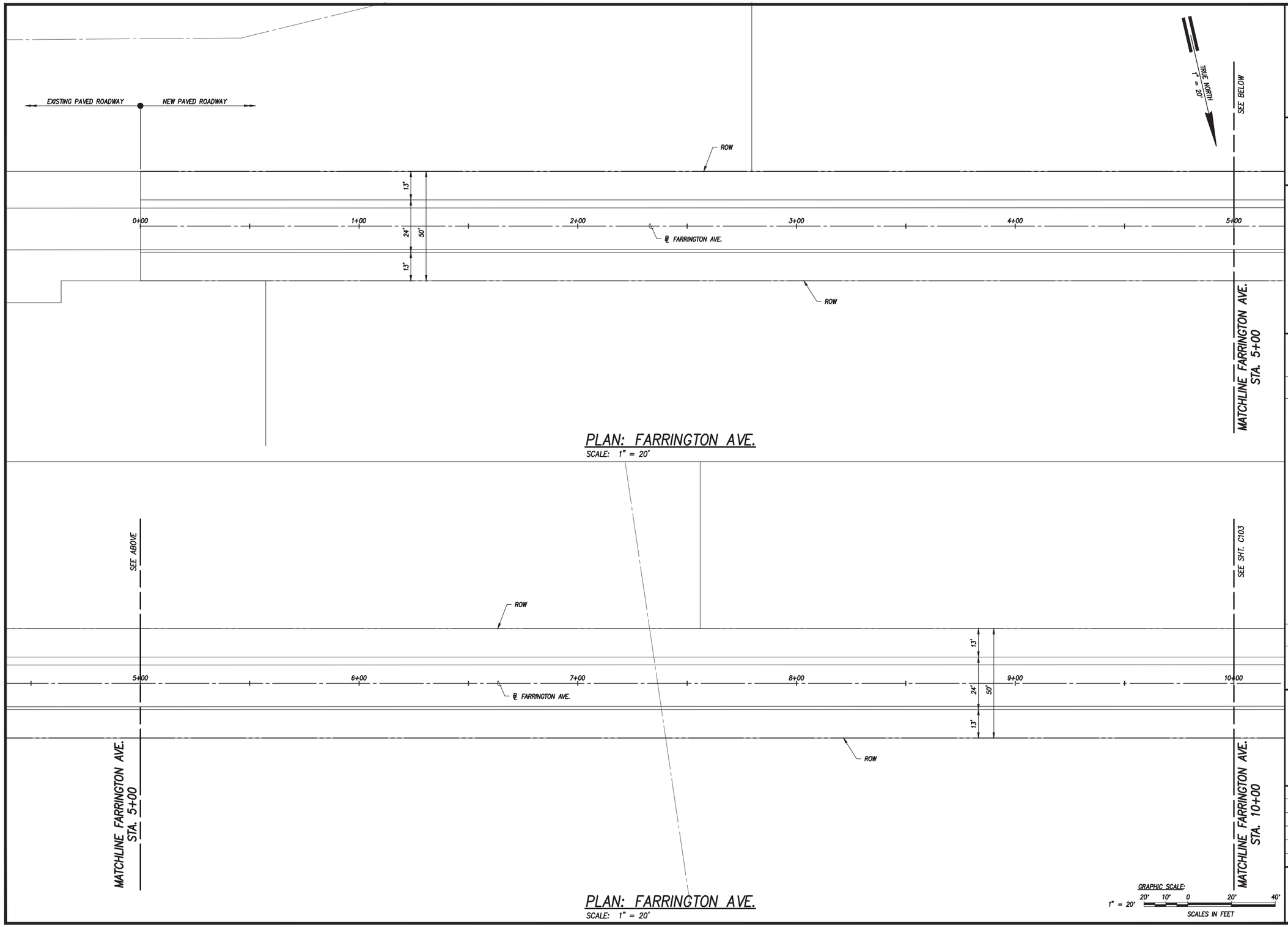
MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

Civil Engineering · Land Surveying · Environmental Services · Photogrammetry · Planning · Construction Management

2024 North King Street, Suite 200A
Honolulu, Hawaii 96819

	BY	APPROVED



PLAN: FARRINGTON AVE.

SCALE: 1" = 20'

PLAN: FARRINGTON AVE.

SCALE: 1" = 20'

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

APPROVED BY

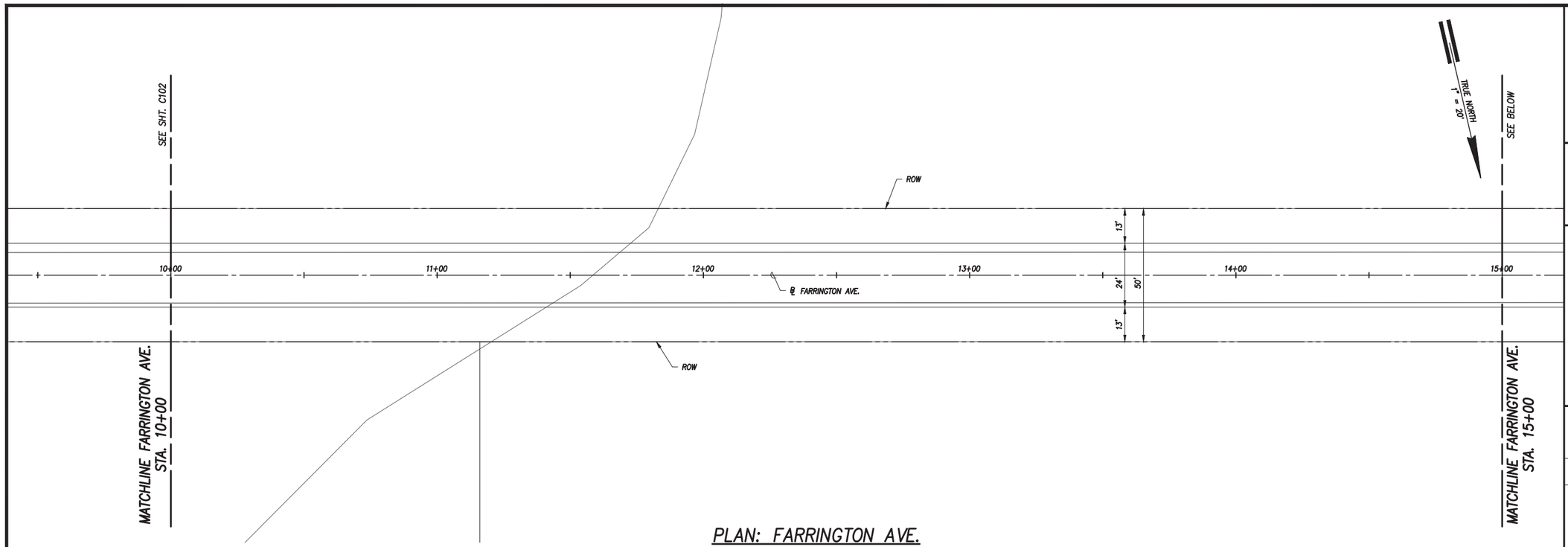
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

FARRINGTON AVE. PLAN–1
(STA. 0+00 TO 10+00)

RMTC JOB NO.: 1–23452–0E

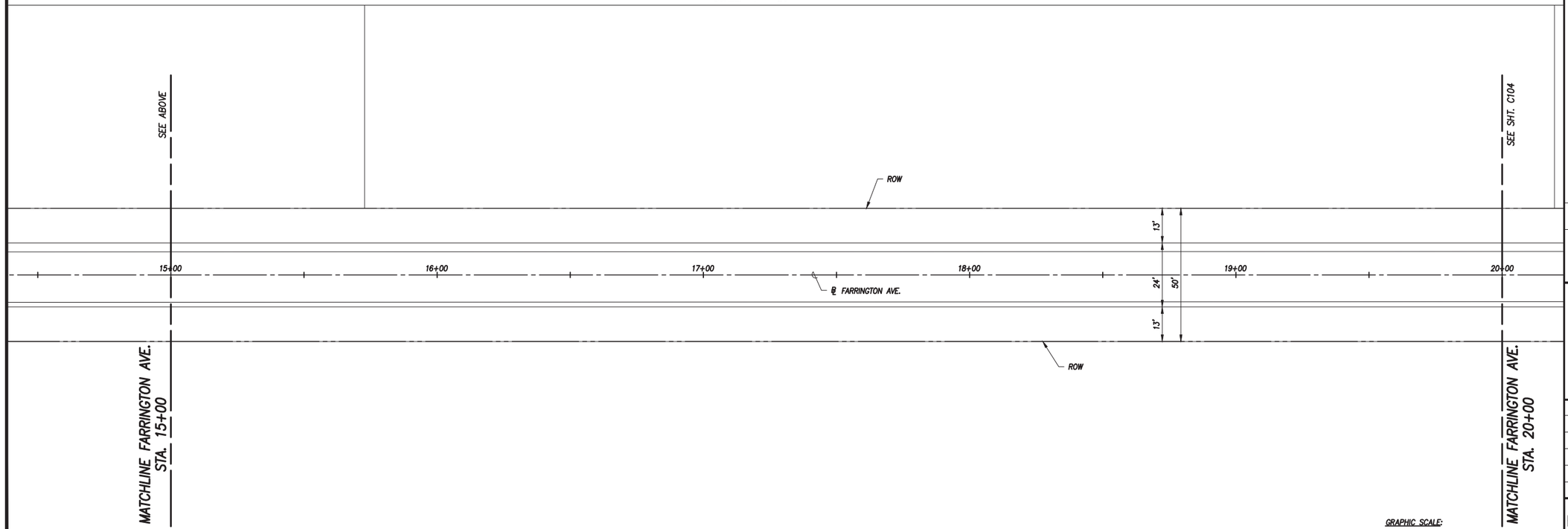
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FILE	POCKET	FOLDER	NO.



PLAN: FARRINGTON AVE.

SCALE: 1" = 20'



PLAN: FARRINGTON AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
20' 10' 0 20' 40'
1" = 20'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

APPROVED	
BY	
BRIEF	
REVISION	
DATE	

APPROVED BY

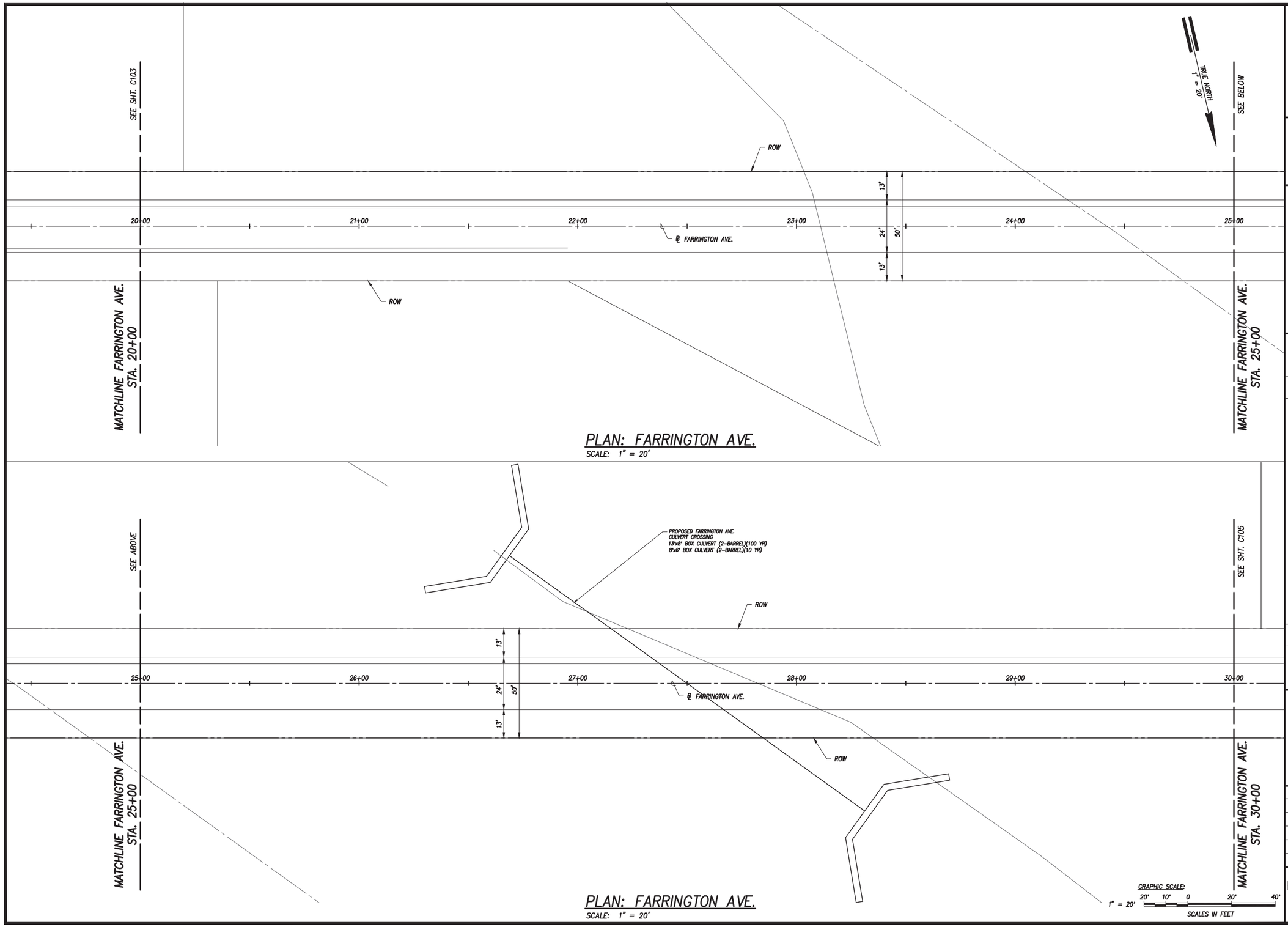
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

FARRINGTON AVE. PLAN-2
(STA. 10+00 TO 20+00)

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C103_FARRINGTON AVE Plan - 2.dwg 11? 26, 2021

FILE	POCKET	FOLDER	NO.



PLAN: FARRINGTON AVE.
SCALE: 1" = 20'

PLAN: FARRINGTON AVE.
SCALE: 1" = 20'

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BRIEF

BY	APPROVED

APPROVED BY

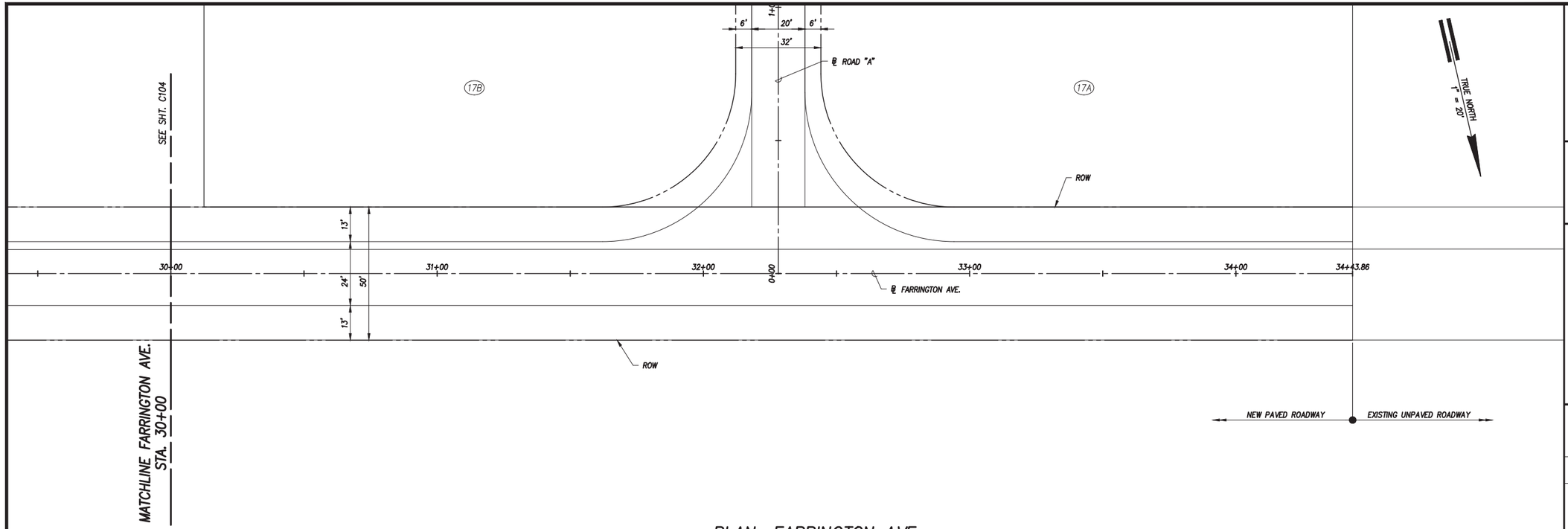
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

FARRINGTON AVE. PLAN-3 (STA. 20+00 TO 30+00)

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C104_FARRINGTON AVE Plan - 3.dwg December 3, 2021

FILE	POCKET	FOLDER	NO.



PLAN: FARRINGTON AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

	BY	DATE
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REVISION		

APPROVED BY

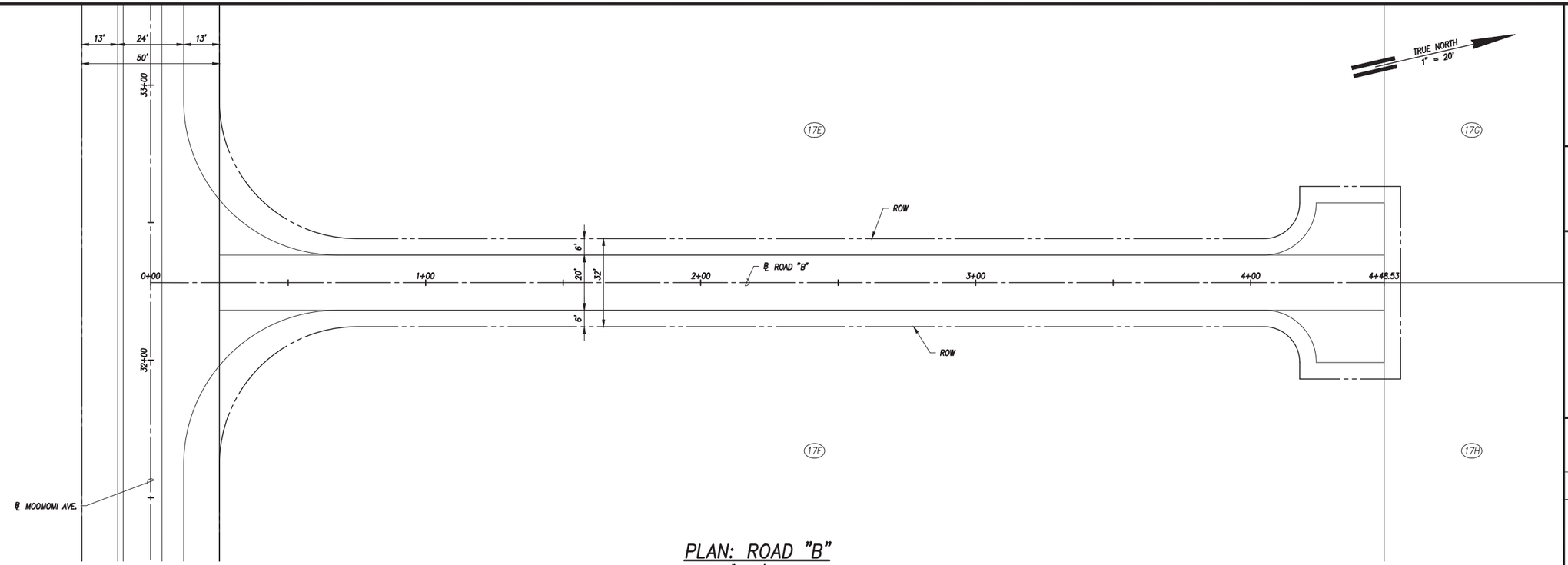
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FARRINGTON AVE. PLAN-4
(STA.30+00 TO 34+43.86)

RMTC JOB NO.: 1-23452-0E

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FILE	POCKET	FOLDER	NO.



PLAN: ROAD "B"

SCALE: 1" = 20'

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

BY	APPROVED

REVISION	DATE	BRIEF

APPROVED BY

ENGINEER	
DRAFTSMAN	
CHECKED BY	
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DPP FILE NO.	

GRAPHIC SCALE:

1" = 20' — 20' 10' 0 20' 40'

SCALES IN FEET

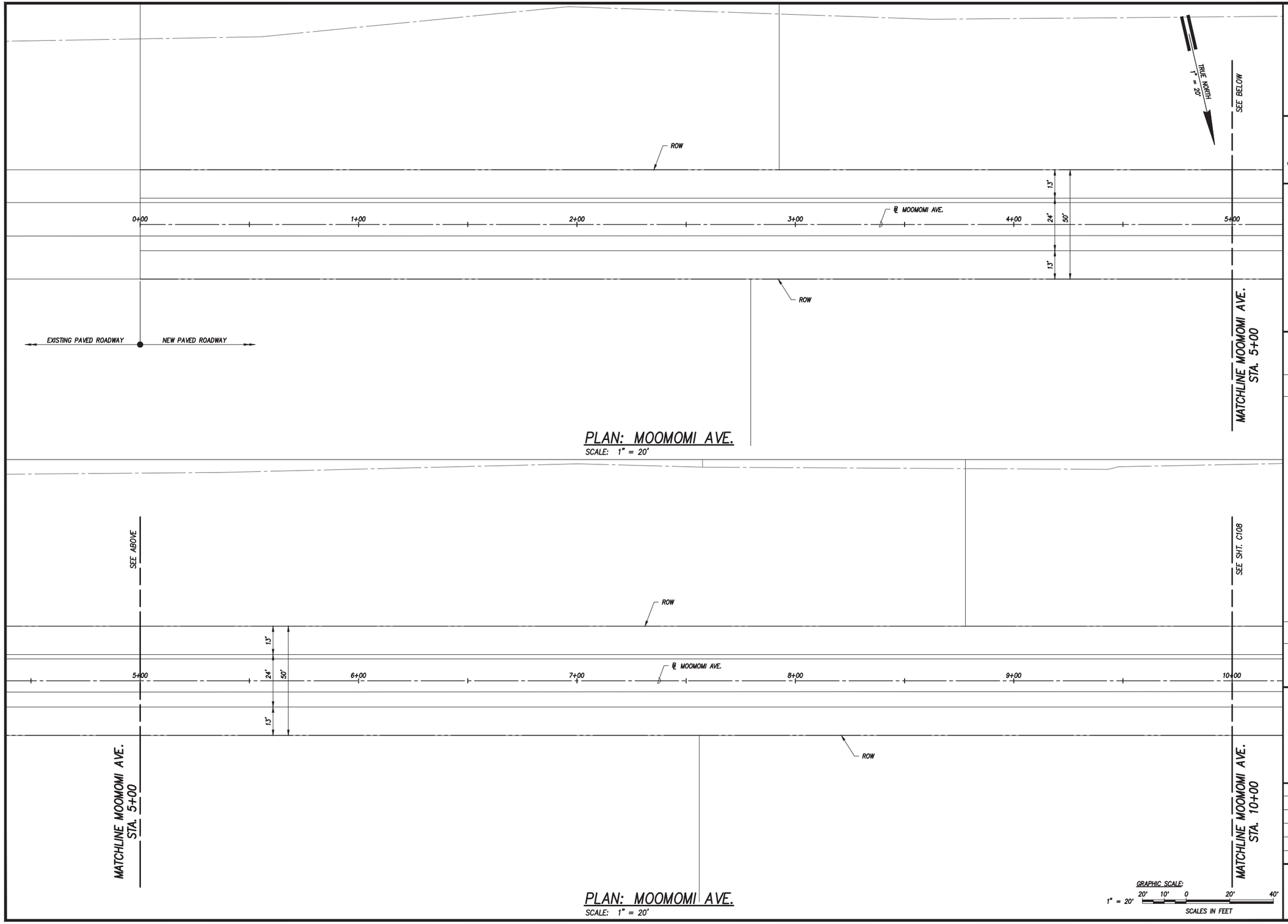
ROAD "B" PLAN (STA. 0+00 TO 4+48.53)

FILE	POCKET	FOLDER	NO.

C106 SHEET OF SHEETS

RMTC JOB NO.: 1-23452-0E

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PLAN: MOOMOMI AVE.
SCALE: 1" = 20'

PLAN: MOOMOMI AVE.
SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BRIEF

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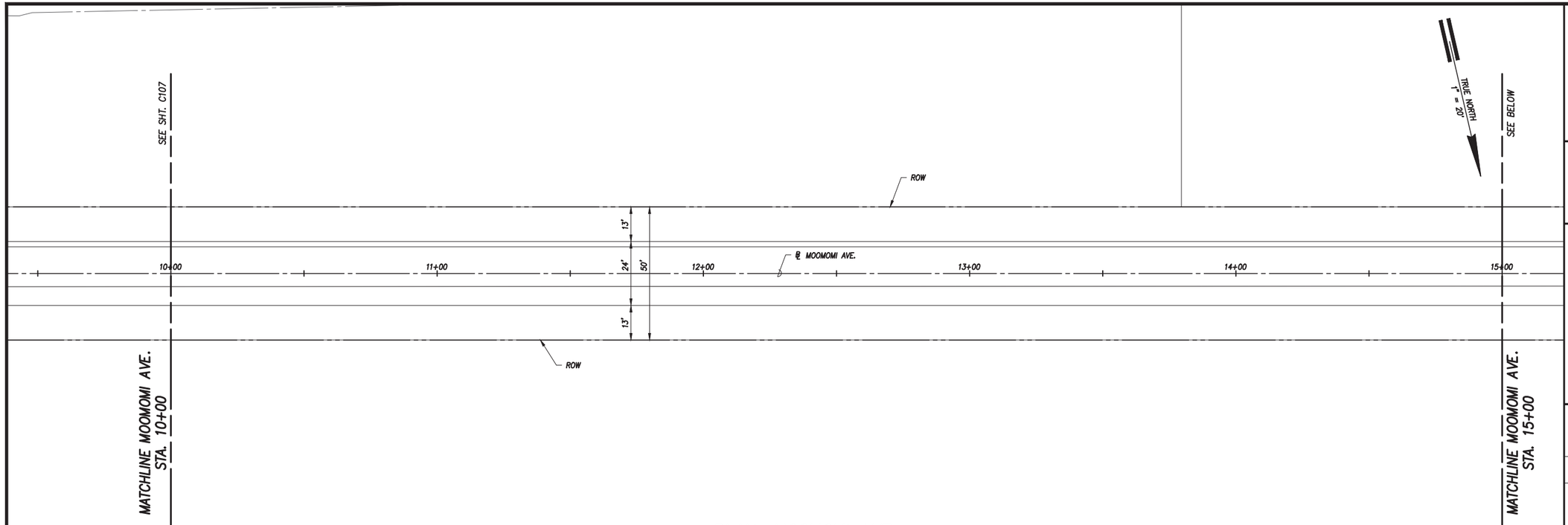
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DPP FILE NO.	

MOOMOMI AVE. PLAN-1
(STA. 0+00 TO 10+00)

FILE	POCKET	FOLDER	NO.

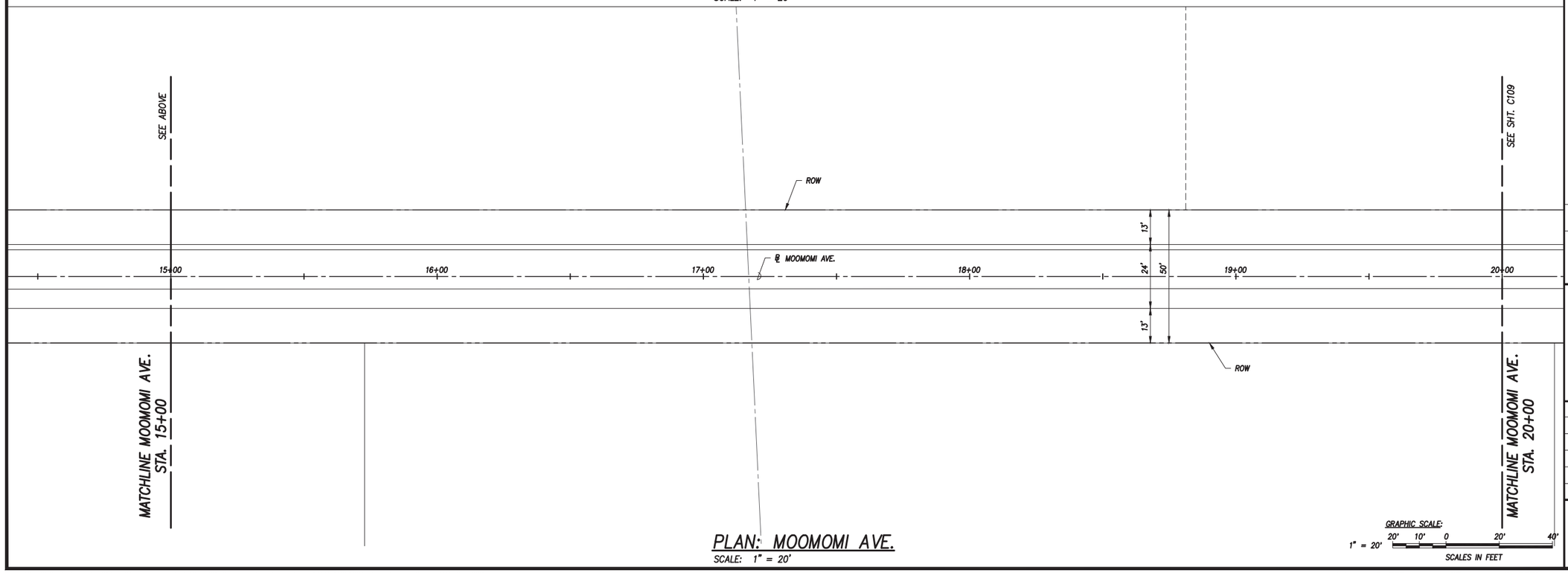
RMTC JOB NO.: 1-23452-0E

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PLAN: MOOMOMI AVE.

SCALE: 1" = 20'



PLAN: MOOMOMI AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

RMTC JOB NO.: 1-23452-0E

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C108 SHEET OF SHEETS

HOOLEHUA

MOLOKAI, HAWAII

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ENGINEER

DRAFTSMAN

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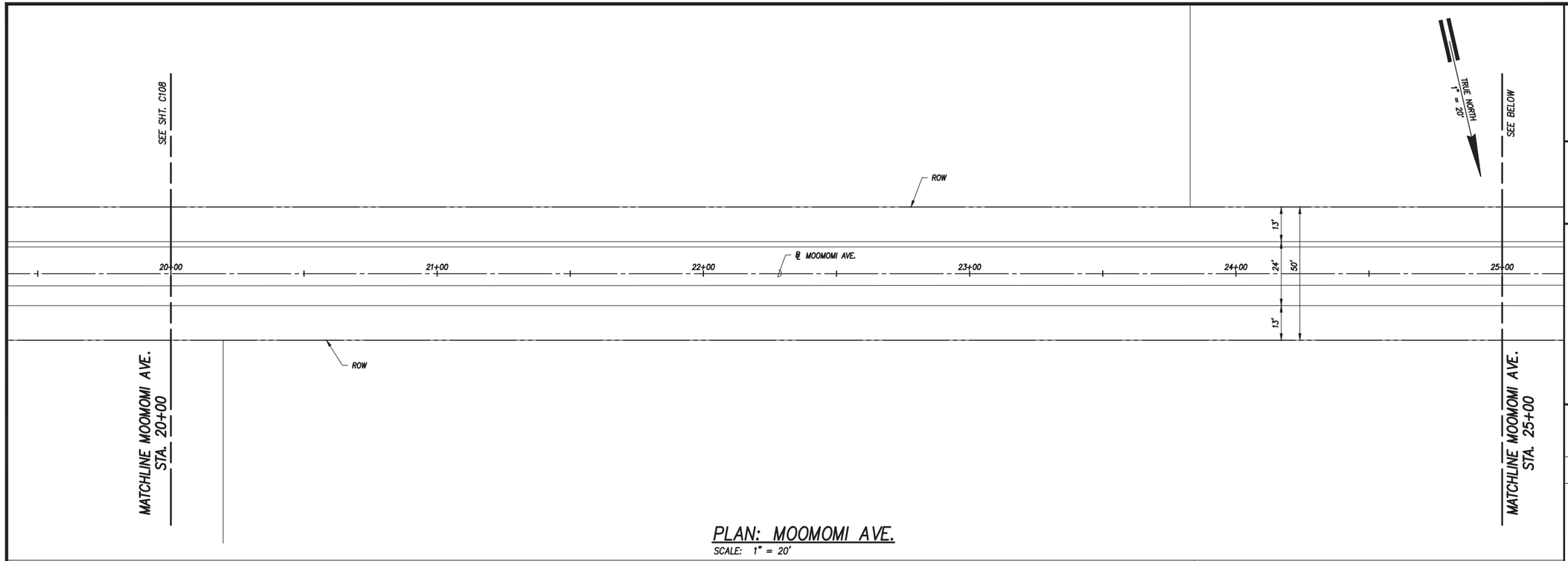
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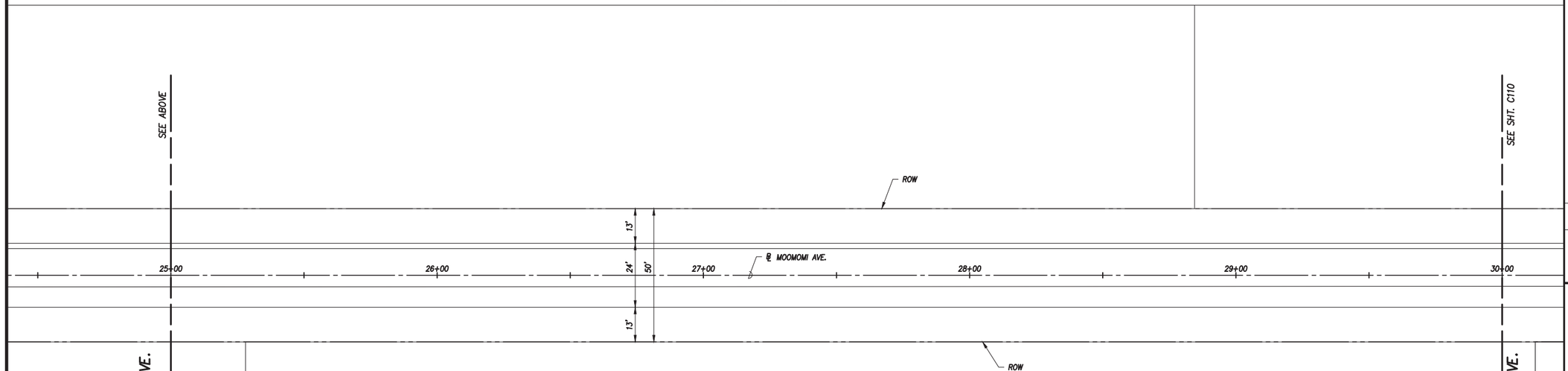
MOOMOMI AVE. PLAN-2
(STA. 10+00 TO 20+00)

FILE	POCKET	FOLDER	NO.



PLAN: MOOMOMI AVE.

SCALE: 1" = 20'



PLAN: MOOMOMI AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
20' 10' 0 20' 40'
1" = 20'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BRIEF

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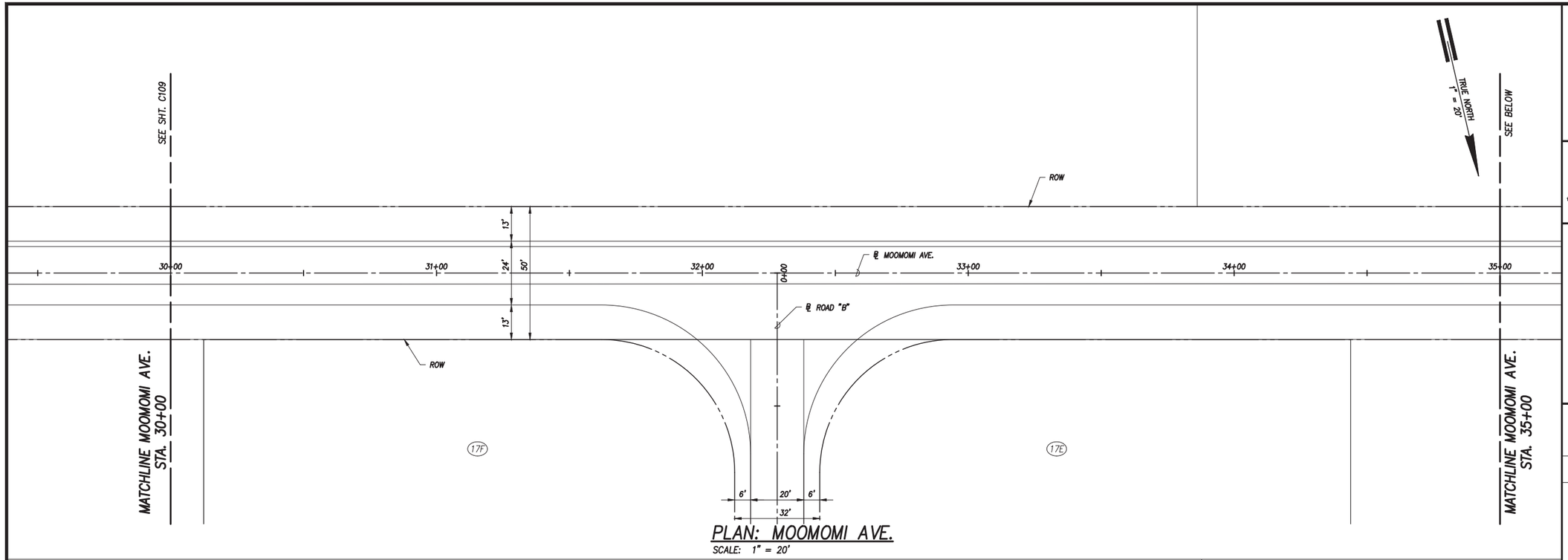
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MOOMOMI AVE. PLAN-3
(STA. 20+00 TO 30+00)

FILE	POCKET	FOLDER	NO.

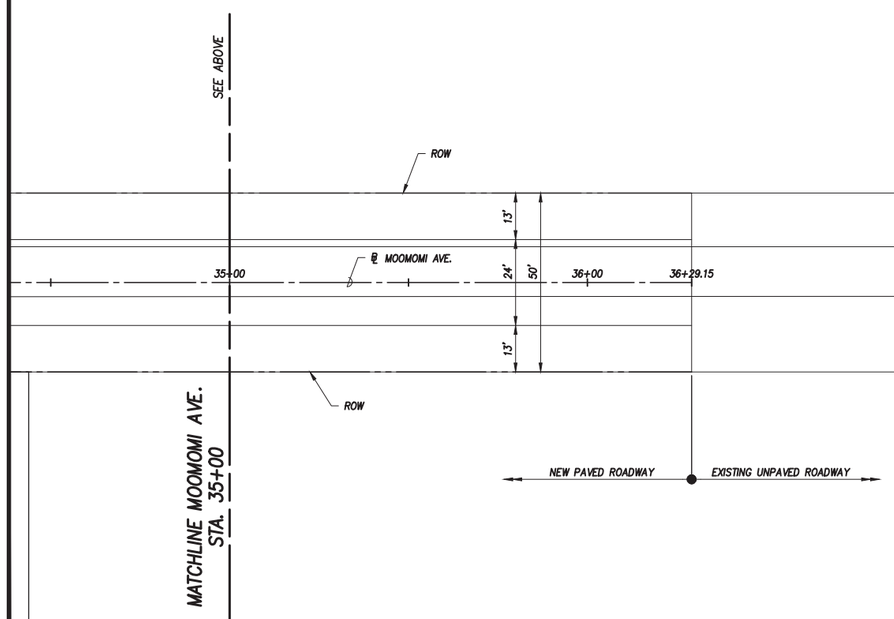
RMTC JOB NO.: 1-23452-0E

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PLAN: MOOMOMI AVE.

SCALE: 1" = 20'



PLAN: MOOMOMI AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:

1" = 20' 20' 10' 0 20' 40'

SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

Planning · Engineering · Environmental Services · Photogrammetry · Surveying · Geographic Information Systems

2024 North King Street, Suite 200A

Honolulu, Hawaii 96819

BY	APPROVED

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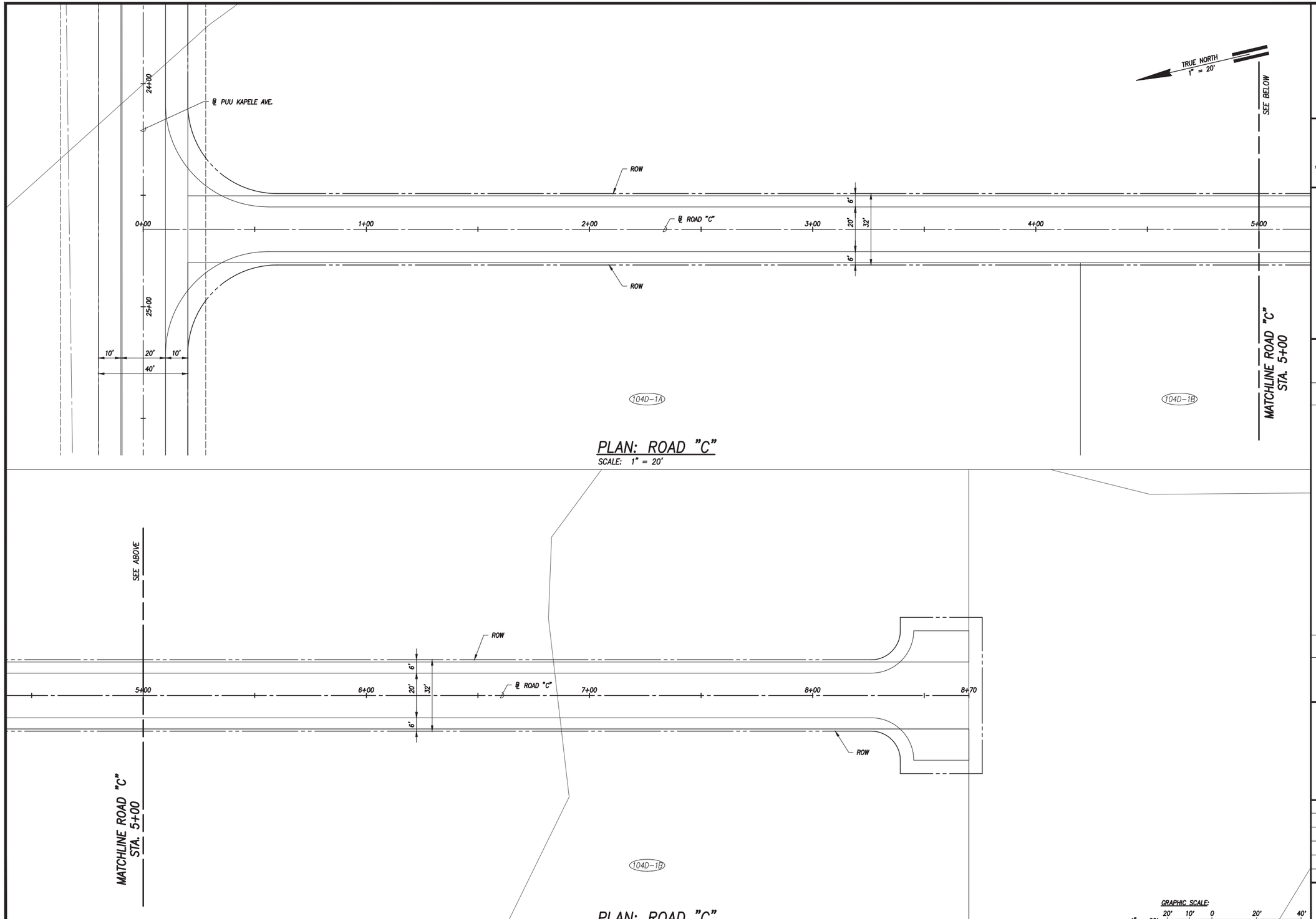
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FILE	POCKET	FOLDER	NO.

C110 SHEET OF SHEETS

RMTC JOB NO.: 1–23452–0E

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PLAN: ROAD "C"
SCALE: 1" = 20'

PLAN: ROAD "C"
SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20' 20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED
BRIEF			

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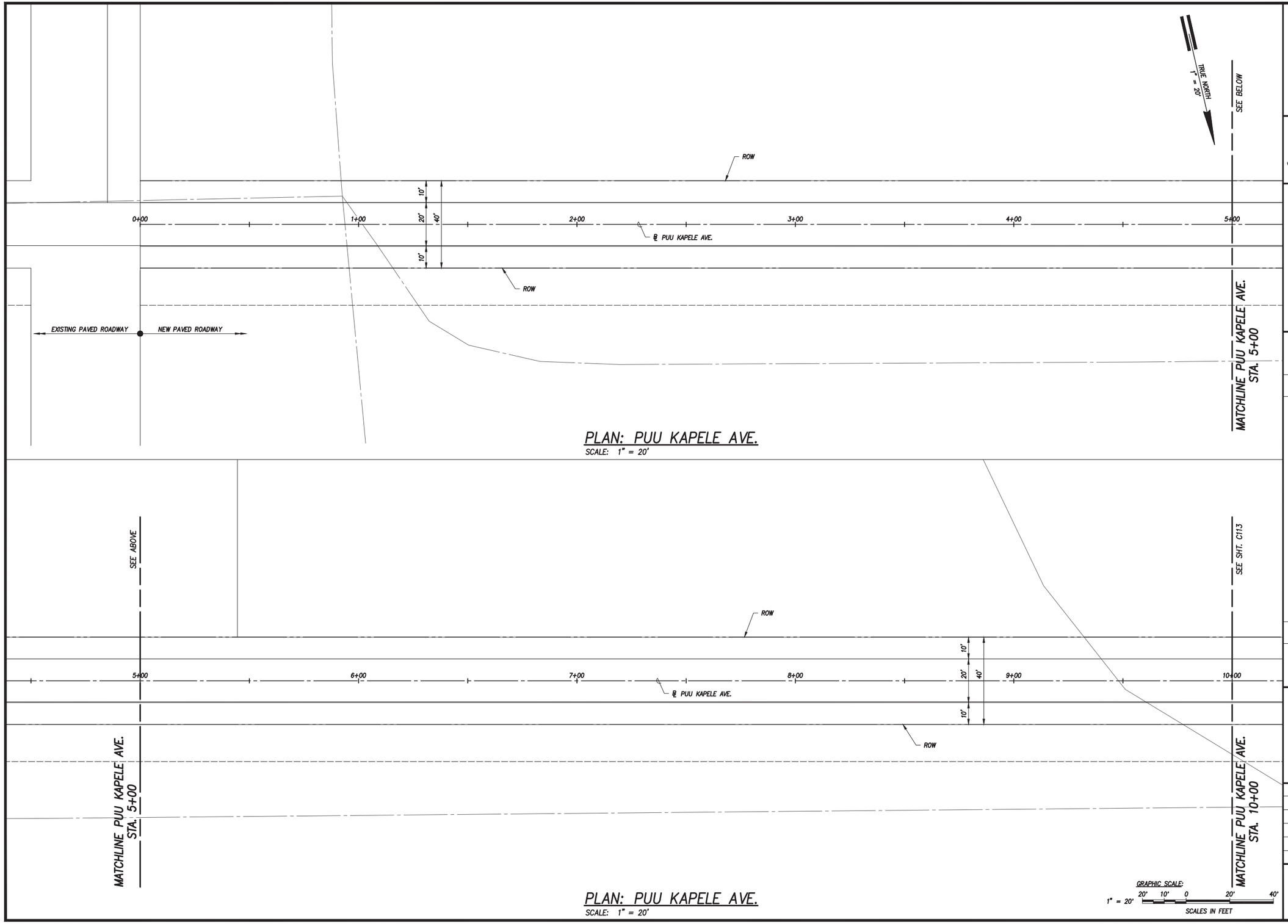
ROAD "C" PLAN
(STA. 0+00 TO 8+70)

FILE	POCKET	FOLDER	NO.

C111 SHEET OF SHEETS

RMTC JOB NO.: 1-23452-0E

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PLAN: PUU KAPELE AVE.
SCALE: 1" = 20'

PLAN: PUU KAPELE AVE.
SCALE: 1" = 20'

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

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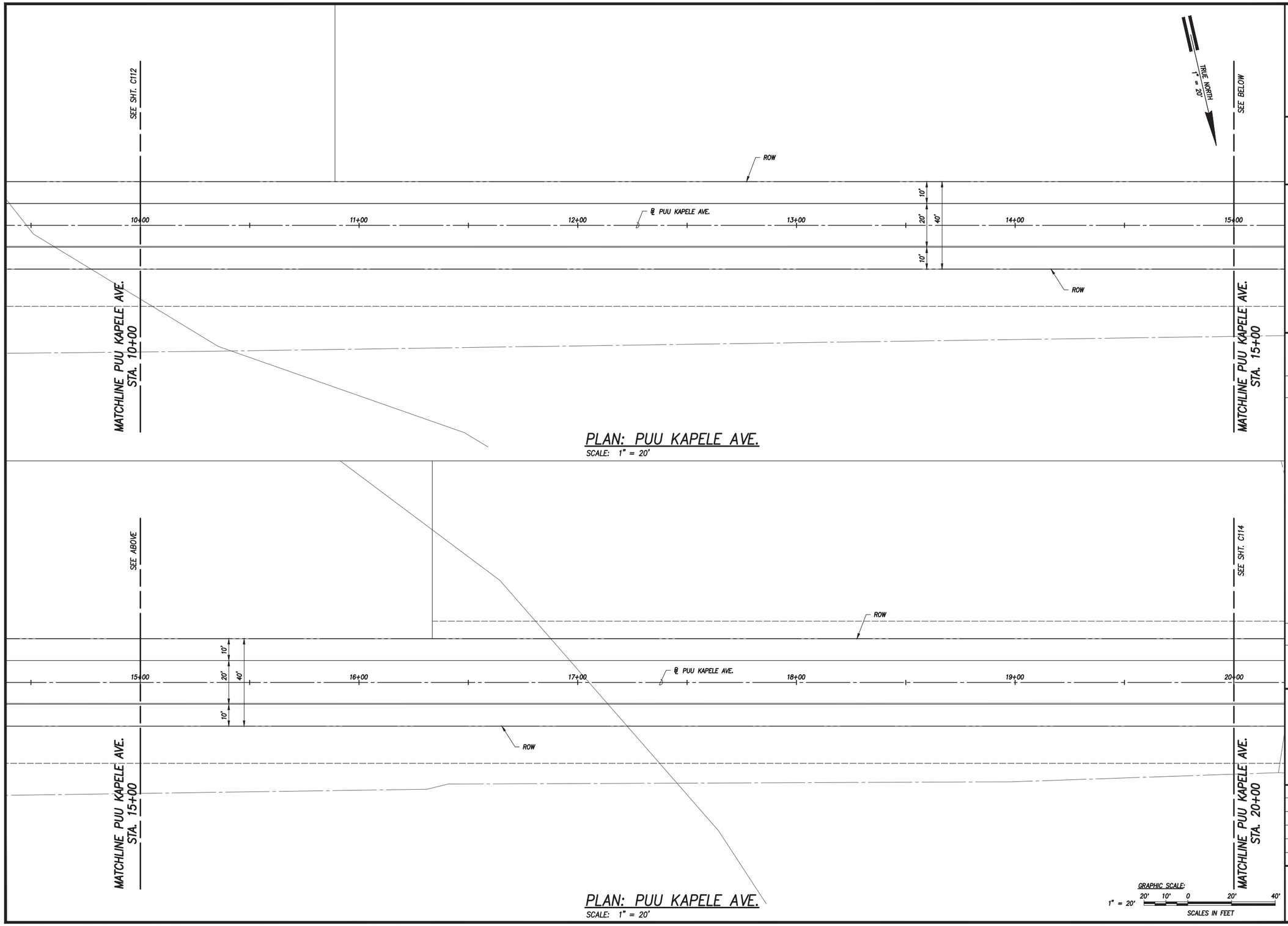
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PUU KAPELE AVE. PLAN-1
(STA. 0+00 TO 10+00)

RMTC JOB NO.: 1-23452-0E

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FILE	POCKET	FOLDER	NO.



HOOLEHUA

MOLOKAI, HAWAII

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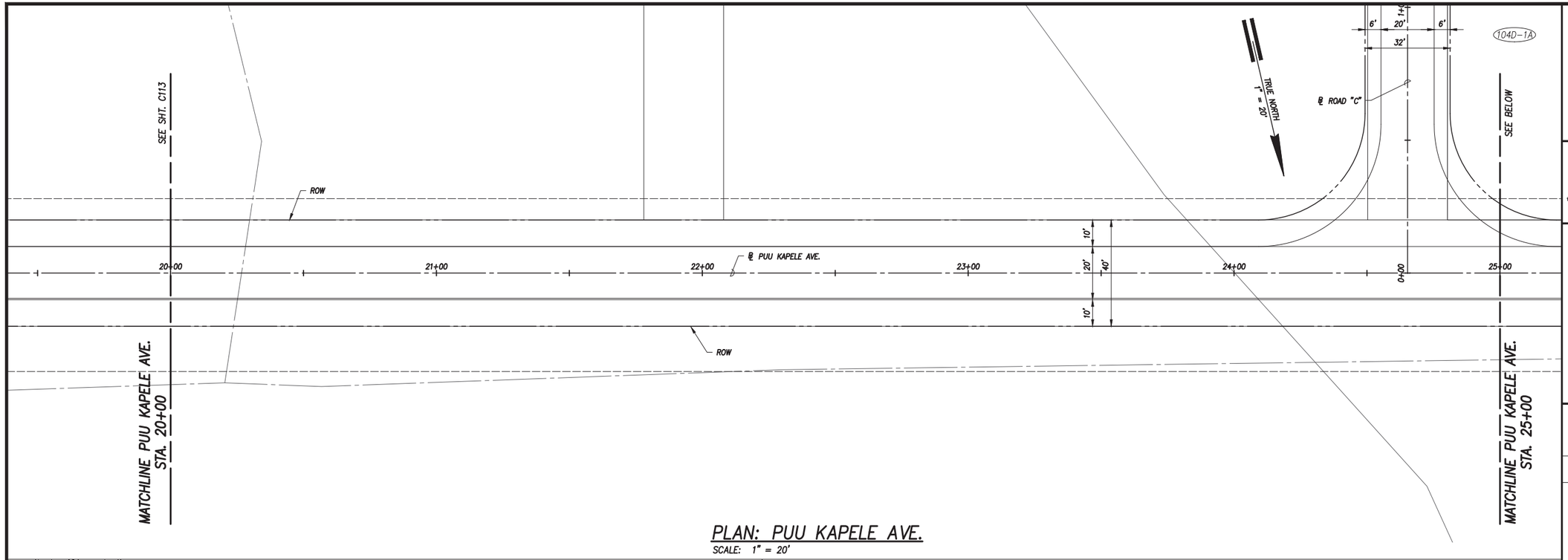
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PUU KAPELE AVE. PLAN–2 (STA. 10+00 TO 20+00)

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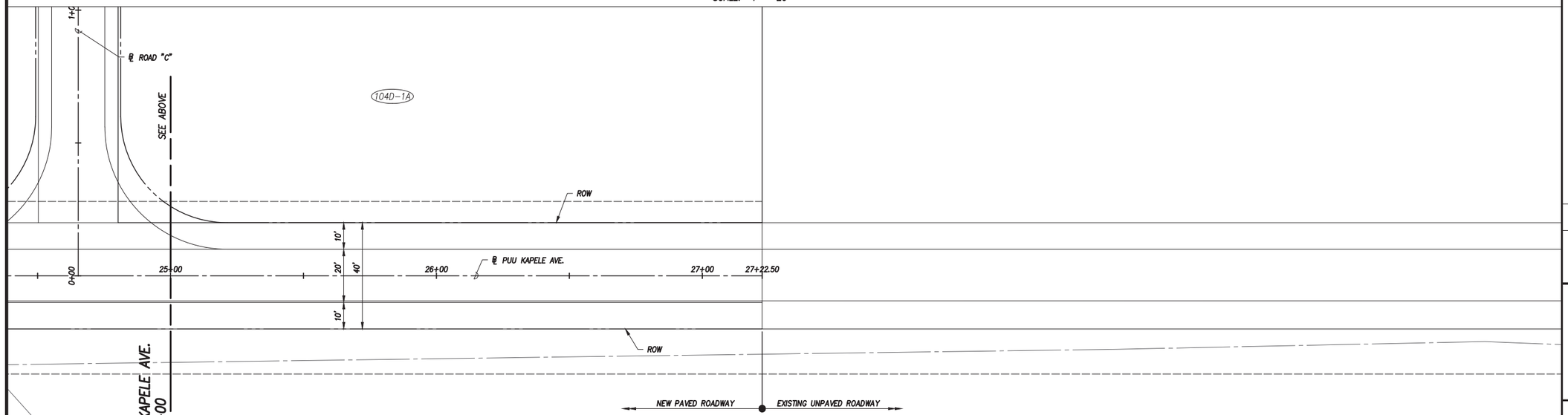
RMTC JOB NO.: 1–23452–0E

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PLAN: PUU KAPELE AVE.

SCALE: 1" = 20'



PLAN: PUU KAPELE AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20' 20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

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SCALE AS SHOWN

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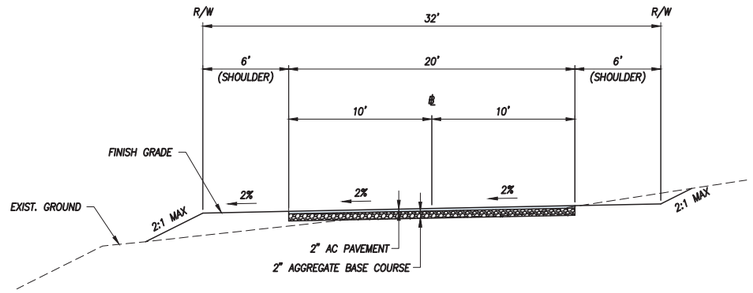
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PUU KAPELE AVE. PLAN-3
(STA.20+00 TO 27+22.50)

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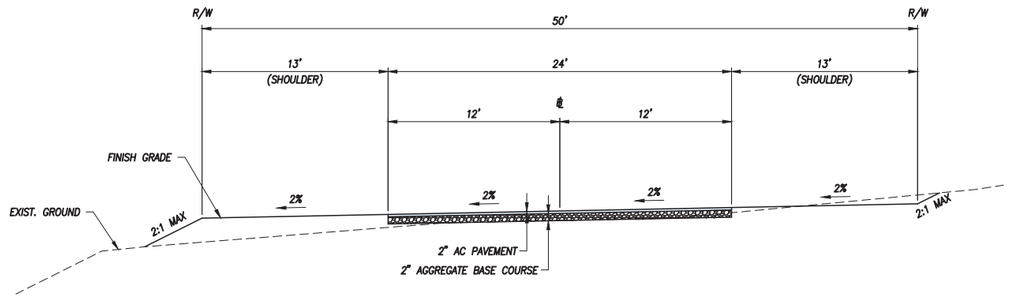
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FILE	POCKET	FOLDER	NO.



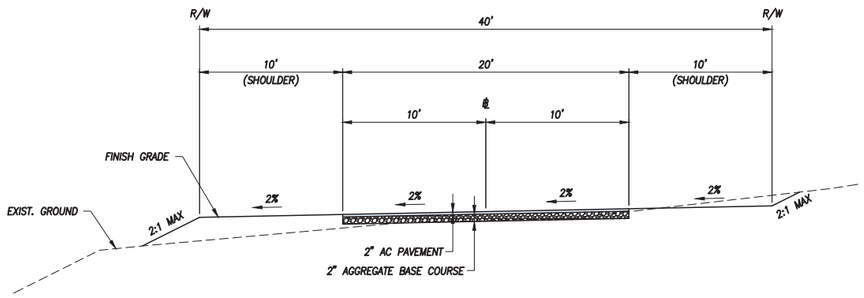
TYPICAL SECTION – ROAD "A", "B", "C"

SCALE: 1" = 5'



TYPICAL SECTION – "FARRINGTON" AVENUE AND "MOOMOMI" AVENUE

SCALE: 1" = 5'



TYPICAL SECTION – "PUU KAPELE" AVENUE

SCALE: 1" = 5'

GRAPHIC SCALE:
1" = 5'
5' 0 5' 10'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

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ENGINEER

DRAFTSMAN

CHECKED BY

SCALE AS SHOWN

DATE

DPP FILE NO.

TYPICAL SECTIONS

RMTC JOB NO.: 1-23452-0E

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C121 SHEET OF SHEETS

FILE	POCKET	FOLDER	NO.

APPENDIX B.

PRELIMINARY EMGINEERING AND DRAINAGE REPORT

HOOLEHUA SCATTERED LOTS

PRELIMINARY ENGINEERING REPORT

Hoolehua, Molokai, Hawaii

TMK: (2) 5-2-005: 031; 5-2-026: 014, 016, 017, 003

June 2025

PREPARED FOR:

Department of Hawaii Home Lands
P.O. Box 1879
Honolulu, Hawaii 96805

R. M. TOWILL CORPORATION
SINCE 1930

2024 North King Street., Suite 200
Honolulu, Hawaii 96819-3494
(808) 842-1133 Fax: (808) 842-1937
(RMTC Ref: 1-23375-00)

HOOLEHUA SCATTERED LOTS

PRELIMINARY ENGINEERING REPORT

June 2025

Prepared by:

R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawaii 96819
(Ref. No. 1-23375-00)

Prepared for:

Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hawaii 96805

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APPENDIX C – Irrigation Calculations
APPENDIX D – Miscellaneous Documents

1. GENERAL

1.1 Project Description

The Hoolehua Scattered Lots are located in Hoolehua, Molokai on five existing agricultural parcels ((2) 5-2-005: 031; 5-2-026: 014, 016, 017, 003) (See Figure 1). Lot 17 and Lot 104D will be subdivided to create a total of 12 lots. Lot 17 is located between Farrington Ave., and Moomomi Ave. Lot 17 will be subdivided into 8 lots ranging between 1.95 acres and 6 acres (See Figure 2). Lot 104D is located on Puu Kapele Ave. Lot 104D will be subdivided into 4 lots ranging between 1 and 12.8 acres (See Figure 3).

Existing infrastructure in the vicinity of the lots included paved roads, water lines, irrigation lines, overhead electrical lines. Proposed infrastructure improvements will include access and utility improvements for the proposed subdivisions and extension of paved roads and utilities where needed to service the proposed lots.

1.2 Objectives and Scope

This Preliminary Engineering Report provides an assessment of existing conditions and proposed improvements to facilitate agricultural and homesteading development at the proposed project sites.

2. EXISITING CONDITIONS

2.1 Soils

According to the Natural Resources Conservation Service, the predominant soil type for both project sites is Molokai silty clay loam. Type of soil has low permeability (0.20 to 0.60 in/hr) and is considered prime farmland.

2.2 Terrain

The existing elevation at Lot 104D is approximately 420 feet and is sloped toward Nenehanaupo stream, which lies southwest of the project site, at approximately 5%. Existing groundcover includes an existing house with vegetation on the exterior.

The existing elevation at Lot 17 is approximately 360 feet and is relatively level. The lot is undeveloped and covered with vegetation. Anahaki gulch is located to the east and crosses Farrington Ave. near the project site.

2.3 Roads

Existing roads onsite are unimproved dirt roads located within 40’ to 50’ wide right-of-ways (ROW). Farrington Ave. and Moomomi Ave. have 50-foot ROWs and Puu Kapele Ave. has a 40-foot ROW. The unimproved roads make it difficult to maintain and access the lots after rain events.

Lot 17 is accessed via Farrington Ave. and Moomomi Ave. The ends of the existing road improvements on Farrington Ave. and Moomomi Ave. are located near TMK (2)5-2-5: 024, approximately 3500 feet away from Lot 17. Existing utilities for Lot 17 within the road right-of-way include irrigation and water lines.

Lot 104D is currently accessed via an existing dirt road located north of Puu Kapele Ave., within an adjacent property (See Figure 4). The right-of-way for Puu Kapele Ave. is undeveloped and overgrown with heavy vegetation and trees. The end of the existing road improvements on Puu Kapele Ave. is at the intersection of Nenehanaupo Ave, approximately 2700 feet away from Lot 104D (See Figure 4). Existing utilities for Lot 104D within the road right-of-way include overhead electrical, irrigation, and water lines.

2.4 Drainage

Drainage affecting the project sites is categorized into offsite and onsite runoff. Runoff calculations were prepared in accordance with the County of Maui's Storm Drainage Standards. Runoff for drainage areas larger than 100 acres is calculated for a 100-yr storm event. Runoff for drainage areas less than 100-areas is calculated for 10-yr storm event.

2.4.1 Offsite Drainage

Offsite drainage does not directly impact either of the proposed sites. However, Anahaki gulch is located near Lot 17 and crosses Farrington Ave. where the road will be extended. (See Figure 5). The drainage area for this portion of Anahaki gulch is 260 acres, which generates 1560 cfs of runoff for a 100-year storm event.

2.4.2 Onsite Drainage Areas

Onsite drainage consists of the existing road and lot area. The existing roads are unimproved dirt and lots are primarily undeveloped and covered with vegetation.

The drainage areas for the lots are shown in Figure 6 and roads are shown in Figure 7. The existing runoff for the road and lot improvements was calculated for a 10-year storm event since the total drainage area is less than 100 acres. The total existing runoff is 120.0 cfs, with 28.2 cfs for the roads and 91.8 cfs for the lots. A summary of the onsite runoff is shown in the table below.

Table 2-1: Existing Onsite Runoff

Area Name	Onsite Area (ac)	Storm Event	Exist Runoff (cfs)
Farrington	4.3	10-yr	10.5
Moomomi	4.5	10-yr	9
Puu Kapele	3.2	10-yr	8.7
Lot 17	31.8	10-yr	55.0
Lot 104D	20.0	10-yr	36.8
Total	63.8		120.0

See Appendix A for runoff calculations, exhibits, and supporting documents.

2.4.3 Road Drainage

The existing unimproved segments of Moomomi Ave., Farrington Ave., and Puu Kapele roads do not have a drainage system.

2.4.4 Flood Zone

The project sites are located in flood zone "X" which is classified as an area determined to be outside the 0.2% annual chance floodplain according to the State of Hawaii Flood Hazard Assessment Report (see Appendix A). Additionally, there are no major drainage ways or streams crossing through the proposed project sites. Therefore, the project sites are not anticipated to be impacted by flood related hazards.

2.5 Potable Water System

The proposed lots will be serviced by the Molokai Water System, which is operated by DHHL. Existing water mains and fire hydrants are located within the existing unimproved roads (See Figure 8). At Lot 17, there is a 6-inch line in Farrington Ave. and 6-inch line in Moomomi Ave. At Lot 104D, there is an existing 1.5 inch lateral providing service to the existing houses on Puu Kapela Ave.

2.5.1 Existing Water Aquifer Conditions

A Ground Water Use Permit approved by DLNR on July 20, 2021 increased the available water capacity for DHHL's existing wells. The existing wells have adequate capacity to support the additional lots that will be developed for this project so that new water service and meters can be provided.

2.5.2 Existing Water System Conditions

The existing low-pressure water system will provide water service to the proposed lots. Pressure in the system is controlled by an existing pressure breaker tank near the intersection of Kulea Street and Moomomi Avenue. The water surface elevation at the tank is 764 ft, which is the starting elevation for this analysis. Pressure in the low-pressure system is further reduced by pressure reducing valves (PRVs) along water mains serving the proposed lots. The PRVs are assumed to have a pressure setting of 80 psi. Existing 6-inch water lines are located within the unimproved roads fronting Lot 17. An existing 8-inch water main provides service to Lot 104D and the existing lots along Puu Kapele Ave. (See Figure 8). Topographic survey

confirmed that existing fire hydrants front each project site on Farrington Ave., Moomomi Ave., and Puu Kapele Ave. Static pressures onsite are high, ranging from 150 psi to 174 psi.

2.6 Non-Potable Irrigation System

The State Department of Agriculture (DOA) operates the Molokai Irrigation System (MIS) consisting of the existing irrigation mains located within existing roads adjacent to the proposed project sites (See Figure 9). There is an existing 12-inch irrigation line in Moomomi Ave. and 8-inch lines on Farrington Ave. and Puu Kapela Ave.

2.6.1 Existing Conditions

The MIS source is Waikolu Valley. Water from the valley is collected and pumped through a 5 mile long tunnel and pipe line to the Kualapuu reservoir, where water is stored. The water surface elevation in the reservoir fluctuates based on rainfall, evaporation, demand, and other factors. Reservoir water depth data provided by DOA was used to determine the average water surface elevation to use for this analysis. Over the past 6 years, the reservoir depth varied between 18.75 and 48 feet, resulting in an average depth of 33.4 feet. This depth equates to a water surface elevation of 838 feet, which provides a minimum static pressure of 146 psi at the project site. The approximate reservoir volume at this depth is 968 million gallons. Prior issues regarding the quality of the MIS water include turbidity, trash, and fish.

2.6.2 Existing Demands

MIS usage data provided by DOA for the past year showed that the usage for 3382 acres in Hoolehua varied from a low of 40 million gallons in March to a high of 98 million gallons in August. The average daily usage ranges from 383 gallons per acre to 936 gallons per acre.

2.7 Electrical Power

The Hoolehua Subdivision is serviced by Hawaiian Electric Company - Maui County (HECO) via overhead primary conductors from the Palaau Substation #81 (See Figure 10). Proposed development of Lot 104D on Puu Kapele Avenue is located along a 7200V, single phase (phase-neutral) circuit while Lot 17 between Farrington Avenue and Moomomi Avenue is outside the area currently served by HECO. Existing overhead infrastructure along Farrington Avenue is a 7200V, single phase (phase-phase-neutral) circuit. This design allows more capacity as the load can be split between the two different overhead phase conductors. Unlike the infrastructure along Farrington Avenue, Moomomi Avenue is serviced overhead with a

7200V, single phase (phase-neutral) circuit. As in all cases, a primary line extension will be required to service all parcels within the proposed lots.

Telephone, CATV, and internet service is available via overhead lines along the existing roads.

2.8 Existing Lot Improvements

An existing house and greenhouse is located on Lot 104D. If the house will remain, the proposed subdivision will need to be configured around it. Topographic survey will be used to locate the existing improvements if they will remain.

There are no existing improvements on Lot 17.

3. PROPOSED CONDITIONS

3.1 Roads

Proposed roads will be extensions of existing roads to provide access to the project sites (See Figure 4). Minimal road improvements are proposed consisting of a paved road and swale.

County of Maui standard roads were not considered since they are extensions of existing roads. Therefore, DHHL will be responsible for maintenance. Paved roads will improve access for lessees and emergency vehicles. The proposed road cross sections will consist of 20-foot wide asphaltic cement pavement in the center of the ROW. Pavement will be sloped in one direction toward the low side of the road. Runoff will be collected at the low point in a grassed swale. Proposed road right-of-way widths are 40 and 50 feet. See Figure 11 for typical road sections.

Road profiles will follow the existing terrain as much as possible to reduce earthwork, maintain existing drainage patterns, and to preserve the existing water and irrigation lines that are already in place.

3.2 Drainage

Proposed subdivision improvements that affect drainage are grading and installation of impervious surfaces. Paved roads will be constructed in the right-of-ways. Within the lots, paved driveways within flag stems and houses will be built. A 5000 sf area for houses and driveways is assumed for each lot. Minimal grading is anticipated for the construction of these improvements and existing drainage patterns will be maintained.

3.2.1 Offsite Drainage

Offsite drainage is not anticipated to have a direct impact on the proposed lot areas. Mitigation measures to divert offsite runoff are not recommended. Offsite flows from adjacent areas will continue to flow through the site.

Offsite drainage is expected to impact the design of the Farrington Ave. extension at the Anahaki gulch crossing. A culvert is recommended at this location to accommodate offsite drainage flowing across the road at this location. These improvements are described in Section 3.2.3.

3.2.2 Onsite Drainage

Onsite drainage areas will be maintained in the proposed condition. It is assumed that existing drainage patterns will not change and grading will be minimal. The proposed lot improvements are not anticipated to significantly increase the peak flow runoff since the increase in impervious area relative to the overall project site is small. Existing drainage runoff patterns will be maintained onsite and drainage areas will continue to discharge into the existing locations onsite.

Onsite drainage consists of road and lot improvements. Road improvements include minimal grading and 20' wide paved road to provide access to the site. Lot improvements include paved driveways and an assumed development area of 5000 sf per lot.

The drainage areas for the lots are shown in Figure 6 and roads are shown in Figure 7. The proposed road and lot improvements will increase runoff. The total runoff increase is 15.7 cfs, with 13.0 cfs for the roads and 1.7 cfs for the lots. All of the drainage areas are less than 100 acres, so runoff is calculated for a 10-year storm event. A summary of the onsite runoff is shown in the table below. See Appendix A for runoff calculations, exhibits, and supporting documents.

Table 3-1: Onsite Runoff

Area Name	Onsite Area (ac)	Storm Event	Exist Runoff (cfs)	Proposed Runoff (cfs)	Increase Runoff (cfs)
Farrington	4.3	10-yr	10.5	14.7	4.2
Moomomi	4.5	10-yr	9	15.4	6.4
Puu Kapele	3.2	10-yr	8.7	12.1	2.4
Lot 17	31.8	10-yr	55.0	56.2	1.2
Lot 104D	20.0	10-yr	36.8	37.3	0.5
Total	63.8		120.0	135.7	15.7

The volume of runoff increase for the lot areas totals approximately 500 cubic feet per lot. Mitigation for this increase can be accommodated by using a small basin on each lot with dimensions of 25 ft wide x 25 ft long x 1 ft deep. The basin should be located downstream of proposed improvements and swales used to direct flow into the basin. Overflow from the basin should follow the natural drainage path.

Maintenance activities for a detention basin include:

- Inspection of basin including inlets/outlets and pipes after storm events.

- Trim vegetation to maintain access into the basin.
- Inspect and remove sediment at inlets/outlets to maintain flow and basin capacity.
- Remove litter and debris.

3.2.3 Road Drainage

The drainage system for the proposed roads will consist of a road swale on the low side of the road. Drain inlets and piping will not be used. The conceptual drainage improvements in this study were designed in accordance with the County of Maui drainage standards. Runoff on the roads will be collected by the road swale.

The volume of additional runoff generated from the roadway improvements varies from 10,000 to 20,000 cubic feet. Mitigation options for the additional roadway runoff can be accommodated by discharging runoff into an existing drainage way, storing runoff in a drainage basin, or storing runoff in infiltration trenches located beneath road swale (See Figure 11).

Options for runoff disposal on Farrington Ave. include discharging the road swale into Anahaki gulch, storing runoff in a drainage basin on the north side of the road, or installing infiltration trenches beneath the road swale (See Figure 7). Discharge of runoff into Anahaki gulch is feasible for a majority of Farrington Ave upstream of the gulch. The remaining portion of Farrington Ave. downstream of the gulch will be addressed by using a drainage basin or infiltration trench. The drainage basin dimensions would be 100-ft x 20-ft x 6-ft deep and will be located outside of the road ROW, in an existing lessee's lot. The infiltration trench will be 6-ft wide x 3-ft deep, filled with drain rock, along the length of the road. Since the infiltration trench can be installed within the ROW, this option is preferred for disposal of the increase in runoff for the roadway.

Options for runoff disposal on Moomomi Ave. include storing runoff in a drainage basin on the north side of the road, or installing infiltration trenches beneath the road swale (See Figure 7). The drainage basin dimensions would be 150-ft x 30-ft x 6-ft deep and will be located outside of the road ROW, in a proposed lessee's lot. The infiltration trench will be 6-ft wide x 3-ft deep, filled with drain rock, and installed along the length of the road. Since the infiltration trench can be installed within the ROW, this option is preferred for disposal of the increase in runoff for the roadway.

Options for runoff disposal on Puu Kapela Ave. include discharging the road swale into Nenehanaupo gulch, storing runoff in a drainage basin on the north side of the road, or installing infiltration trenches beneath the road swale (See Figure 7). Discharge of runoff into Nenehanaupo gulch would require extension of the road swale approximately 1600 feet beyond the project site. The drainage basin dimensions would be 110-ft x 20-ft x 6-ft deep and will be located outside of the road ROW, in a proposed lessee's lot. The infiltration trench will be 6-ft wide x 3-ft deep, filled with drain rock, along the length of the road. Since the infiltration trench can be installed within the ROW, this option is preferred for disposal of the increase in runoff for the roadway.

Anahaki gulch crosses Farrington Ave. near the project site, conveying a total of 1560 cfs from 256 acres for a 100-yr storm event. For this road to be used during storm events, a culvert under the road is needed. Two 13-ft wide x 8-ft high box culverts are needed to convey the 100-yr storm event. To reduce the cost of installing a large culvert and since the road will not be designed to County of Maui standards, a smaller culvert could be considered to convey runoff generated by a smaller storm event that will allow the road to be used for most small storm events. The 10-yr storm will generate 640 cfs, requiring two 8-ft wide x 6-ft high box culverts.

3.2.4 Road Drainage Alternatives

Low impact development (LID) alternatives to the road drainage system components described above were evaluated to determine their feasibility for implementation in this project. LID elements would reduce the amount of runoff entering the roadway drainage system.

3.2.4.1 Low Impact Development

Potential LID drainage alternatives for the proposed roads include porous pavement and infiltration trenches. Porous pavement would replace the asphalt pavement and allows runoff to percolate through the pavement surface, where it is stored in a subsurface rock reservoir. The collected runoff percolates into the existing subgrade below. Infiltration trenches would be installed within the unpaved road shoulder, at the low point of the roadway swale. Runoff collected in the infiltration trench will be stored and allowed to percolate into the existing subgrade. The collected runoff should completely percolate within 48 hours.

3.2.4.2 Porous Asphalt Pavement

Porous asphalt pavement is an alternative to traditional pavement, which is impermeable. A typical asphalt pavement cross section consists of AC pavement over a base course layer installed on a compacted subgrade, while a typical porous asphalt cross section consists of porous AC pavement over a choker layer and a rock reservoir layer below, installed on uncompacted subgrade. Characteristics of porous pavement include:

- Reduces runoff and pollutants but is not designed to accommodate design storm events.
- Higher initial cost.
- Larger runoff flows require installation of subdrain system with connections to the roadway drainage system.
- Underground runoff storage will not have significant reduction in size of road drainage system.
- Maintenance requires vacuuming or pressure washing every 3 months since the road is adjacent to agricultural areas.
- Ideal for flat installations. The proposed road extensions are sloped.
- Requires a minimum soil percolation rate of 0.5 in/hr. The assumed percolation rate of the existing soils is less than 0.5 in/hr based on the NRCS soil classification.
- Ideal for light traffic conditions such as parking lots. The pavement for this project will be used for roads.

3.2.4.3 Infiltration Trenches

Infiltration trenches are recommended for use beneath road swales to provide storage of the increase in runoff generated by the new roads. The trenches will be 6-ft deep by 3-ft wide and will be filled with drain rock that provides 40% voids. Runoff will be stored in the voids in the rock. Since the roads are sloped, dams will need to be used to prevent collected runoff from flowing downstream and allow runoff collected in each section of trench to percolate into the existing soils. Percolation tests will be needed to confirm the permeability of the existing soils and validate the use of infiltration trenches in this project.

3.2.4.4 Road Maintenance

Since the proposed roads will not be designed to County of Maui (COM) standards, DHHL will be responsible for maintenance of the roads and any LID features installed.

3.2.4.4 Conclusion

Porous asphalt pavement is not recommended for installation within the proposed road right-of-ways for this project because many of the porous pavement characteristics described above are infeasible or disadvantages for this project. Infiltration trenches are recommended for use in the road right-of-way to provide treatment and storage of the increase in runoff. Lessees could also implement LID measures in the design of their house and lot improvements.

3.3 Potable Water System

An analysis of the existing water mains providing service to Lots 17 and 104D was conducted to determine the adequacy of the system for the proposed use in accordance with the Water System Standards (WSS).

3.3.1 Potable Water Demands

Potable water demand is based on the 600 gallons per day per the Department of Water Supply's Water System Standards (WSS) for a single family house. Irrigation usage is not included since there is an existing non-potable irrigation system available. For domestic use, the peak hour flow is used to determine the residual pressures at all nodes. For fire protection, the required fire flow (500 gpm) is used to determine the residual pressure at each hydrant. Per the WSS, the residual pressure for the peak hour analysis is 40 psi and for the fire flow analysis, 20 psi.

3.3.2 Hydraulic Analysis

The existing water system was modeled using WaterCAD to determine residual pressures for domestic and fire protection uses. The results of the model indicate that the existing water system is adequate to support the proposed subdivision. The highest and lowest residual pressures for the peak hour and fire flow analyses are shown below.

Table 3-2: Peak Hour Analysis

Node	Residual Pressure (psi)
Lot 17D	80
Lot 104D-1B	150

Table 3-3: Fire Flow Analysis

Node	Residual Pressure (psi)
H-26	126
H-65	152

Since the residual pressures at the mains are generally high, there are no areas in the subdivision that have elevation restrictions for water use. However, to control high pressure, pressure reducing valves should be considered for lots with pressures greater than 125 psi. Details of the criteria used, assumptions, demands, and calculation results can be found in Appendix B.

3.3.3 Conclusion

The hydraulic analysis results indicate that there is ample residual pressure available in the existing water system to support the proposed subdivisions at Lots 17 and 104D. No improvements to the existing water system are recommended. Water laterals will need to be extended along the flag stems to provide service to the interior lots. On Puu Kapele Ave., a new water lateral will need to be extended along the flag stem to service the rear lot.

Field topographic survey data confirmed that existing fire hydrants front the project site along Puu Kapele Avenue, Farrington Avenue, and Moomomi Avenue.

3.4 Non-Potable Irrigation System

An analysis of the existing irrigation mains providing service to Lots 17 and 104D was conducted to determine the adequacy of the existing MIS system.

3.4.1 Irrigation Demands

Proposed irrigation demands were determined by comparing the demand from the Department of Water Suppy's Water System Standards (WSS) and actual MIS usage. The WSS water demand for agricultural lot is 5000 gallons per acre. The monthly MIS usage per acre for the highest month is 29,024 gallons per acre or 936 gallons per acre per day. Since the WSS demand is more conservative, 5000 gallons per acre will be used for this study. The area for each proposed lot was used to calculate its demand.

3.4.2 Hydraulic Analysis

To confirm the adequacy of the existing irrigation lines, a hydraulic model of the existing system and new pipes was prepared using WaterCAD to verify the existing pipe sizes, size new pipes, and determine residual pressures available at each lot.

Since the water surface elevation in the Kualapuu reservoir has varied by approximately 20 feet over the past 5 years, three starting water surface elevations were used in the model: 1-ft, 10-ft, and 38 ft. The average irrigation demand for each lot is 5000 gal/acre per 8-hour day. The minimum residual pressure at each lot is 30 psi, regardless of the water level in the reservoir. Using these parameters, the highest and lowest pressures onsite are shown in the table below.

Table 3-4: Irrigation Pressures

Node	Residual Pressure (psi)		
	1-ft	10-ft	38-ft
Lot 104	157	161	173
Lot 17	187	191	203

A new 8-inch irrigation line is proposed to service Lot 17 from Farrington Ave. (See Figure 10). No improvements to the existing MIS are recommended. The hydraulic model results indicate that residual pressures, even at the lowest reservoir level, will provide ample residual pressure to support the proposed subdivision. The high pressures are primarily due to the difference in elevation from the reservoir to the subdivision. The pressure at each lot may be too high for proposed irrigation systems and pressure reducing valves may be needed. The irrigation

system model does not include existing system demands or pressure reductions, such as at a breaker tank or pressure reducing valve. The hydraulic model results should be compared to actual flow data obtained in the field to confirm these results. Details of the criteria used, assumptions, demands, and calculation results can be found in Appendix C.

3.4.3 Conclusion

The existing MIS and new 8-inch irrigation line will be adequate to provide irrigation to the proposed lots. On Farrington Ave. the existing 8-inch main will be extended to Lot 17. Irrigation laterals will need to be extended along the flag stems to provide service to the interior lots. On Puu Kapele Ave., new irrigation laterals will be provided for each lot from the proposed 8-inch main.

Coordination with DOA is required to obtain irrigation service and meters. The irrigation system model only represents a portion of the existing MIS and does not include the impacts of existing demands on the irrigation network, which may affect pressures at common nodes where the existing lines/flows are split. If more detailed analysis is required, demand data and field flow tests are required.

3.5 Electrical Power

3.5.1 Proposed Electrical Power

Lot 104D is located at the end of a single phase medium voltage circuit run along Puu Kapele Ave (from the west). Lot 104D is comprised of four parcels. To service each individual parcel, a new buck pole is to be installed along the existing overhead line across the access driveway to the lot (See Figure 12). A new 450 foot primary line extension will incorporate two new poles spaced approximately 225 feet apart from the new buck pole. Estimated cost to service Lot 104D is $120,000.

Lot 17 is located approximately 3000-3250 feet west of the last existing HECO power poles. Lot 17 is comprised of 8 parcels and will be serviced from both Farrington Avenue and Moomomi Avenue. To extend overheat primary power to the lot, an estimated 13 poles will be installed along Farrington Avenue and an estimated 11 poles will be installed along Moomomi Avenue (See Figure 12). Spacing between poles is estimated at 275 feet. To service the 8 parcels, they will be split into (2) four parcel groups. Overhead lines will be bucked off the last proposed poles

on Farrington and Moomomi Avenues and extend two poles along the access driveways. These poles are spaced approximately 200 feet apart. An additional pole is to be installed across the access driveway at the first pole to service on of the lots. Estimated cost to service Lot 17 is $1,160,000.

3.6 Cost Estimate

The proposed infrastructure improvements to develop the Hoolehua Scattered Lots are estimated to cost $7.7 million. The cost breakdown in shown in the table below.

Item	Cost
Site Preparation	$1,200,000
Roads	$2,000,000
Drainage	$830,000
Water	$810,000
Irrigation	$340,000
Electrical	$1,280,000
Subtotal	$6,460,000
Contingency (20%)	$1,300,000
Total	$7,760,000

The highest cost is for the roads to access the proposed lots. The drainage system cost could be reduced if a smaller culvert is used at Farrington Ave.

DHHL's construction budget may not be able to fund construction of all the proposed improvements. Therefore, construction of the improvements may need to be phased based on availability of funds.

3. REFERENCES

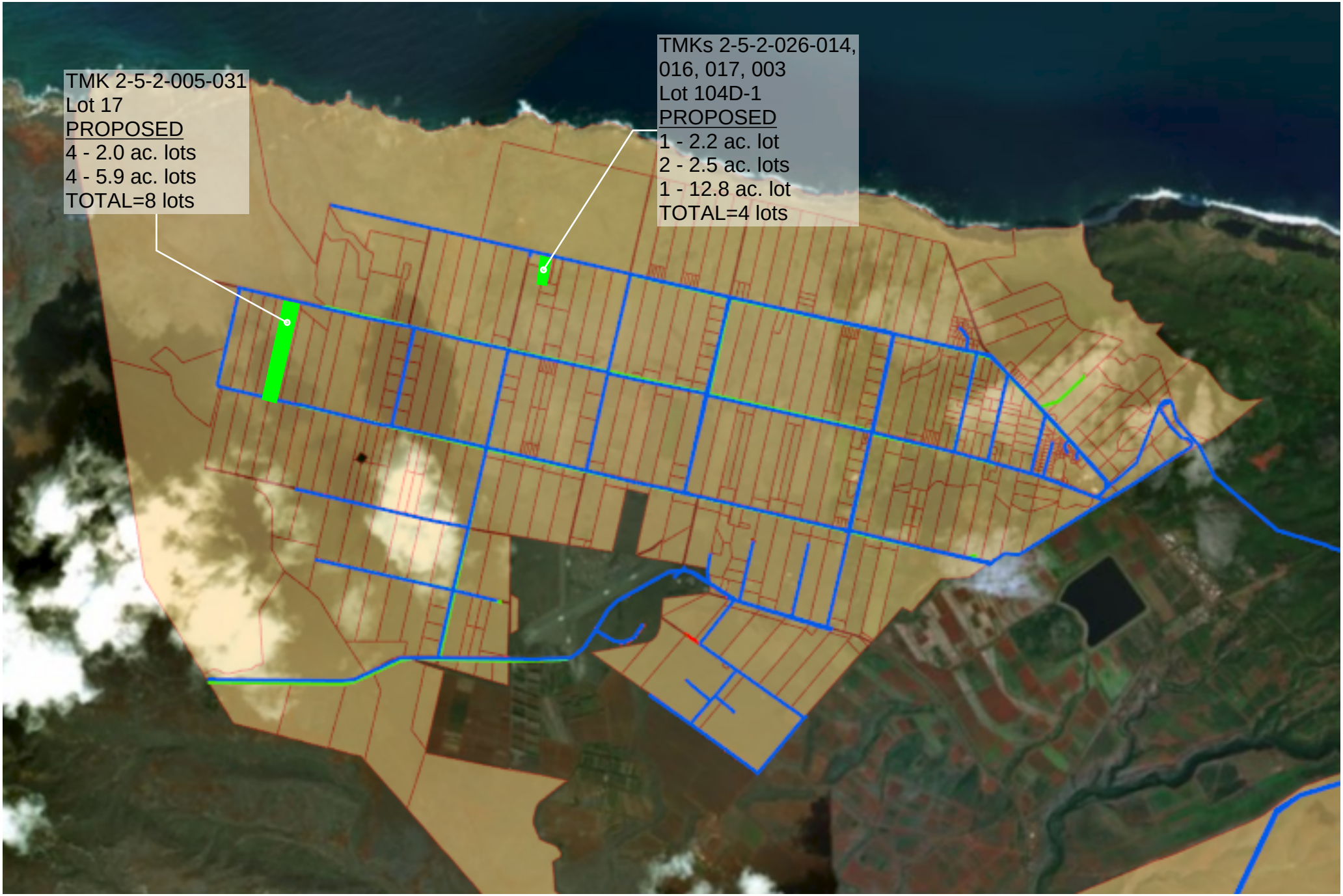
1. *Water System Standards*, 2002, Department of Water Supply – County of Maui.

2. *Custom Soil Resource Report for Island of Oahu, Hawaii,* United States Department of Agriculture, Natural Resources Conservation Service, March 2018.

3. *Wastewater System Design Standards,* Department of Environmental Services, City and County of Honolulu, July 2017.

4. *Repeal of Rules Relating to Soil Erosion Standards and Guidelines an 1.5 Section II of the Rules Relating to Storm Drainage Standards; and Adoption of Rules Relating to Water Quality*, Department of Planning and Permitting City and County of Honolulu, August 2017.

5. *Storm Drainage Standards*, Department of Planning and Permitting City and County of Honolulu, August 2017.



HO'OLEHUA VACANT LOTS

FIGURE 1

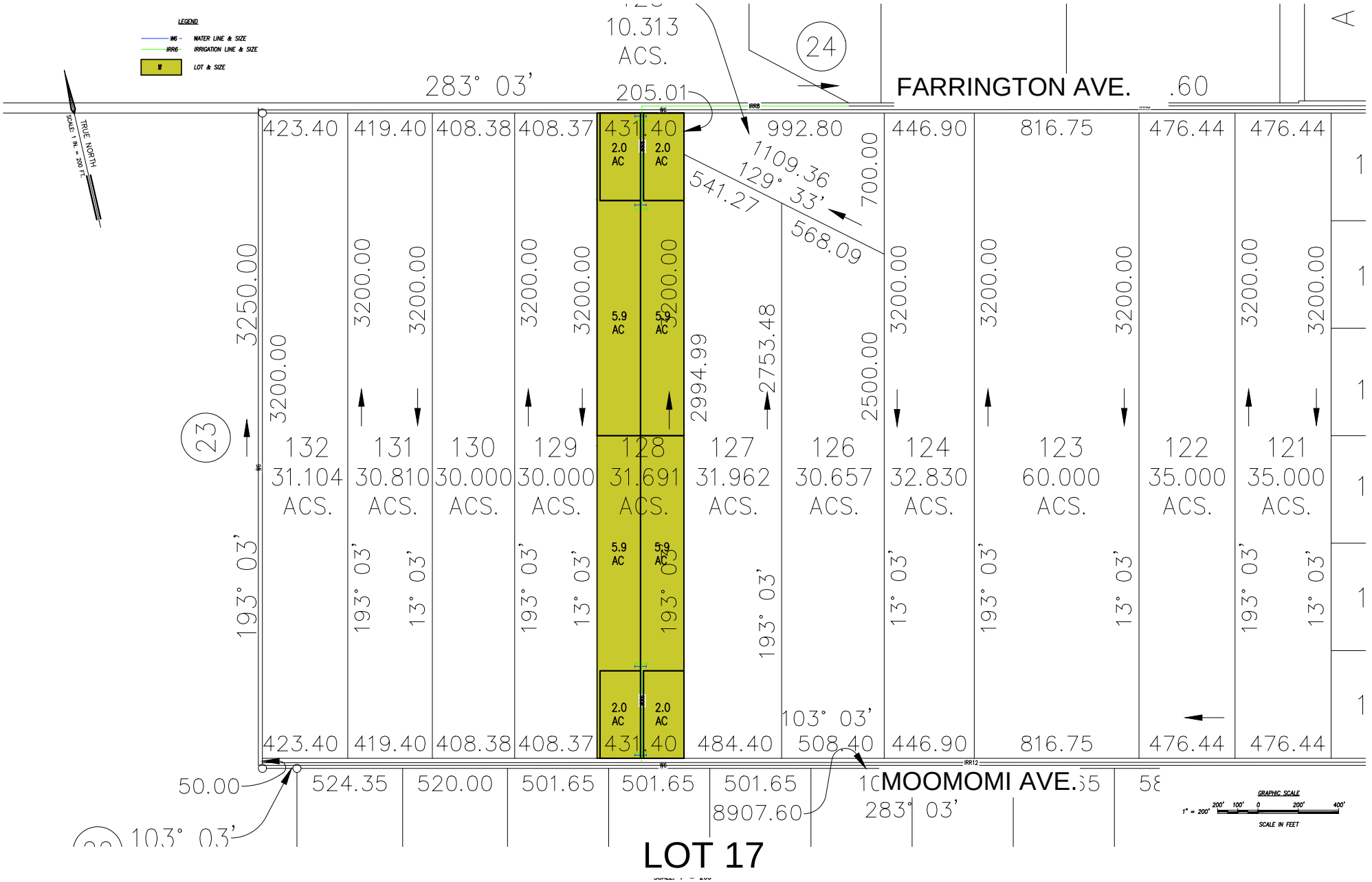
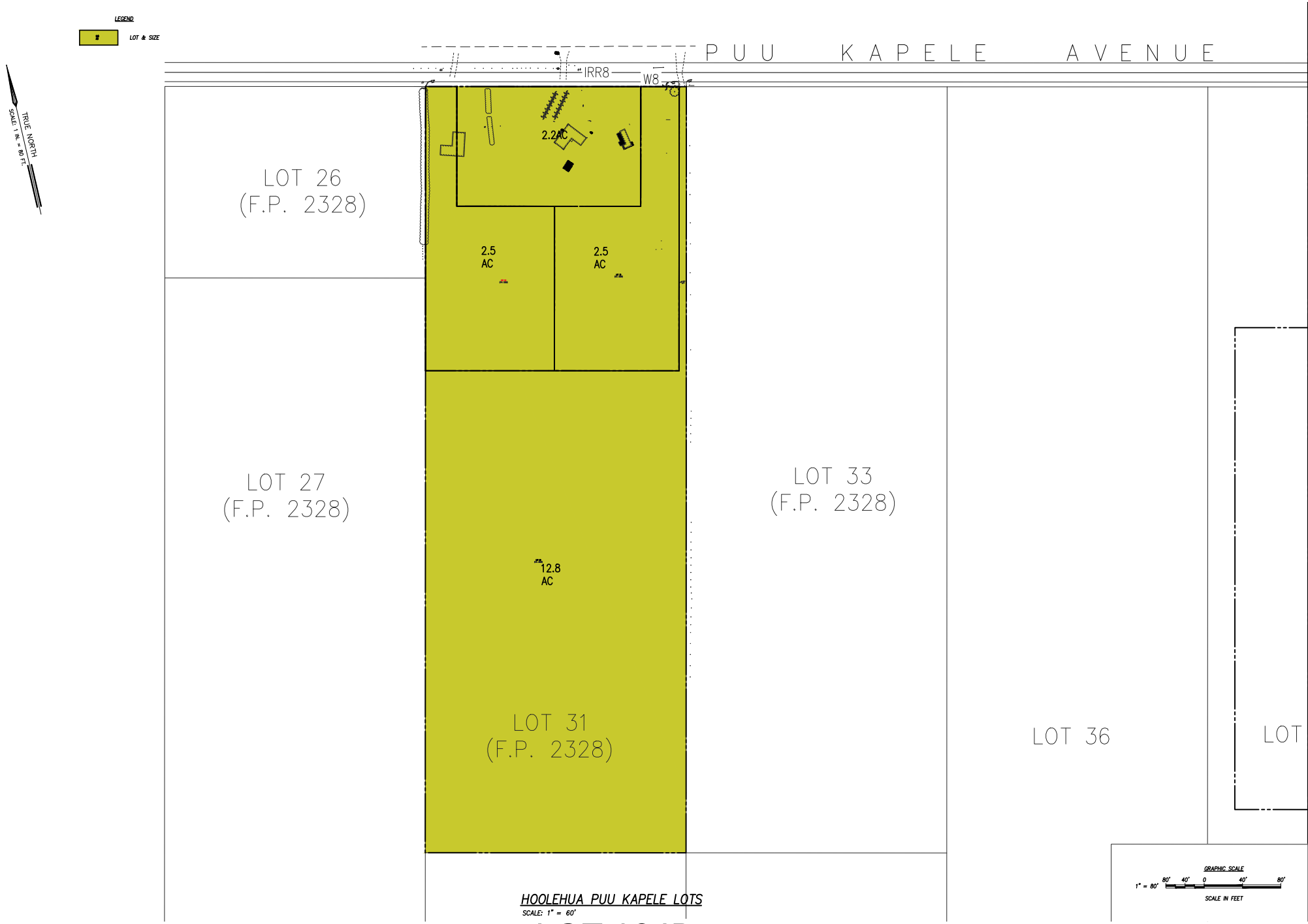

LEGEND
W6 - WATER LINE & SIZE
IRR6 - IRRIGATION LINE & SIZE
LOT & SIZE
TRUE NORTH
SCALE: 1 IN. = 200 FT.
10.313 ACS.
24
283° 03'
205.01
FARRINGTON AVE.
.60
423.40
419.40
408.38
408.37
431.40
992.80
446.90
816.75
476.44
476.44
1109.36
129° 33'
541.27
568.09
700.00
3250.00
3200.00
2994.99
2753.48
2500.00
2.0 AC
5.9 AC
23
132
31.104 ACS.
131
30.810 ACS.
130
30.000 ACS.
129
30.000 ACS.
128
31.691 ACS.
127
31.962 ACS.
126
30.657 ACS.
124
32.830 ACS.
123
60.000 ACS.
122
35.000 ACS.
121
35.000 ACS.
193° 03'
13° 03'
103° 03'
484.40
508.40
50.00
524.35
520.00
501.65
501.65
501.65
8907.60
MOOMOMI AVE.
GRAPHIC SCALE
1" = 200'
SCALE IN FEET
LOT 17

FIGURE 2



LOT 104D

FIGURE 3

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

TRUE NORTH
1" = 500'

200

400

400

PUU KAPELE AVE.

EXISTING UNPAVED ROADWAY

2722.5'
(NEW PAVED ROADWAY)

EXISTING PAVED ROADWAY

PUU KAPELE AVE.

LOT 104D

4 LOTS

ANAKAHI AVE.

HAUAKEA AVE.

NENEHANAUPO AVE.

EXISTING UNPAVED ROADWAY

3443.86'
(NEW PAVED ROADWAY)

EXISTING PAVED ROADWAY

FARRINGTON AVE.

FARRINGTON AVE.

PROPOSED FARRINGTON AVE.
CULVERT CROSSING
11'x8' BOX CULVERT (2-BARREL)

LOT 17

8 LOTS

HAUAKEA AVE.

NENEHANAUPO AVE.

MOOMOMI AVE.

MOOMOMI AVE.

EXISTING UNPAVED ROADWAY

3629.15'
(NEW PAVED ROADWAY)

EXISTING PAVED ROADWAY

OVERALL ROAD LAYOUT PLAN

SCALE: 1" = 500'

GRAPHIC SCALE:
500' 250' 0 500' 1000'
1" = 500'
SCALES IN FEET

REVISION | DATE | BRIEF | BY | APPROVED

APPROVED BY

ENGINEER

DRAFTSMAN

CHECKED BY

SCALE AS SHOWN

DATE

DPP FILE NO.

OVERALL
ROAD LAYOUT PLAN

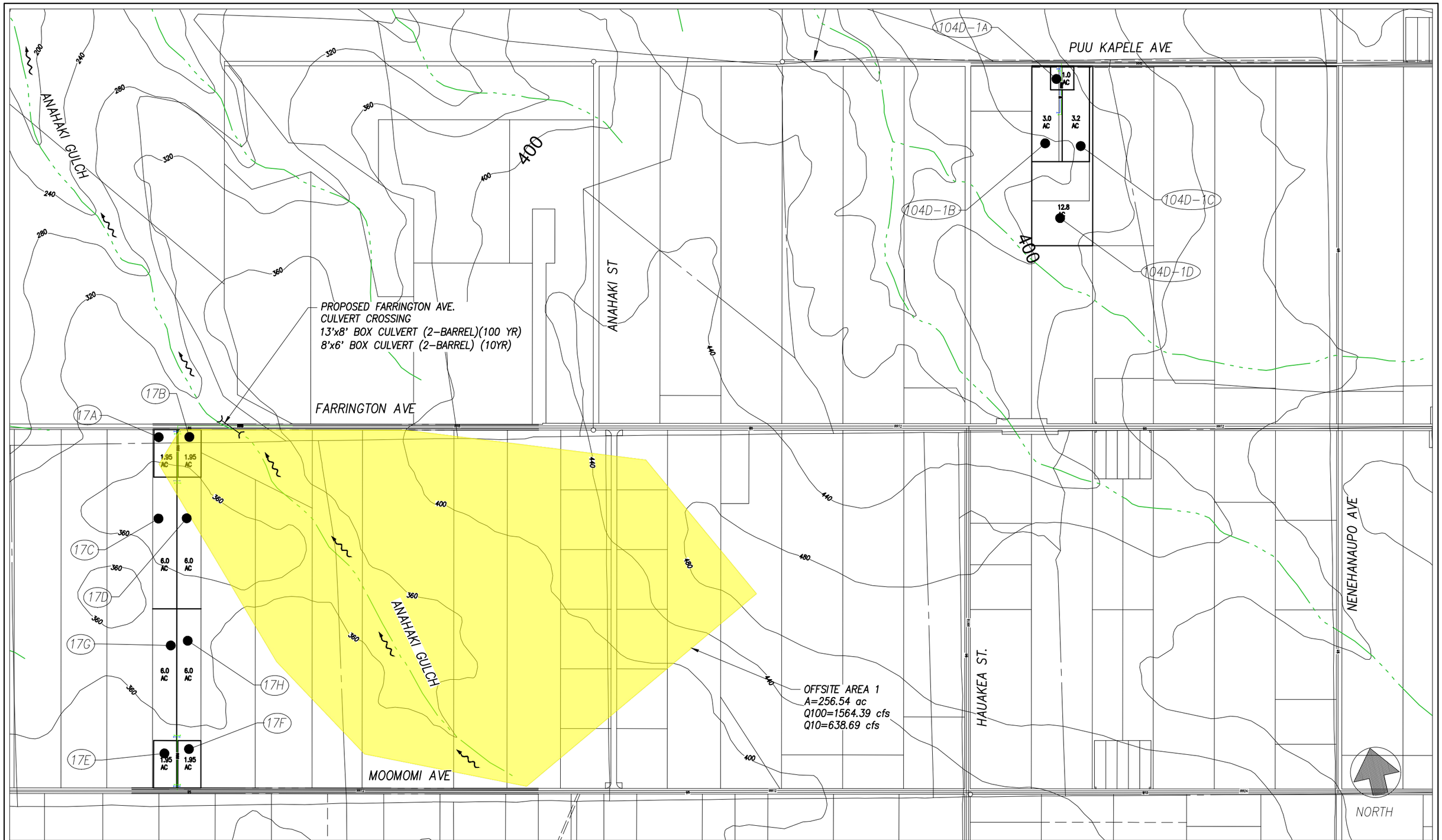
RMTC JOB NO.: 1-23452-0E

K:\civil\23375 Hoolehua Naiwa\PER\Hoolehua\04 Roads\CAD files\C100_Overall Road Layout Plan.dwg October 26, 2023

C100 SHEET OF SHEETS

FILE	POCKET	FOLDER	NO.

FIGURE 4



Planning – Engineering – Environmental Services – Photogrammetry – Surveying – Construction Management

R. M. TOWILL CORPORATION

808 842 1133 2024 North King Street, Suite 200 Honolulu Hawaii 96819-3494

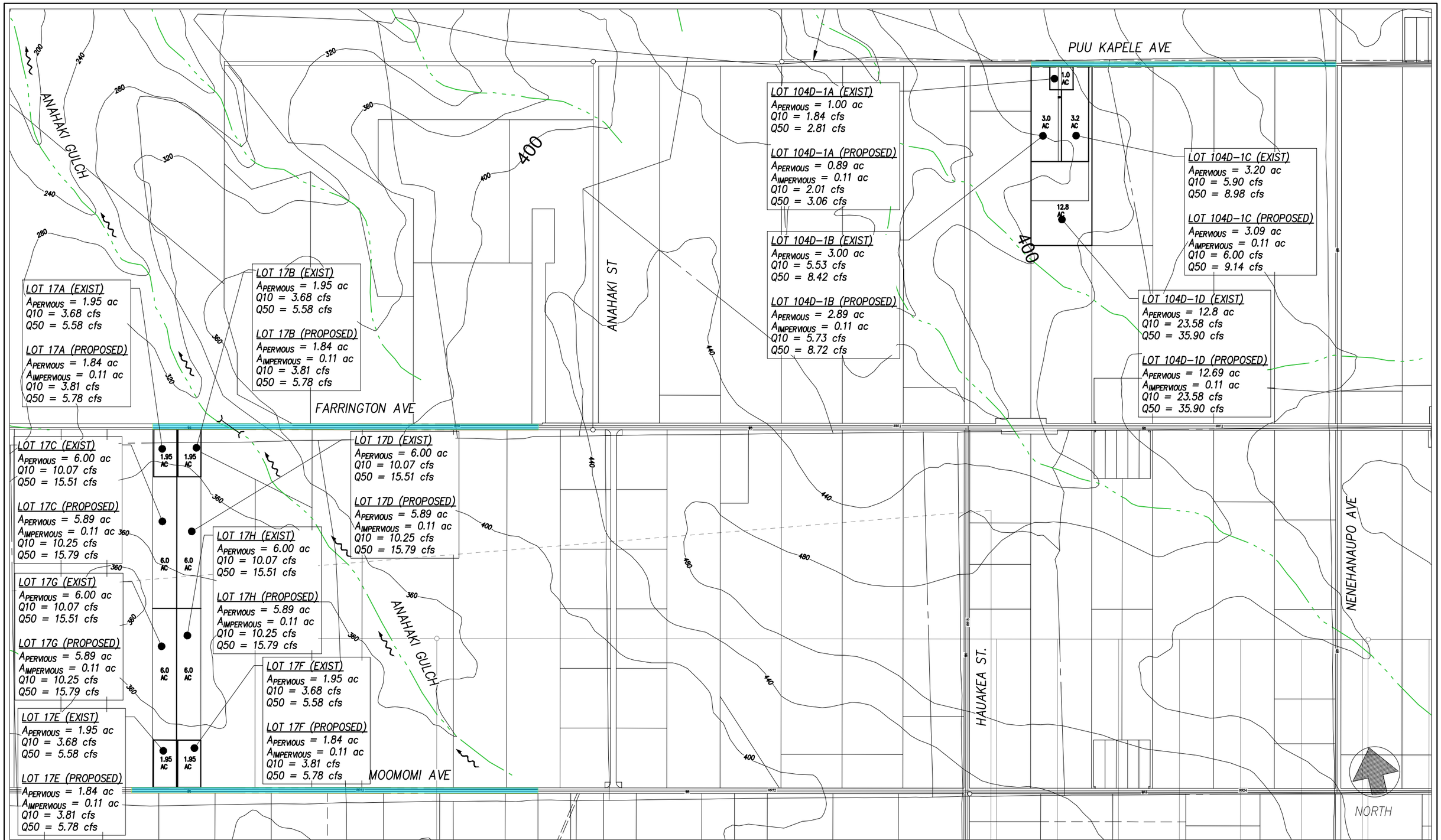
800' 400' 0 800' 1600'

1" = 800'

HOOLEHUA

DRAINAGE RUNOFF PLAN

FIGURE 5



Planning – Engineering – Environmental Services – Photogrammetry – Surveying – Construction Management

R. M. TOWILL CORPORATION

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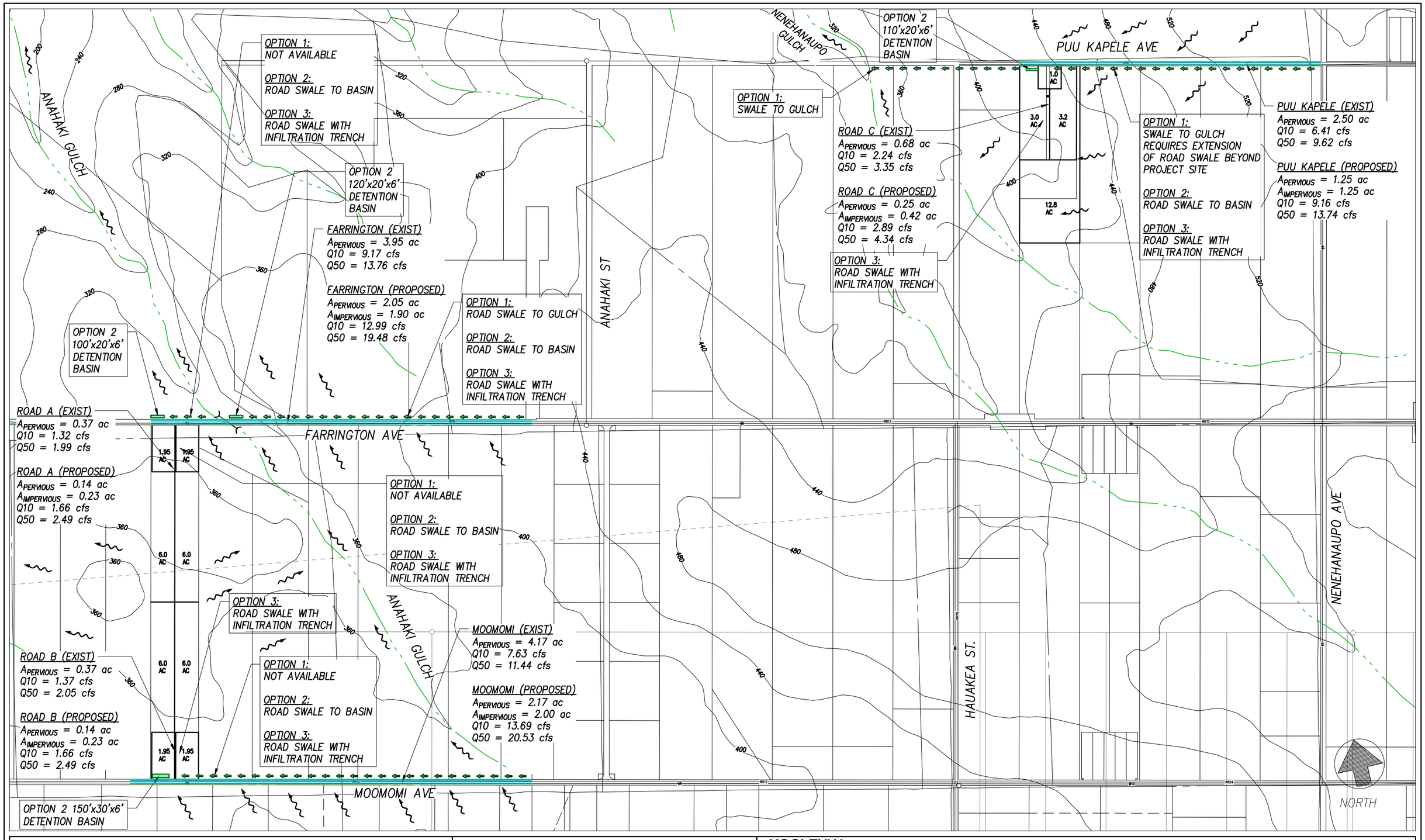
800' 400' 0 800' 1600'

1" = 800'

HOOLEHUA

DRAINAGE AREA MAP (LOTS)

FIGURE 6



Planning – Engineering – Environmental Services – Photogrammetry – Surveying – Construction Management

R. M. TOWILL CORPORATION

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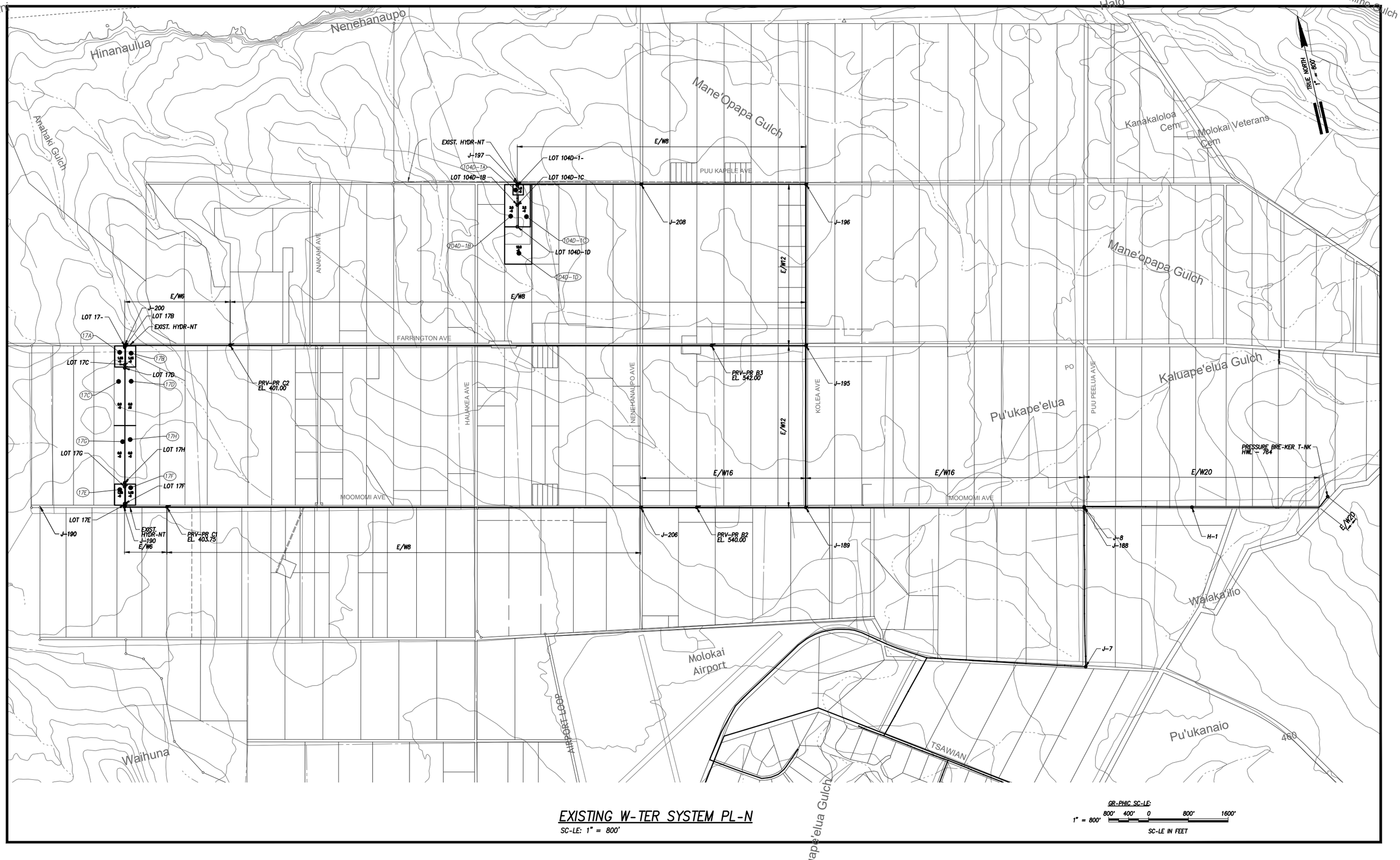
800' 400' 0 800' 1600'

1" = 800'

HOOLEHUA

DRAINAGE AREA MAP (ROADWAYS)

FIGURE 7

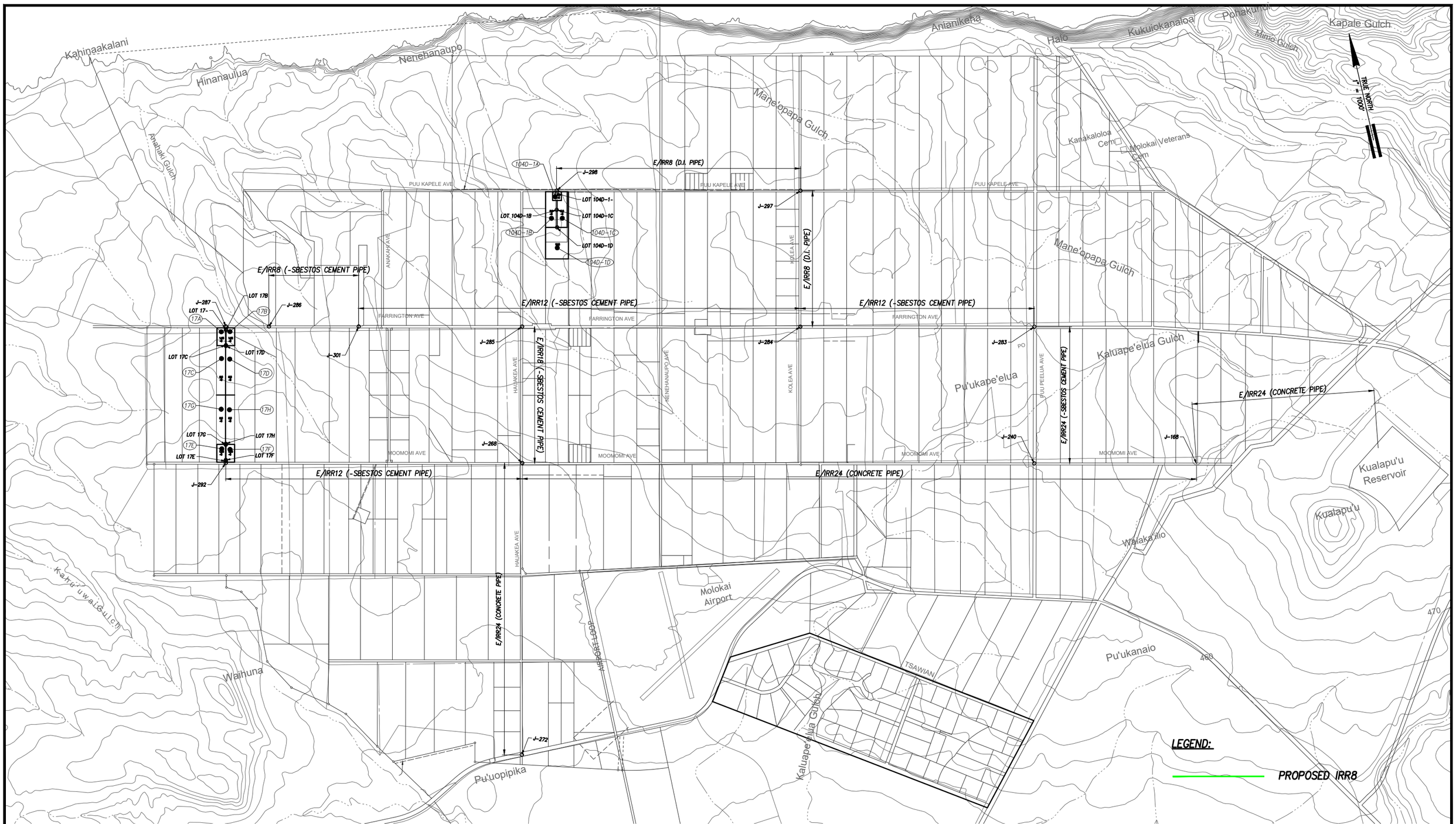


EXISTING W-TER SYSTEM PL-N

SC-LE: 1" = 800'

GR-PHIC SC-LE:
800' 400' 0 800' 1600'
1" = 800'
SC-LE IN FEET

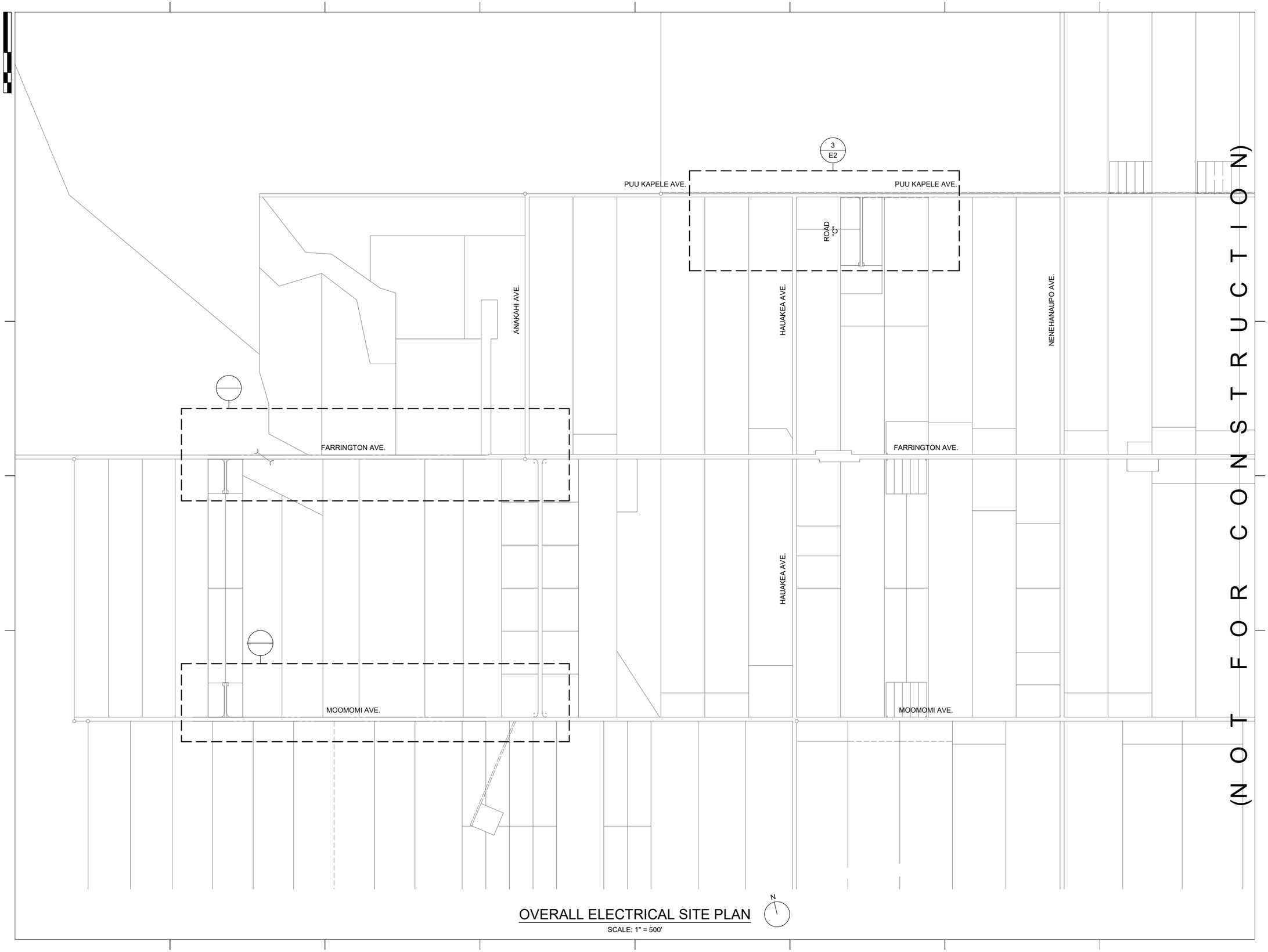
FIGURE 8



IRRIGATION SYSTEM PLAN

SCALE: 1" = 1000'

FIGURE 9



OVERALL ELECTRICAL SITE PLAN

SCALE: 1" = 500'

MORIKAWA & ASSOCIATES LLC
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Fax: (808) 572-6323

Licensed in:
Alaska - Hawaii - Idaho-
Nevada - Oregon - Washington -
California - Michigan - Arizona - Guam
Wyoming

This work was prepared by me or under my supervision and construction of this project will be under my observation.

JOB NO.	DATE:
19-147	2021-12-17

DRAWN BY:	DESIGNED BY:
J.E.	D.S.

TMK: (2) #-##-##

HOOLEHUA SITE IMPROVEMENTS

ELECTRICAL PLANS FOR:

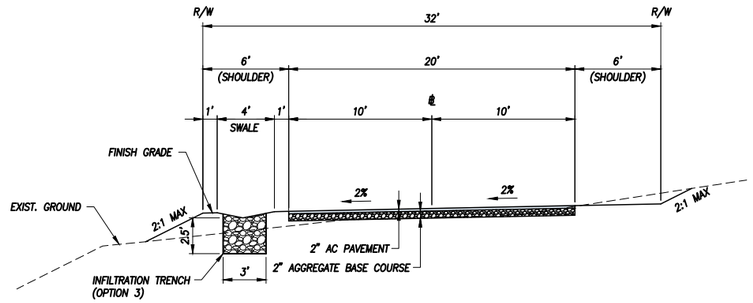
MAUI, HAWAII

REVISIONS:

SHEET NO.

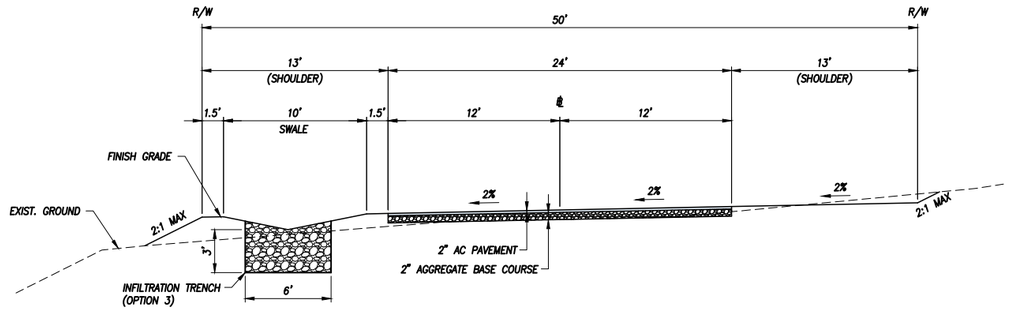
E1

FIGURE 10



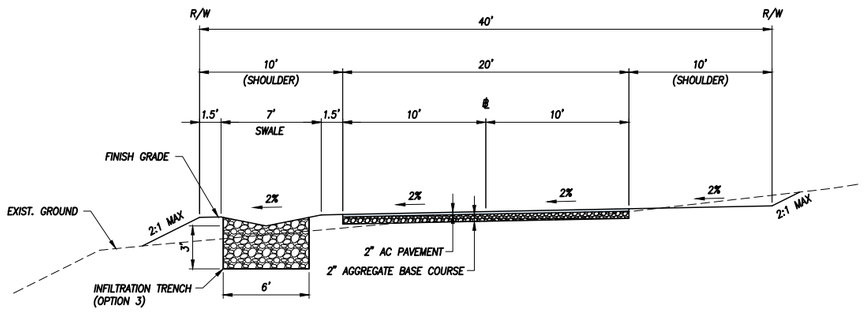
TYPICAL SECTION – ROAD "A", "B", "C"

SCALE: 1" = 5'



TYPICAL SECTION – "FARRINGTON" AVENUE AND "MOOMOMI" AVENUE

SCALE: 1" = 5'



TYPICAL SECTION – "PUU KAPELE" AVENUE

SCALE: 1" = 5'

GRAPHIC SCALE:
1" = 5'
5' 0 5' 10'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

APPROVED BY

ENGINEER

DRAFTSMAN

CHECKED BY

SCALE AS SHOWN

DATE

DPP FILE NO.

TYPICAL SECTIONS

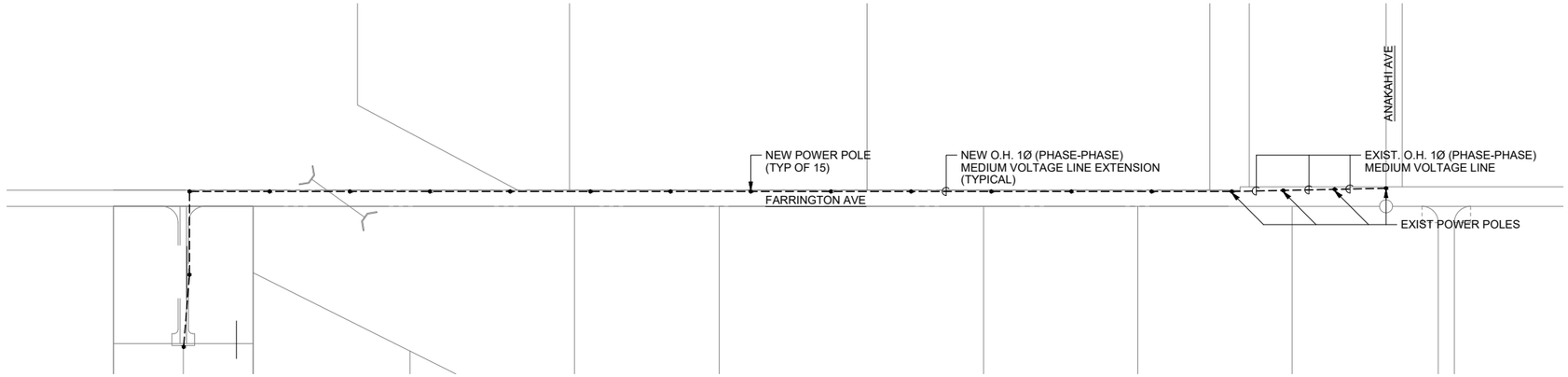
C121 SHEET OF SHEETS

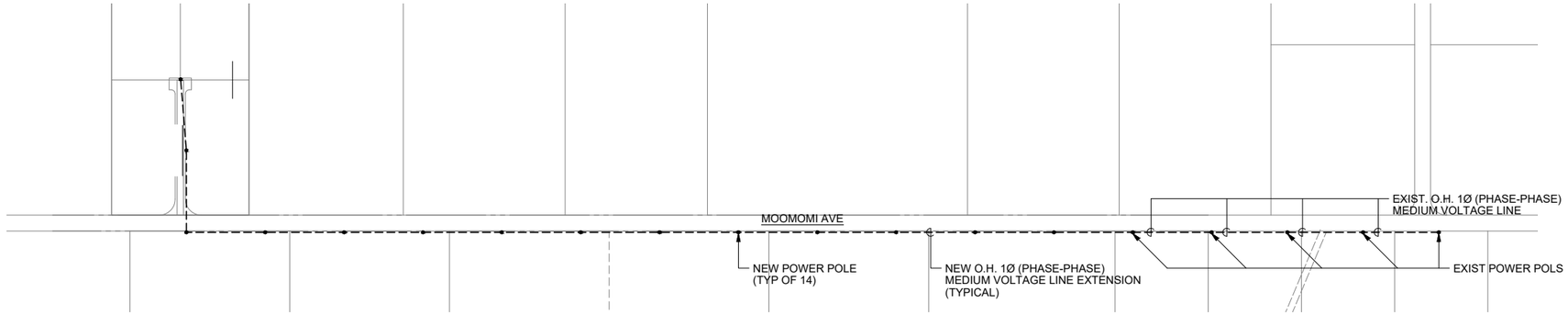
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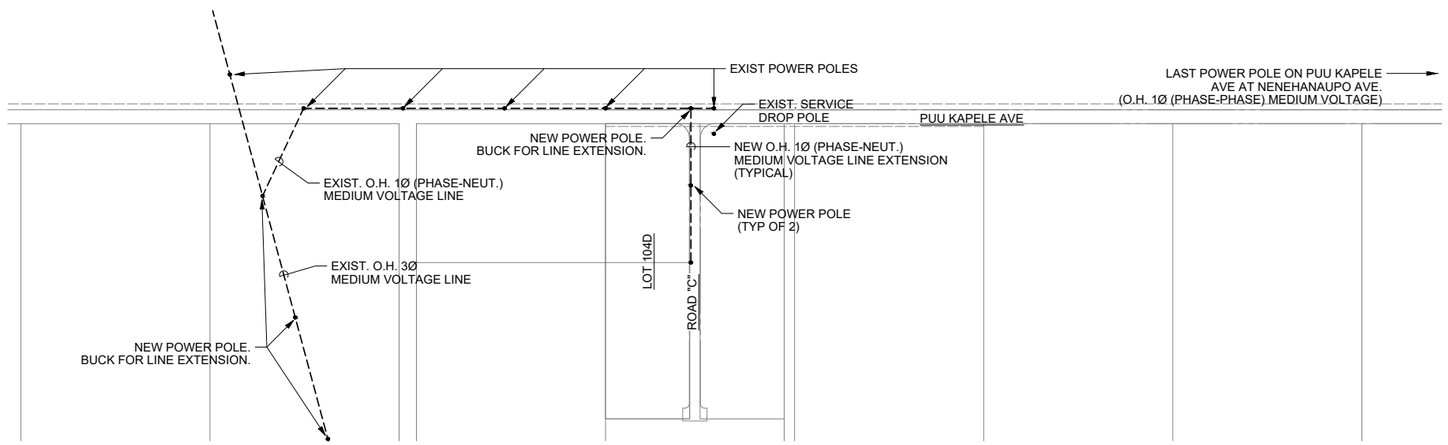
RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C121 Typical Road Sections.dwg December 21, 2021

FIGURE 11







(NOT FOR CONSTRUCTION)

MORIKAWA & ASSOCIATES LLC
Electrical Engineering Services
431 Auli Drive
P.O. Box 880280
Pukalani, Hawaii 96788
Tel: (808) 572-1745
Fax: (808) 572-6323

Licensed in:
Alaska - Hawaii - Idaho-
Nevada - Oregon - Washington -
California - Michigan - Arizona - Guam
Wyoming

This work was prepared by me or under my supervision and construction of this project will be under my observation.

JOB NO.	DATE:
19-147	2021-12-17

DRAWN BY:	DESIGNED BY:
J.E.	D.S.

TMK: (2) #### ##

HOOLEHUA SITE IMPROVEMENTS

ELECTRICAL PLANS FOR:

MAUI, HAWAII

REVISIONS:

SHEET NO.

E2

FIGURE 12

APPENDIX A

Drainage Calculations

HOOLEHUA LOTS (EXISTING)

TABLE 1: PEAK RUNOFF CALCULATION (10 YR Q)

Drainage Basin	Drain Area	IMPERVIOUS C	IMPERVIOUS area (acres)	PERVIOUS C	PERVIOUS area (acres)	Tc (min)	Weighted C	10 YR I (in/hr)	Total area, A (acres)	Q=CIA (cfs)
	Lot 17A	0.95	0.00	0.55	1.95	23.0	0.55	3.43	1.95	3.68
	Lot 17B	0.95	0.00	0.55	1.95	23.0	0.55	3.43	1.95	3.68
	Lot 17C	0.95	0.00	0.55	6.00	30.0	0.55	3.05	6.00	10.07
	Lot 17D	0.95	0.00	0.55	6.00	30.0	0.55	3.05	6.00	10.07
	Lot 17E	0.95	0.00	0.55	1.95	23.0	0.55	3.43	1.95	3.68
	Lot 17F	0.95	0.00	0.55	1.95	23.0	0.55	3.43	1.95	3.68
	Lot 17G	0.95	0.00	0.55	6.00	30.0	0.55	3.05	6.00	10.07
	Lot 17H	0.95	0.00	0.55	6.00	30.0	0.55	3.05	6.00	10.07
	Lot 104D-1A	0.95	0.00	0.55	1.00	24.5	0.55	3.35	1.00	1.84
	Lot 104D-1B	0.95	0.00	0.55	3.00	24.5	0.55	3.35	3.00	5.53
	Lot 104D-1C	0.95	0.00	0.55	3.20	24.5	0.55	3.35	3.20	5.90
	Lot 104D-1D	0.95	0.00	0.55	12.80	24.5	0.55	3.35	12.80	23.58
									51.80	**91.82**

TABLE 2: PEAK RUNOFF CALCULATION (50 YR Q)

Drainage Basin	Drain Area	IMPERVIOUS C	IMPERVIOUS area (acres)	PERVIOUS C	PERVIOUS area (acres)	Tc (min)	Weighted C	50 YR I (in/hr)	Total area, A (acres)	Q=CIA (cfs)
	Lot 17A	0.95	0.00	0.55	1.95	23.0	0.55	5.2	1.95	5.58
	Lot 17B	0.95	0.00	0.55	1.95	23.0	0.55	5.2	1.95	5.58
	Lot 17C	0.95	0.00	0.55	6.00	30.0	0.55	4.7	6.00	15.51
	Lot 17D	0.95	0.00	0.55	6.00	30.0	0.55	4.7	6.00	15.51
	Lot 17E	0.95	0.00	0.55	1.95	23.0	0.55	5.2	1.95	5.58
	Lot 17F	0.95	0.00	0.55	1.95	23.0	0.55	5.2	1.95	5.58
	Lot 17G	0.95	0.00	0.55	6.00	30.0	0.55	4.7	6.00	15.51
	Lot 17H	0.95	0.00	0.55	6.00	30.0	0.55	4.7	6.00	15.51
	Lot 104D-1A	0.95	0.00	0.55	1.00	24.5	0.55	5.1	1.00	2.81
	Lot 104D-1B	0.95	0.00	0.55	3.00	24.5	0.55	5.1	3.00	8.42
	Lot 104D-1C	0.95	0.00	0.55	3.20	24.5	0.55	5.1	3.20	8.98
	Lot 104D-1D	0.95	0.00	0.55	12.80	24.5	0.55	5.1	12.80	35.90
									51.80	**140.45**

HOOLEHUA LOTS (PROPOSED)

TABLE 1: PEAK RUNOFF CALCULATION (10 YR Q)

Drainage Basin	Drain Area	IMPERVIOUS C	IMPERVIOUS area (acres)	PERVIOUS C	PERVIOUS area (acres)	Tc (min)	Weighted C	10 YR I (in/hr)	Total area, A (acres)	Q=CIA (cfs)
	Lot 17A	0.95	0.11	0.55	1.84	23.0	0.57	3.43	1.95	3.81
	Lot 17B	0.95	0.11	0.55	1.84	23.0	0.57	3.43	1.95	3.81
	Lot 17C	0.95	0.11	0.55	5.89	30.0	0.56	3.05	6.00	10.25
	Lot 17D	0.95	0.11	0.55	5.89	30.0	0.56	3.05	6.00	10.25
	Lot 17E	0.95	0.11	0.55	1.84	23.0	0.57	3.43	1.95	3.81
	Lot 17F	0.95	0.11	0.55	1.84	23.0	0.57	3.43	1.95	3.81
	Lot 17G	0.95	0.11	0.55	5.89	30.0	0.56	3.05	6.00	10.25
	Lot 17H	0.95	0.11	0.55	5.89	30.0	0.56	3.05	6.00	10.25
	Lot 104D-1A	0.95	0.11	0.55	0.89	24.5	0.60	3.35	1.00	2.01
	Lot 104D-1B	0.95	0.11	0.55	2.89	24.5	0.57	3.35	3.00	5.73
	Lot 104D-1C	0.95	0.11	0.55	3.09	24.5	0.56	3.35	3.20	6.00
	Lot 104D-1D	0.95	0.11	0.55	12.69	24.5	0.55	3.35	12.80	23.58
									51.80	**93.57**

TABLE 2: PEAK RUNOFF CALCULATION (50 YR Q)

Drainage Basin	Drain Area	IMPERVIOUS C	IMPERVIOUS area (acres)	PERVIOUS C	PERVIOUS area (acres)	Tc (min)	Weighted C	50 YR I (in/hr)	Total area, A (acres)	Q=CIA (cfs)
	Lot 17A	0.95	0.11	0.55	1.84	23.0	0.57	5.2	1.95	5.78
	Lot 17B	0.95	0.11	0.55	1.84	23.0	0.57	5.2	1.95	5.78
	Lot 17C	0.95	0.11	0.55	5.89	30.0	0.56	4.7	6.00	15.79
	Lot 17D	0.95	0.11	0.55	5.89	30.0	0.56	4.7	6.00	15.79
	Lot 17E	0.95	0.11	0.55	1.84	23.0	0.57	5.2	1.95	5.78
	Lot 17F	0.95	0.11	0.55	1.84	23.0	0.57	5.2	1.95	5.78
	Lot 17G	0.95	0.11	0.55	5.89	30.0	0.56	4.7	6.00	15.79
	Lot 17H	0.95	0.11	0.55	5.89	30.0	0.56	4.7	6.00	15.79
	Lot 104D-1A	0.95	0.11	0.55	0.89	24.5	0.60	5.1	1.00	3.06
	Lot 104D-1B	0.95	0.11	0.55	2.89	25.5	0.57	5.1	3.00	8.72
	Lot 104D-1C	0.95	0.11	0.55	3.09	24.5	0.56	5.1	3.20	9.14
	Lot 104D-1D	0.95	0.11	0.55	12.69	24.5	0.55	5.1	12.80	35.90
									51.80	**143.11**

LOTS RUNOFF VOLUME

		PROPOSED		EXISTING		DIFFERENCE	PROPOSED		EXISTING		DIFFERENCE
DRAINAGE BASIN	AREA	Q10 HYD VOL (ACFT)	Q10 HYD VOL (CF)	Q10 HYD VOL (ACFT)	Q10 HYD VOL (CF)		Q50 HYD VOL	Q50 HYD VOL (CF)	Q50 HYD VOL (ACFT)	Q50 HYD VOL (CF)	
	Lot 17A	0.182	7,923.00	0.175	7,616.00	(307.00)	0.272	11,856.00	0.262	11,397.00	(459.00)
	Lot 17B	0.182	7,923.00	0.175	7,616.00	(307.00)	0.272	11,856.00	0.262	11,397.00	(459.00)
	Lot 17C	0.469	20,442.00	0.461	20,077.00	(365.00)	0.703	30,603.00	0.690	30,056.00	(547.00)
	Lot 17D	0.469	20,442.00	0.461	20,077.00	(365.00)	0.703	30,603.00	0.690	30,056.00	(547.00)
	Lot 17E	0.182	7,923.00	0.175	7,616.00	(307.00)	0.272	11,856.00	0.262	11,397.00	(459.00)
	Lot 17F	0.182	7,923.00	0.175	7,616.00	(307.00)	0.272	11,856.00	0.262	11,397.00	(459.00)
	Lot 17G	0.469	20,442.00	0.461	20,077.00	(365.00)	0.703	30,603.00	0.690	30,056.00	(547.00)
	Lot 17H	0.469	20,442.00	0.461	20,077.00	(365.00)	0.703	30,603.00	0.690	30,056.00	(547.00)
	Lot 104D-1A	0.090	3,936.00	0.087	3,798.00	(138.00)	0.135	5,891.00	0.130	5,684.00	(207.00)
	Lot 104D-1B	0.271	11,809.00	0.262	11,394.00	(415.00)	0.406	17,672.00	0.391	17,052.00	(620.00)
	Lot 104D-1C	0.289	12,596.00	0.279	12,154.00	(442.00)	0.433	18,850.00	0.418	18,189.00	(661.00)
	Lot 104D-1D	0.289	12,596.00	0.279	12,154.00	(442.00)	0.433	18,850.00	0.418	18,189.00	(661.00)
						-	TOTAL VOL	231,099.00		224,926.00	(6,173.00)

HOOLEHUA ROADWAYS (EXISTING)

TABLE 1: PEAK RUNOFF CALCULATION (10 YR Q)

Drainage Basin	Drain Area	Impervious C	Impervious area (acres)	Pervious C	Pervious Area (acres)	Tc (min)	Weighted C	10 YR I (in/hr)	F	Total area, A (acres)	Q=CIFA (cfs)
-	Farrington	0.95	0.00	0.55	3.95	15.9	0.55	2.22	1.9	3.95	9.71
-	Road A	0.95	0.00	0.55	0.37	3.9	0.55	2.22	2.9	0.37	1.32
-	Moomomi	0.95	0.00	0.55	4.17	28.0	0.55	2.22	1.5	4.17	7.63
-	Road B	0.95	0.00	0.55	0.37	3.1	0.55	2.22	3	0.37	1.37
-	Puu Kapele	0.95	0.00	0.55	2.50	11.8	0.55	2.22	2.1	2.50	6.41
-	Road C	0.95	0.00	0.55	0.68	4.7	0.55	2.22	2.7	0.68	2.24
-	-	-	-	-	-	-	-	-	**SUBTOTAL**	**12.04**	**28.14**

TABLE 2: PEAK RUNOFF CALCULATION (50 YR Q)

Drainage Basin	Drain Area	Impervious C	Impervious area (acres)	Pervious C	Pervious Area (acres)	Tc (min)	Weighted C	50 YR I (in/hr)	F	Total area, A (acres)	Q=CIFA (cfs)
-	Farrington	0.95	0.00	0.55	3.95	15.9	0.55	3.33	1.9	3.95	13.76
-	Road A	0.95	0.00	0.55	0.37	3.9	0.55	3.33	2.9	0.37	1.99
-	Moomomi	0.95	0.00	0.55	4.17	28.0	0.55	3.33	1.5	4.17	11.44
-	Road B	0.95	0.00	0.55	0.37	3.1	0.55	3.33	3	0.37	2.05
-	Puu Kapele	0.95	0.00	0.55	2.50	11.8	0.55	3.33	2.1	2.50	9.62
-	Road C	0.95	0.00	0.55	0.68	4.7	0.55	3.33	2.7	0.68	3.35
-	-	-	-	-	-	-	-	-	**SUBTOTAL**	**12.04**	**42.21**

HOOLEHUA ROADWAYS (PROPOSED)

TABLE 1: PEAK RUNOFF CALCULATION (10 YR Q)

Drainage Basin	Drain Area	IMPERVIOUS C	IMPERVIOUS area (acres)	PERVIOUS C	PERVIOUS area (acres)	Tc (min)	Weighted C	10 YR I (in/hr)	F	Total area, A (acres)	Q=CIFA (cfs)
	Farrington	0.95	1.90	0.55	2.06	14.0	0.74	2.22	2	3.95	12.99
	Road A	0.95	0.23	0.55	0.14	6.7	0.80	2.22	2.5	0.37	1.66
	Moomomi	0.95	2.00	0.55	2.17	14.0	0.74	2.22	2	4.17	13.69
	Road B	0.95	0.23	0.55	0.14	6.5	0.80	2.22	2.5	0.37	1.66
	Puu Kapele	0.95	1.25	0.55	1.25	10.0	0.75	2.22	2.2	2.50	9.16
	Road C	0.95	0.42	0.55	0.25	8.0	0.80	2.22	2.4	0.68	2.89
								SUBTOTAL		**12.04**	**42.04**

TABLE 2: PEAK RUNOFF CALCULATION (50 YR Q)

Drainage Basin	Drain Area	IMPERVIOUS C	IMPERVIOUS area (acres)	PERVIOUS C	PERVIOUS area (acres)	Tc (min)	Weighted C	50 YR I (in/hr)	F	Total area, A (acres)	Q=CIFA (cfs)
	Farrington	0.95	1.90	0.55	2.06	14.0	0.74	3.33	2	3.95	19.48
	Road A	0.95	0.23	0.55	0.14	6.7	0.80	3.33	2.5	0.37	2.49
	Moomomi	0.95	2.00	0.55	2.17	14.0	0.74	3.33	2	4.17	20.53
	Road B	0.95	0.23	0.55	0.14	6.5	0.80	3.33	2.5	0.37	2.49
	Puu Kapele	0.95	1.25	0.55	1.25	10.0	0.75	3.33	2.2	2.50	13.74
	Road C	0.95	0.42	0.55	0.25	8.0	0.80	3.33	2.4	0.68	4.34
								SUBTOTAL		**12.04**	**63.06**

ROADS RUNOFF VOLUME

		PROPOSED		EXISTING		PROPOSED		EXISTING		DIFFERENCE	Basin Volume (CF)	Basin Dimension (LxWxD) in ft
DRAINAGE BASIN	AREA	Q10 HYD VOL (ACFT)	Q10 HYD VOL (CF)	Q10 HYD VOL (ACFT)	Q10 HYD VOL (CF)	Q50 HYD VOL	Q50 HYD VOL (CF)	Q50 HYD VOL (ACFT)	Q50 HYD VOL (CF)			
	Farrington	0.618	26,920.08	0.427	18,600.12	0.925	40,293.00	0.639	27,834.84	**(12,458.16)**	14400	120X20X6
	Road A	0.084	3,659.04	0.070	3,049.20	0.126	5,488.56	0.104	4,530.24	**(958.32)**		
	Moomomi	0.651	28,357.56	0.334	14,549.04	0.974	42,427.44	0.501	21,823.56	**(20,603.88)**	27000	150X30X6
	Road B	0.089	3,876.84	0.075	3,267.00	0.133	5,793.48	0.113	4,922.28	**(871.20)**		
	Puu Kapele	0.461	20,081.16	0.311	13,547.16	0.690	30,056.40	0.466	20,298.96	**(9,757.44)**	13200	110X20X6
	Road C	0.145	6,316.20	0.120	5,227.20	0.217	9,452.52	0.179	7,797.24	**(1,655.28)**		
						TOTAL VOL	**133,511.40**		**87,207.12**	**(46,304.28)**		

Table 1

GUIDE FOR THE DETERMINATION OF RUNOFF COEFFICIENTS FOR BUILT-UP AREAS*

WATERSHED CHARACTERISTICS	EXTREME	HIGH	MODERATE	LOW
INFILTRATION	NEGLIGIBLE 0.20	SLOW 0.14	MEDIUM 0.07	HIGH 0.0
RELIEF	STEEP (> 25%) 0.08	HILLY (15-25%) 0.06	ROLLING (5-15%) 0.03	FLAT (0-5%) 0.0
VEGETAL COVER	NONE 0.07	POOR (< 10%) 0.05	GOOD (10-50%) 0.03	HIGH (50-90%) 0.0
DEVELOPMENT TYPE	INDUSTRIAL & BUSINESS 0.55	HOTEL-APARTMENT 0.45	RESIDENTIAL 0.40	AGRICULTURAL 0.15

NOTE: The design coefficient "c" must result from a total of the values for all four watershed characteristics of the site.

C=0.3

Table 2

RUNOFF COEFFICIENTS

Type of Drainage Area	Runoff Coefficient C
Business:	
Downtown areas	0.95
Neighborhood areas	0.70
Residential:	
Single-family areas	0.50
Multi-units, detached	0.60
Multi-units, attached	0.75
Suburban	0.40
Apartment dwelling areas	0.70
Industrial:	
Light areas	0.80
Heavy areas	0.90
Parks, cemeteries	0.25
Playgrounds	0.35
Railroad-yard areas	0.40
Unimproved areas	0.30
Streets:	
Asphaltic	0.95
Concrete	0.95
Brick	0.85
Drive and walks	0.85
Roofs	0.95
Lawns:	
Sandy, soil, flat, 2%	0.10
Sandy, soil, avg., 2-7%	0.15
Sandy, soil, steep, 7%	0.20
Heavy soil, flat, 2%	0.17
Heavy soil, avg., 2-7%	0.22
Heavy soil, steep, 7%	0.35

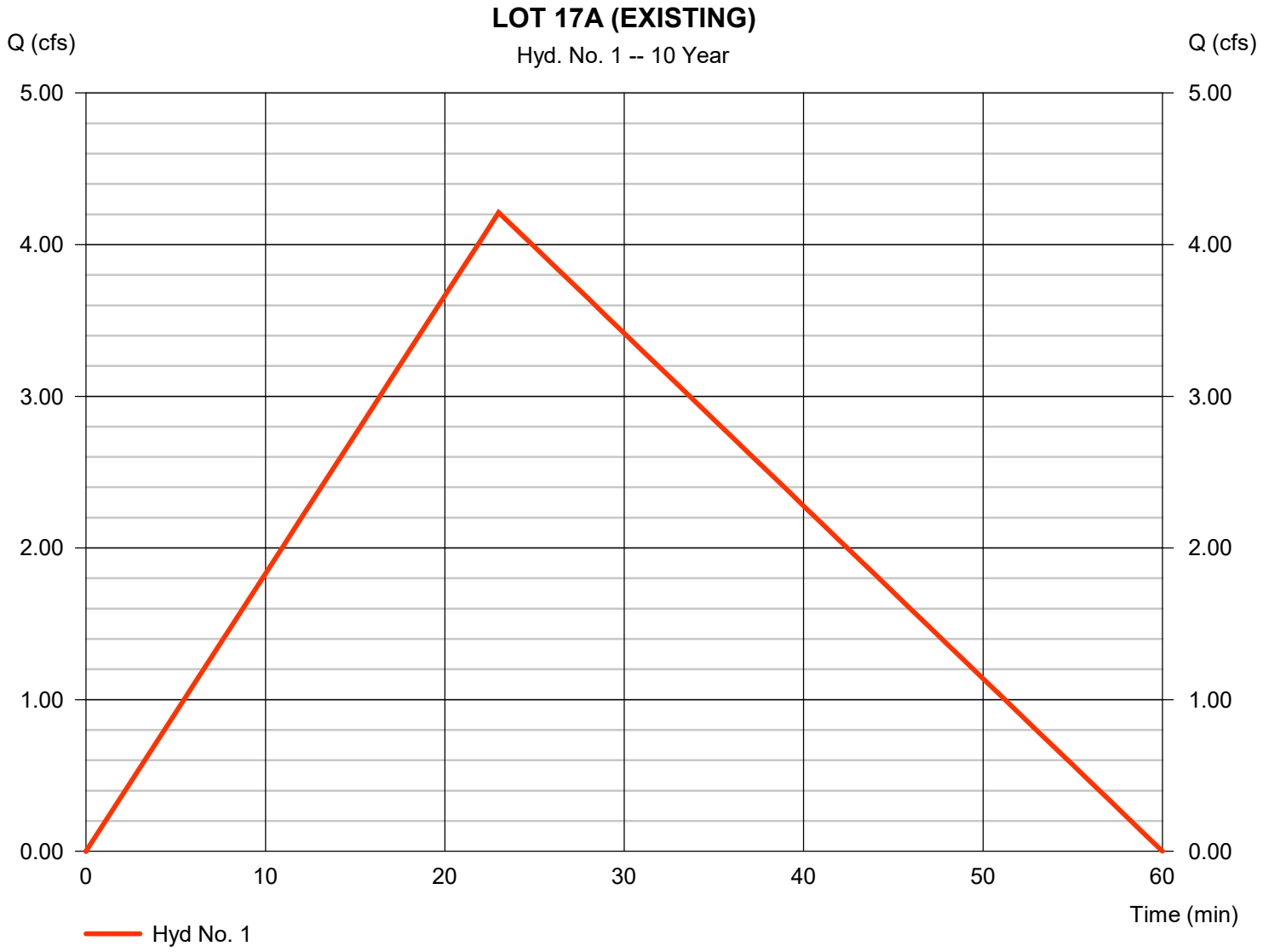
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Monday, 10 / 23 / 2023

Hyd. No. 1

LOT 17A (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 4.213 cfs
Storm frequency	= 10 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 7,616 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.55
Intensity	= 3.928 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.62

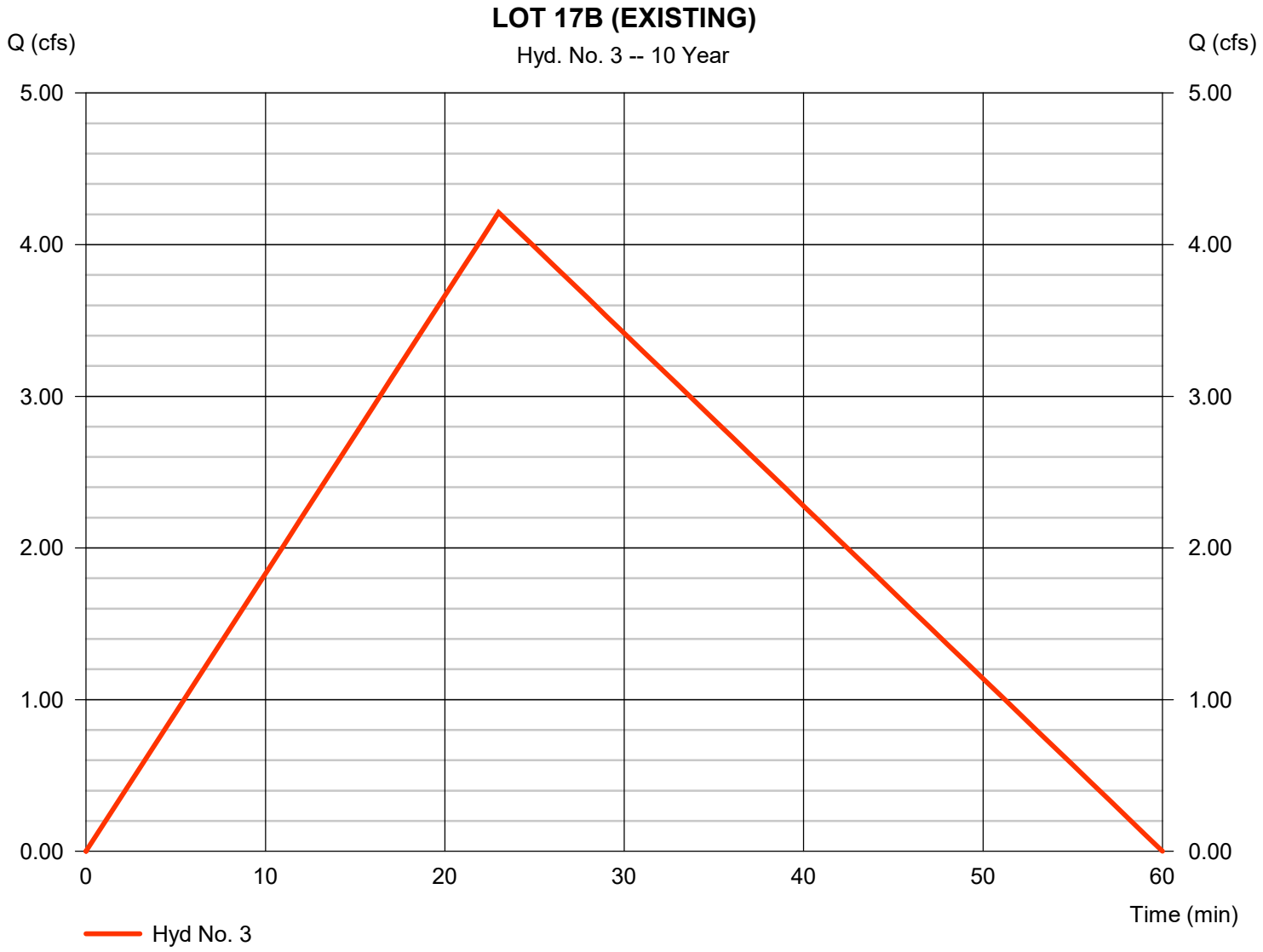


Hydrograph Report

Hyd. No. 3

LOT 17B (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 4.213 cfs
Storm frequency	= 10 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 7,616 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.55
Intensity	= 3.928 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.62

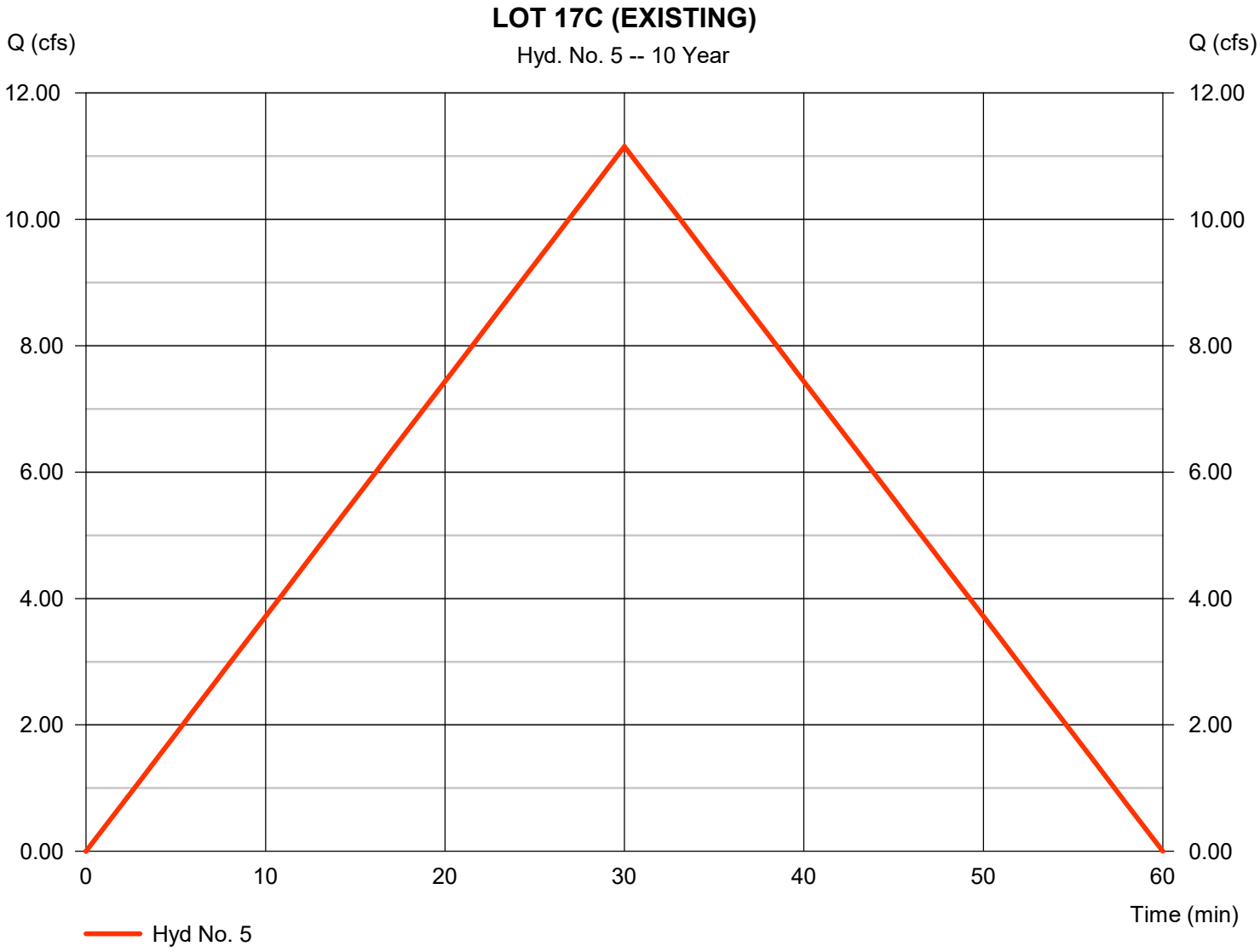


Hydrograph Report

Hyd. No. 5

LOT 17C (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 11.15 cfs
Storm frequency	= 10 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 20,077 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.55
Intensity	= 3.380 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

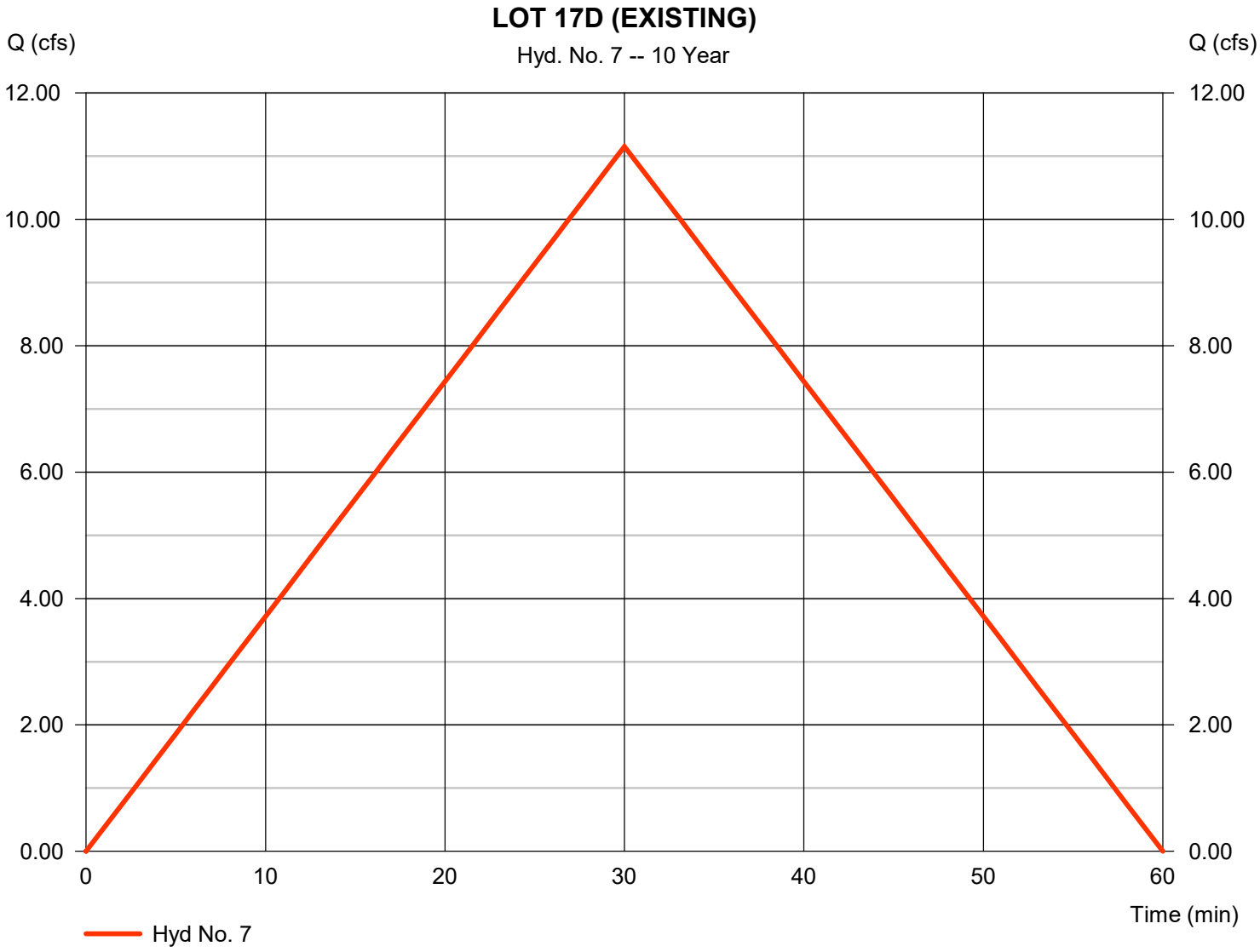


Hydrograph Report

Hyd. No. 7

LOT 17D (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 11.15 cfs
Storm frequency	= 10 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 20,077 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.55
Intensity	= 3.380 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

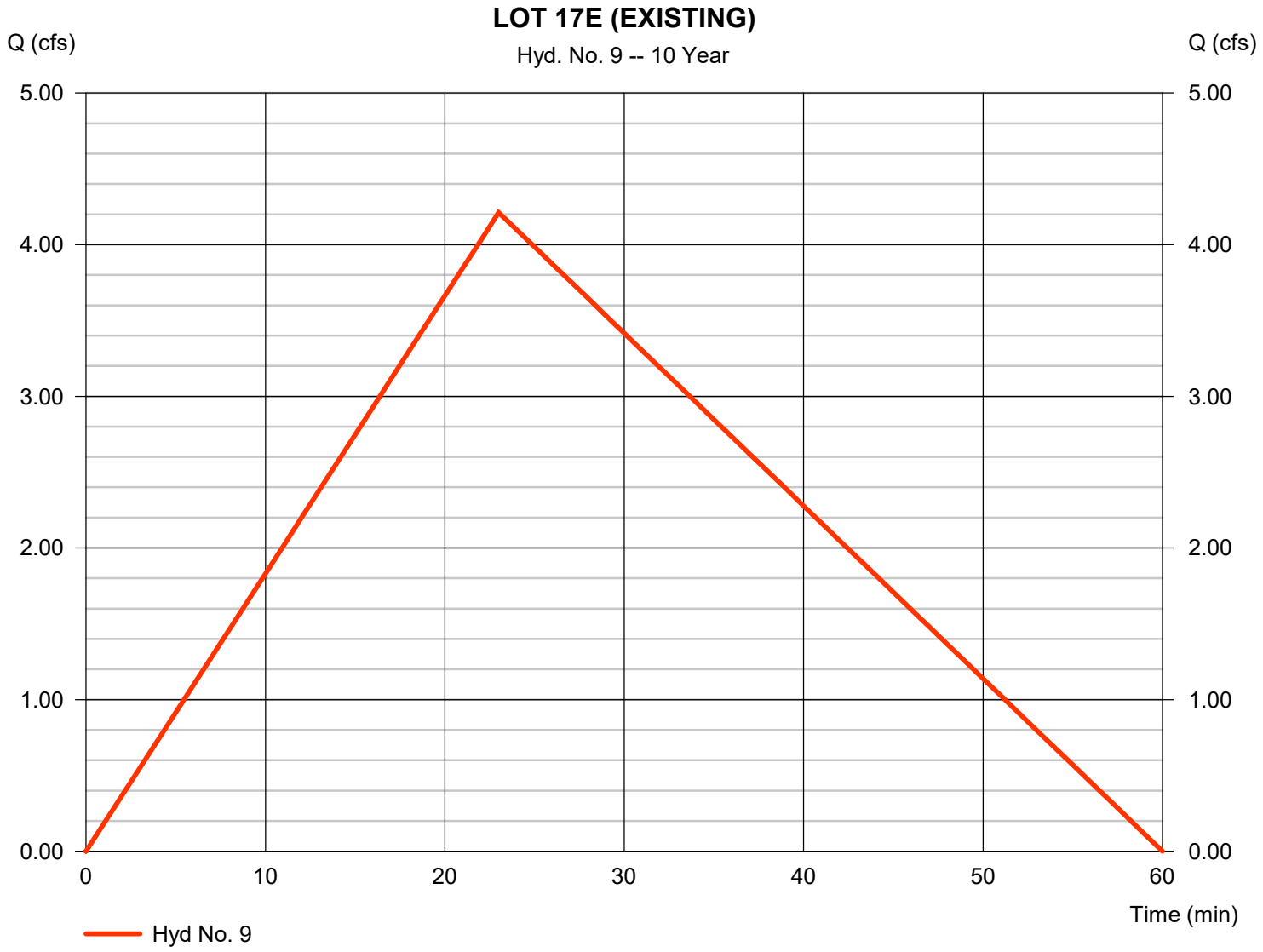


Hydrograph Report

Hyd. No. 9

LOT 17E (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 4.213 cfs
Storm frequency	= 10 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 7,616 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.55
Intensity	= 3.928 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.62

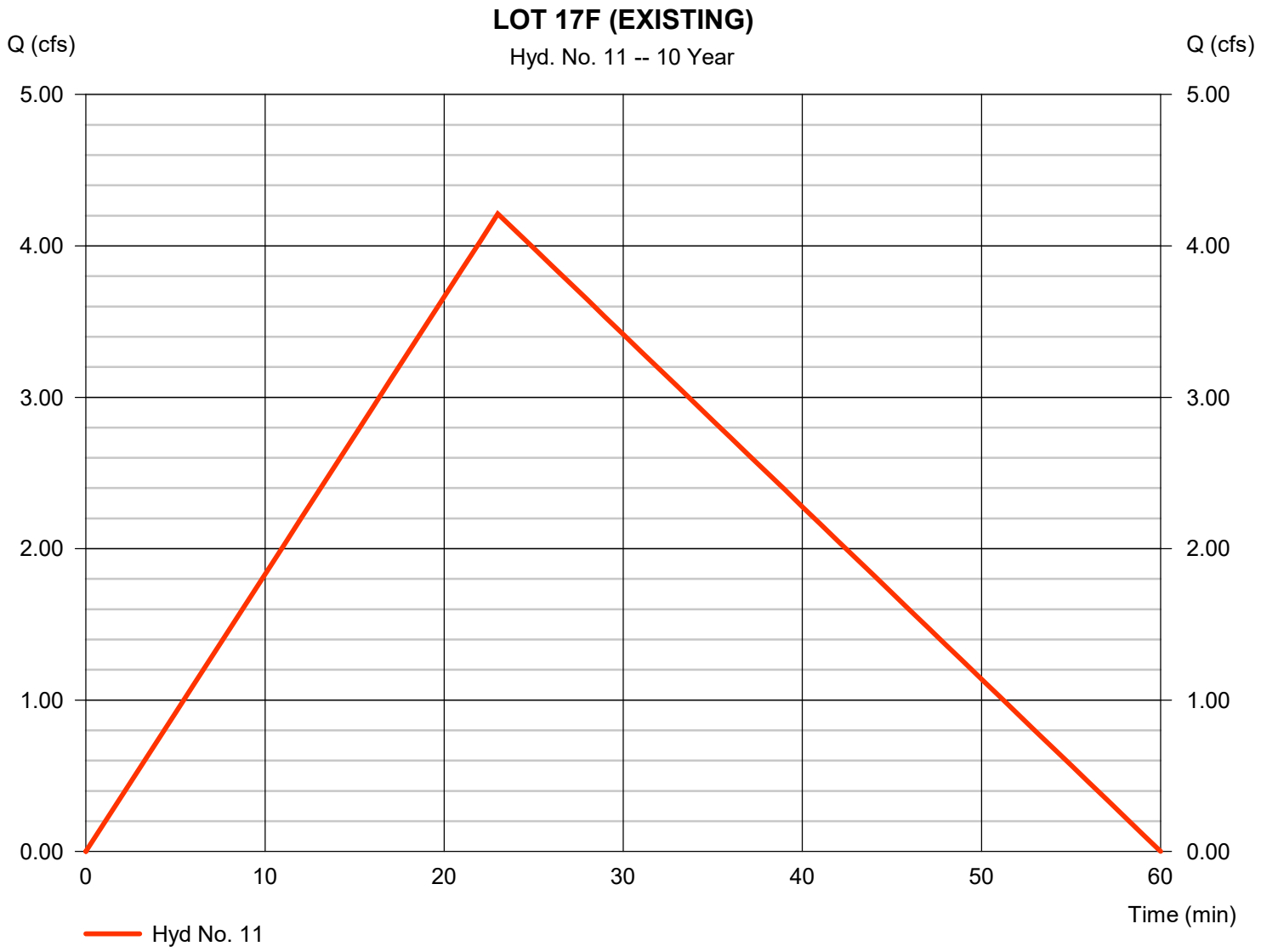


Hydrograph Report

Hyd. No. 11

LOT 17F (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 4.213 cfs
Storm frequency	= 10 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 7,616 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.55
Intensity	= 3.928 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.62

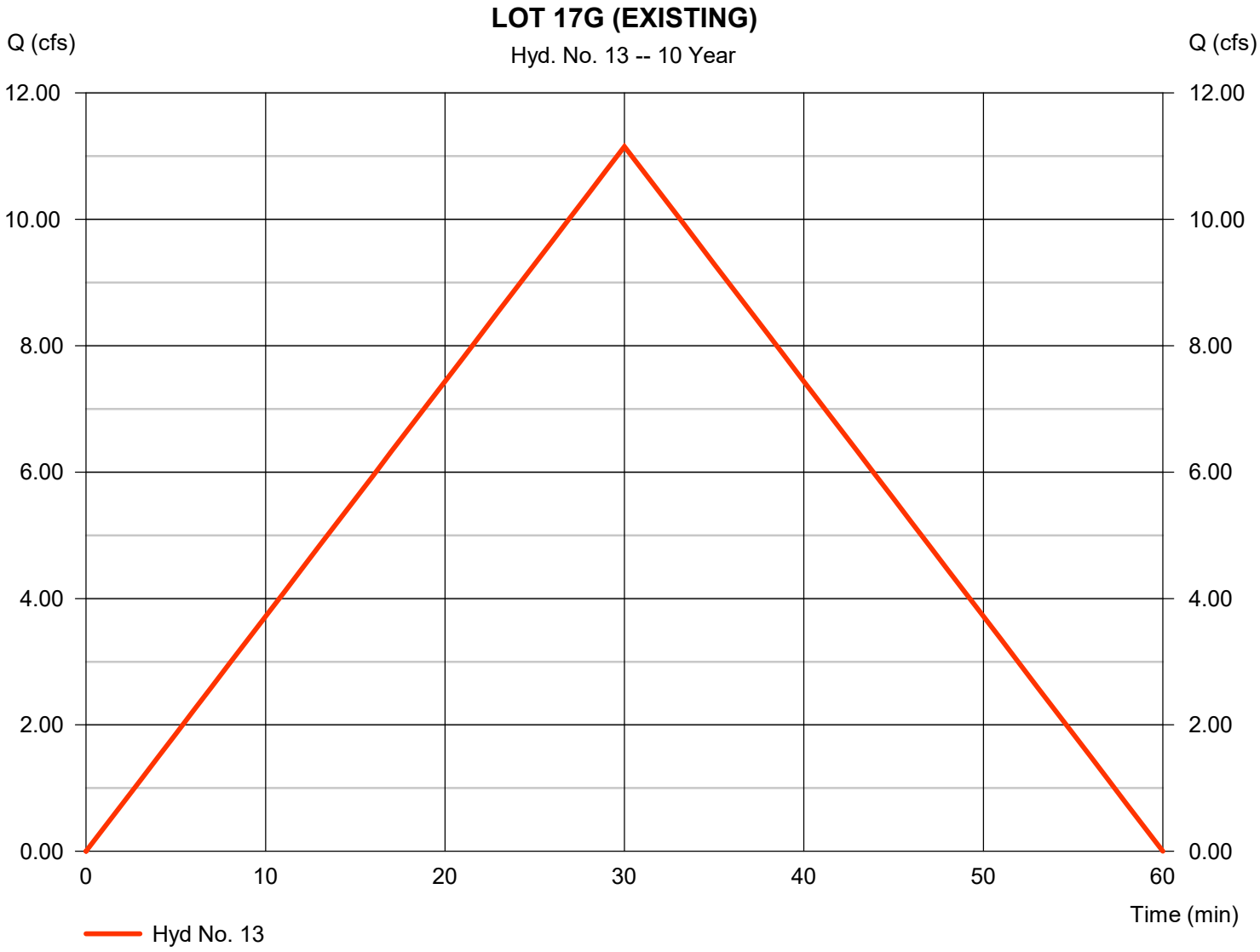


Hydrograph Report

Hyd. No. 13

LOT 17G (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 11.15 cfs
Storm frequency	= 10 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 20,077 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.55
Intensity	= 3.380 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

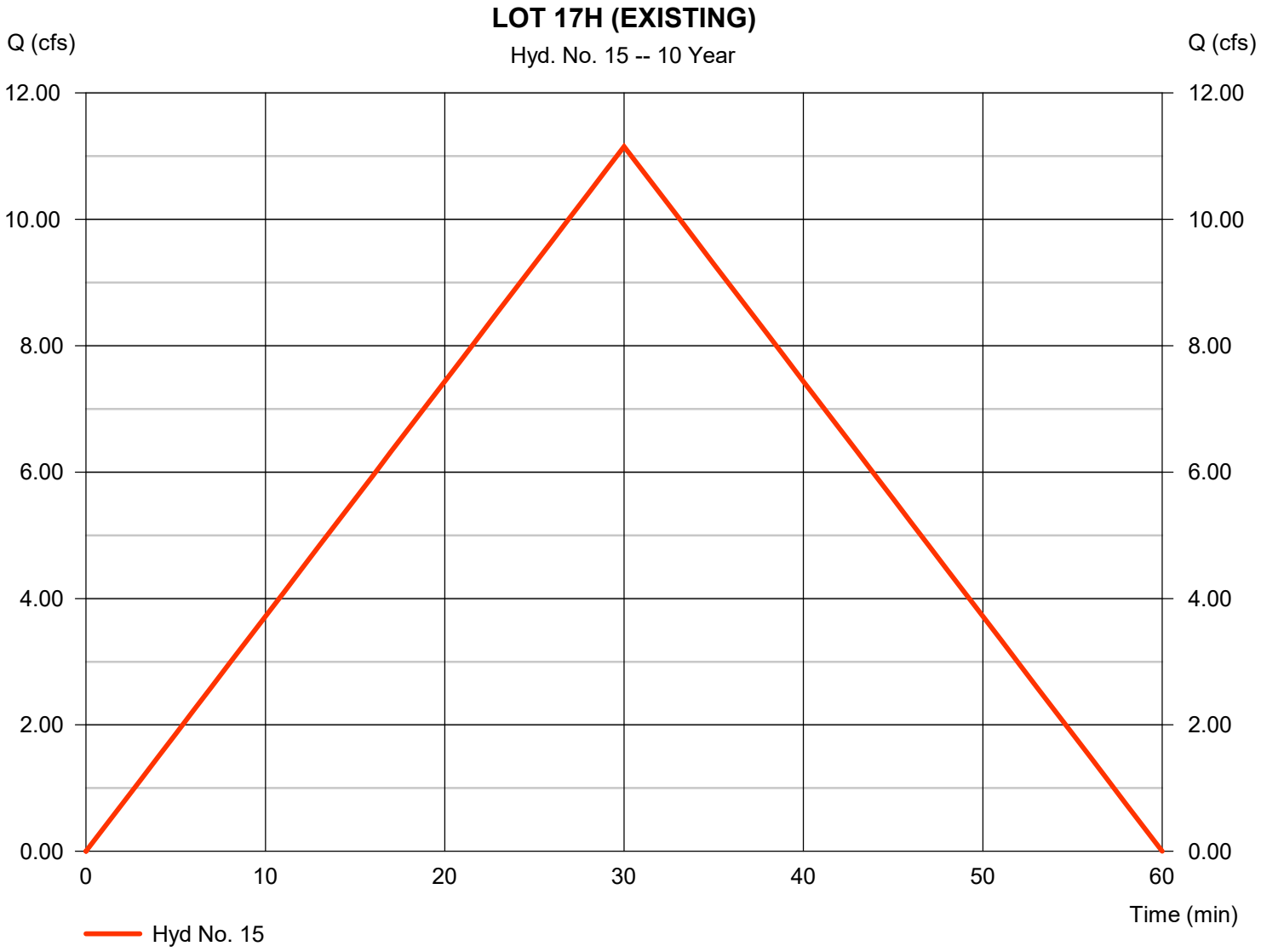


Hydrograph Report

Hyd. No. 15

LOT 17H (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 11.15 cfs
Storm frequency	= 10 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 20,077 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.55
Intensity	= 3.380 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

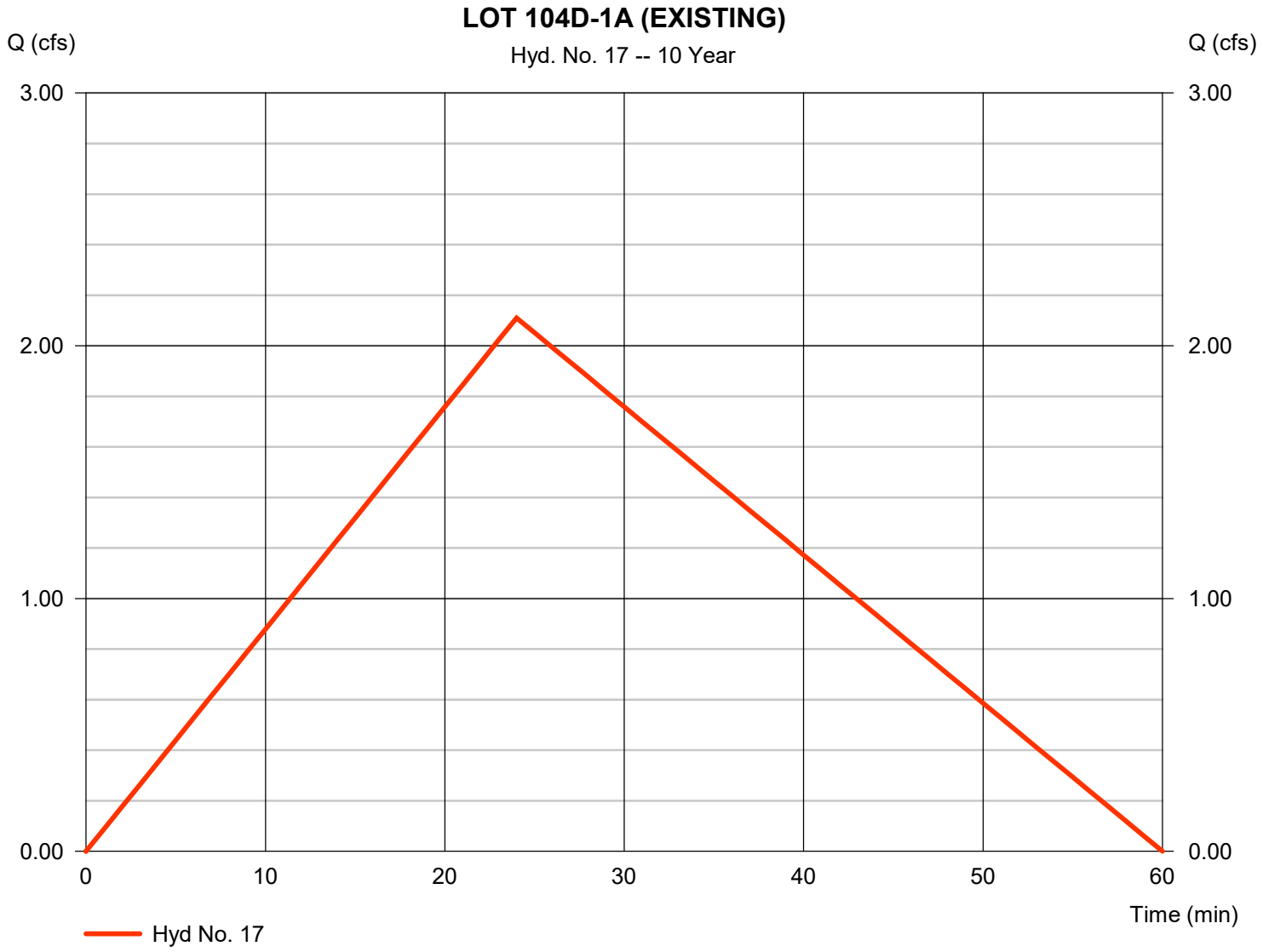


Hydrograph Report

Hyd. No. 17

LOT 104D-1A (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	2.110 cfs
Storm frequency	=	10 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	3,798 cuft
Drainage area	=	1.000 ac	Runoff coeff.	=	0.55
Intensity	=	3.837 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

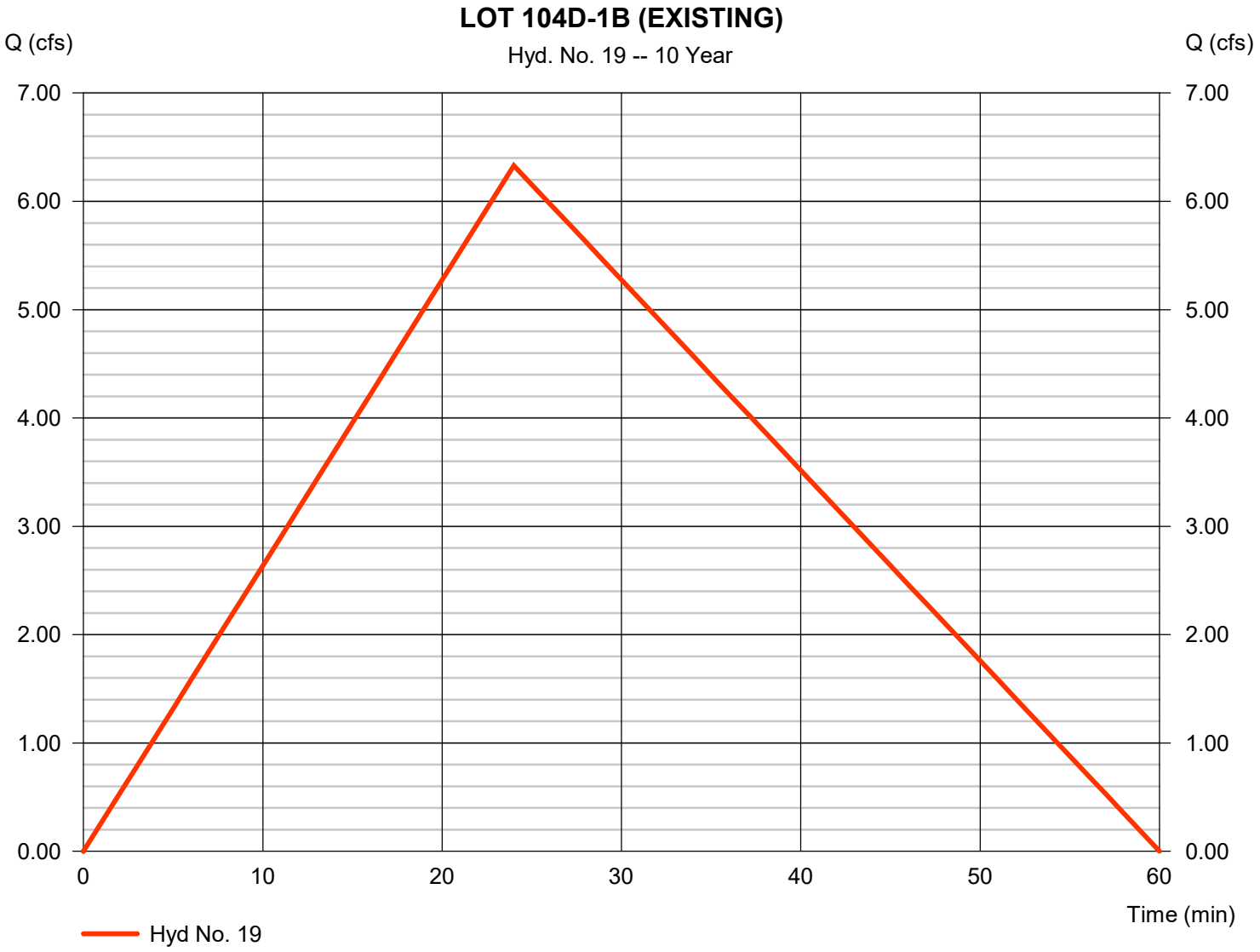


Hydrograph Report

Hyd. No. 19

LOT 104D-1B (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	6.330 cfs
Storm frequency	=	10 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	11,394 cuft
Drainage area	=	3.000 ac	Runoff coeff.	=	0.55
Intensity	=	3.837 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

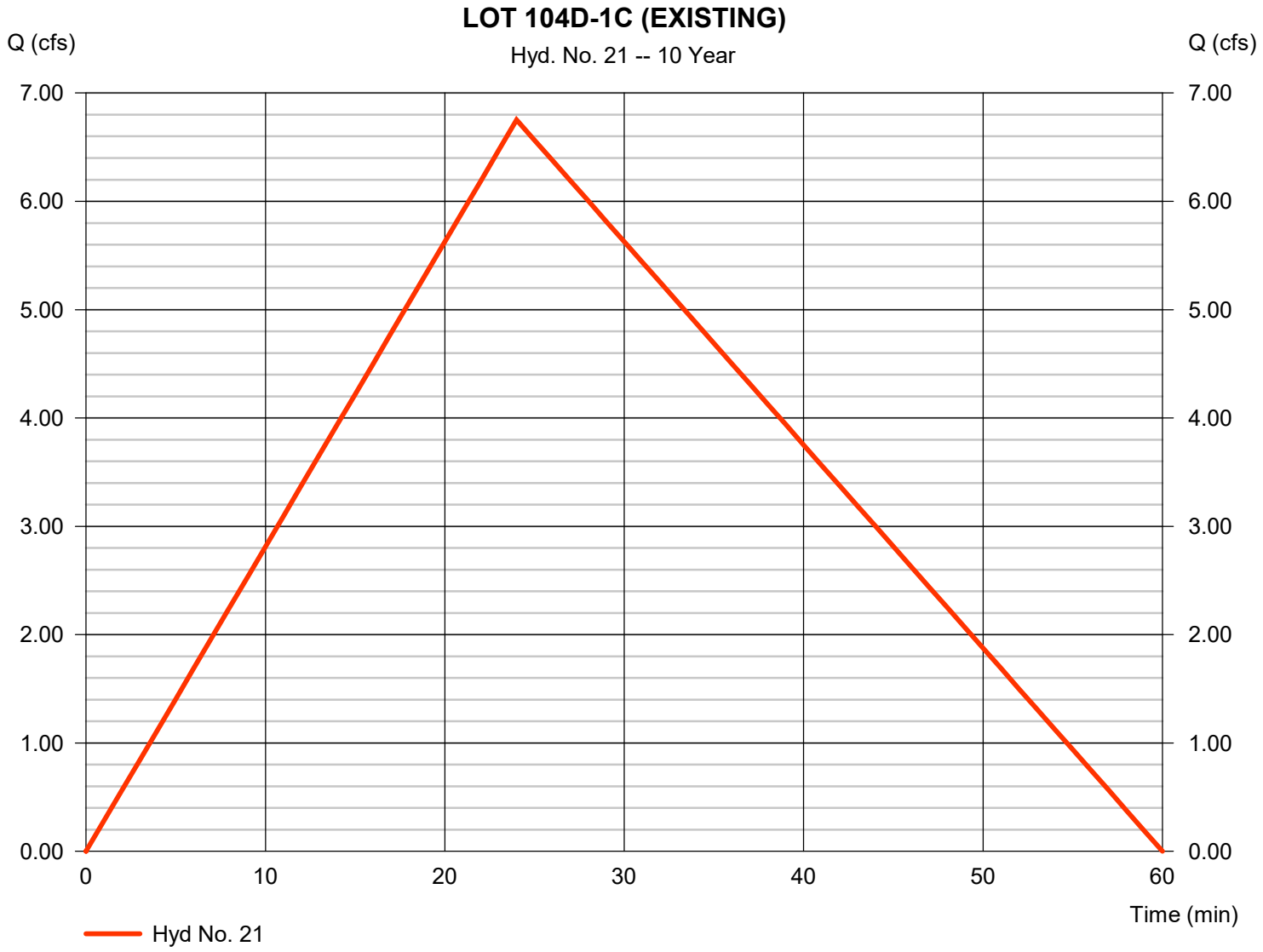


Hydrograph Report

Hyd. No. 21

LOT 104D-1C (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	6.752 cfs
Storm frequency	=	10 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	12,154 cuft
Drainage area	=	3.200 ac	Runoff coeff.	=	0.55
Intensity	=	3.837 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

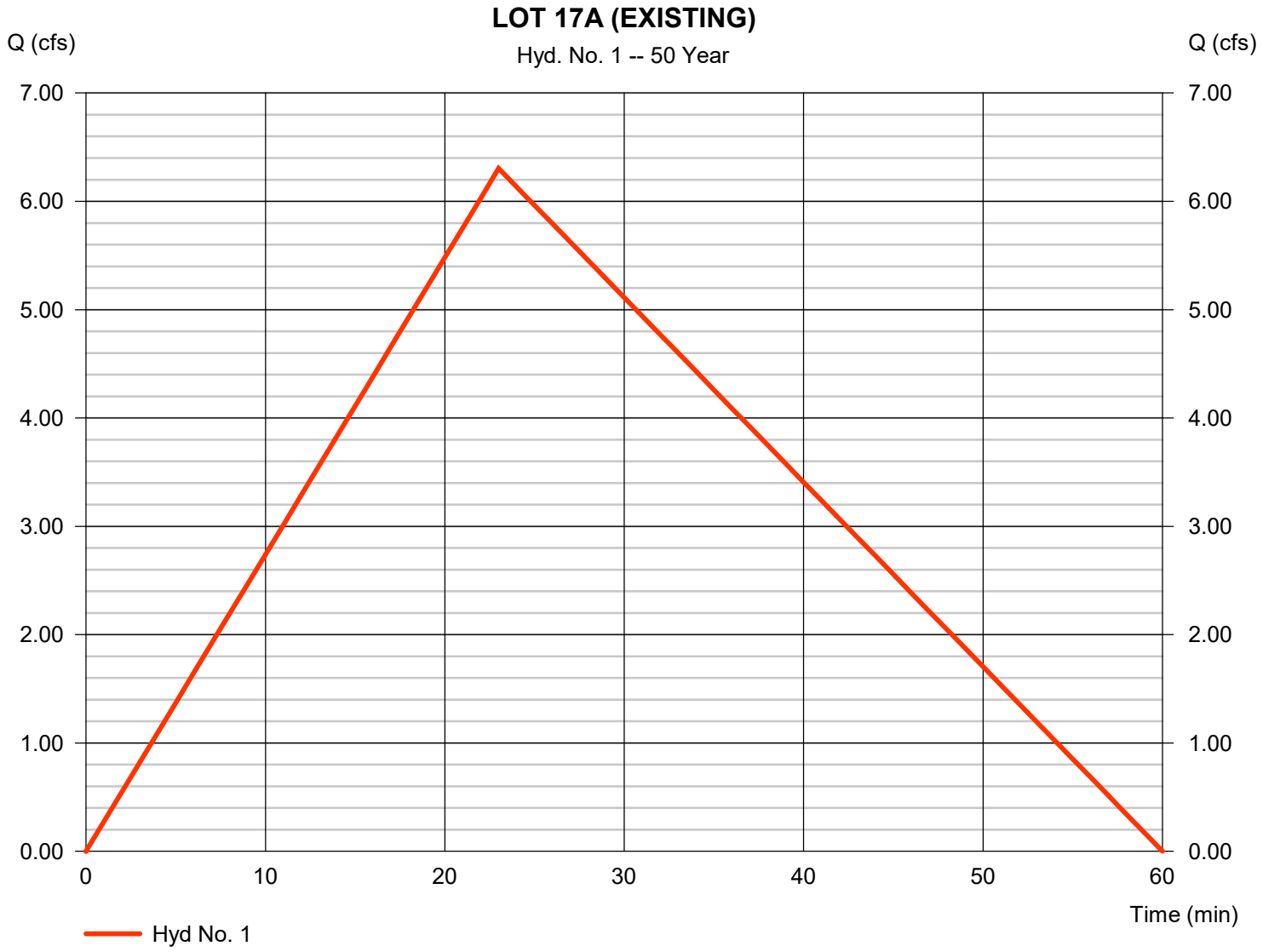


Hydrograph Report

Hyd. No. 1

LOT 17A (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	6.304 cfs
Storm frequency	=	50 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	11,397 cuft
Drainage area	=	1.950 ac	Runoff coeff.	=	0.55
Intensity	=	5.878 in/hr	Tc by User	=	23.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.62

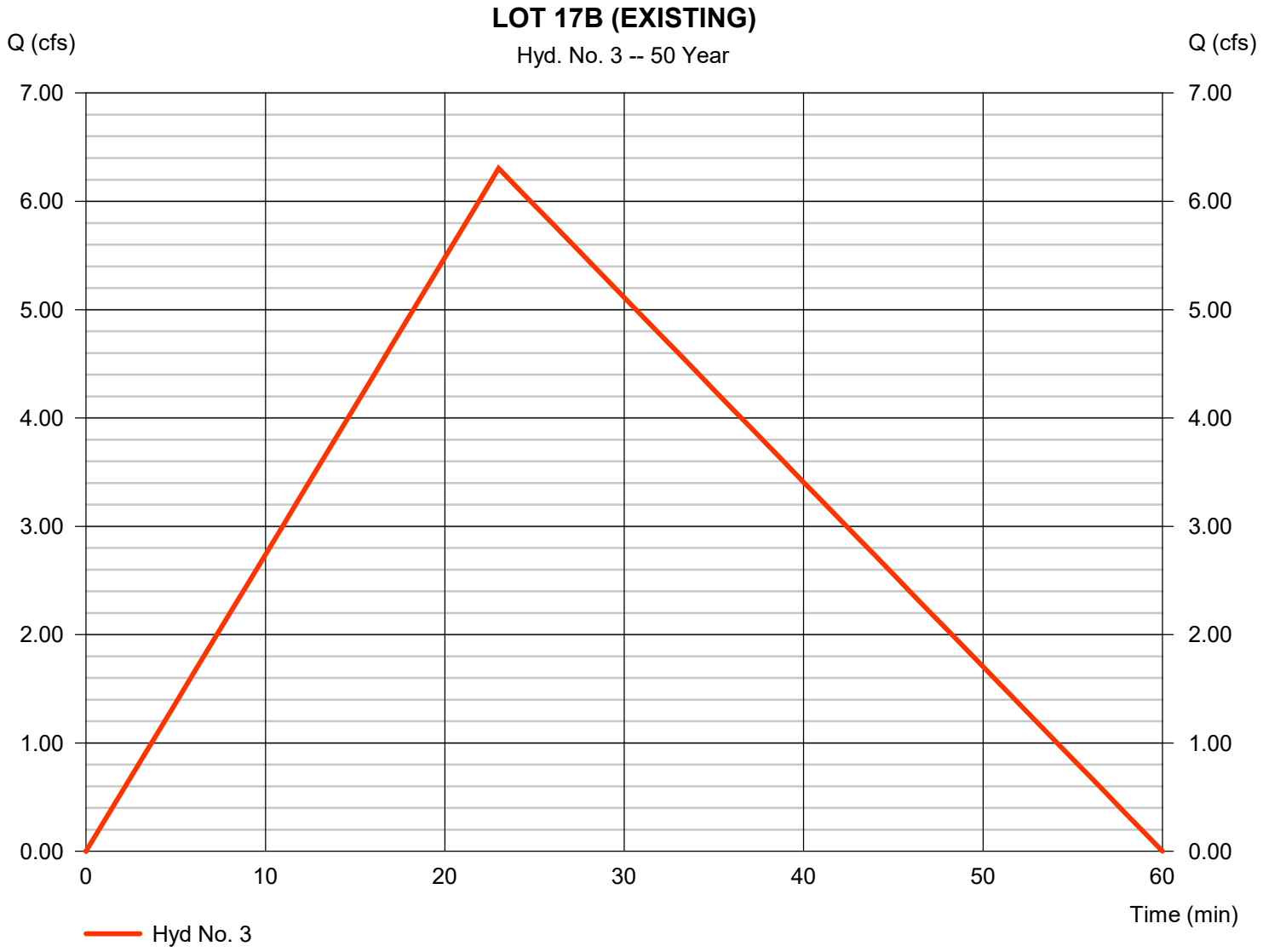


Hydrograph Report

Hyd. No. 3

LOT 17B (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	6.304 cfs
Storm frequency	=	50 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	11,397 cuft
Drainage area	=	1.950 ac	Runoff coeff.	=	0.55
Intensity	=	5.878 in/hr	Tc by User	=	23.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.62

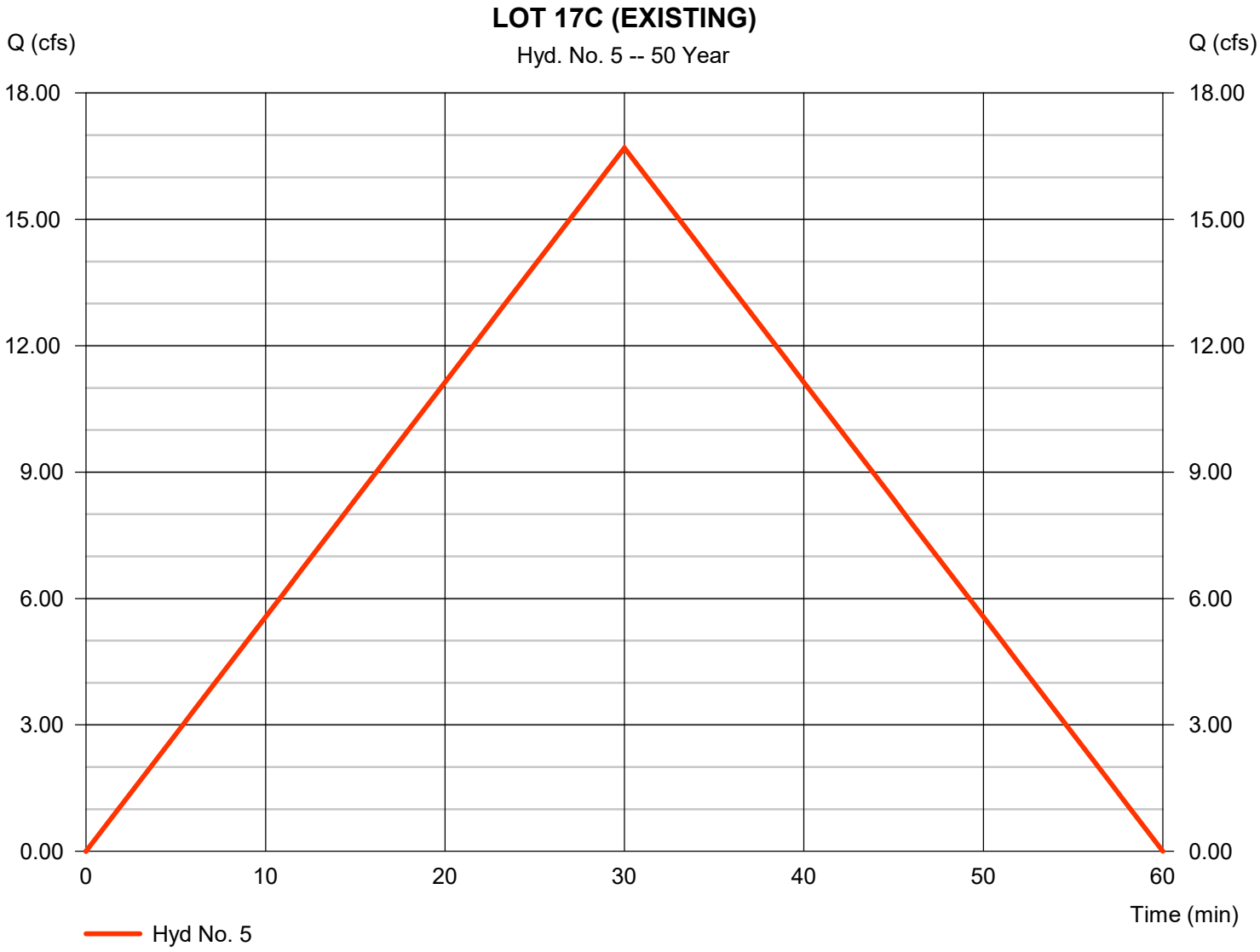


Hydrograph Report

Hyd. No. 5

LOT 17C (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	16.70 cfs
Storm frequency	=	50 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	30,056 cuft
Drainage area	=	6.000 ac	Runoff coeff.	=	0.55
Intensity	=	5.060 in/hr	Tc by User	=	30.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1

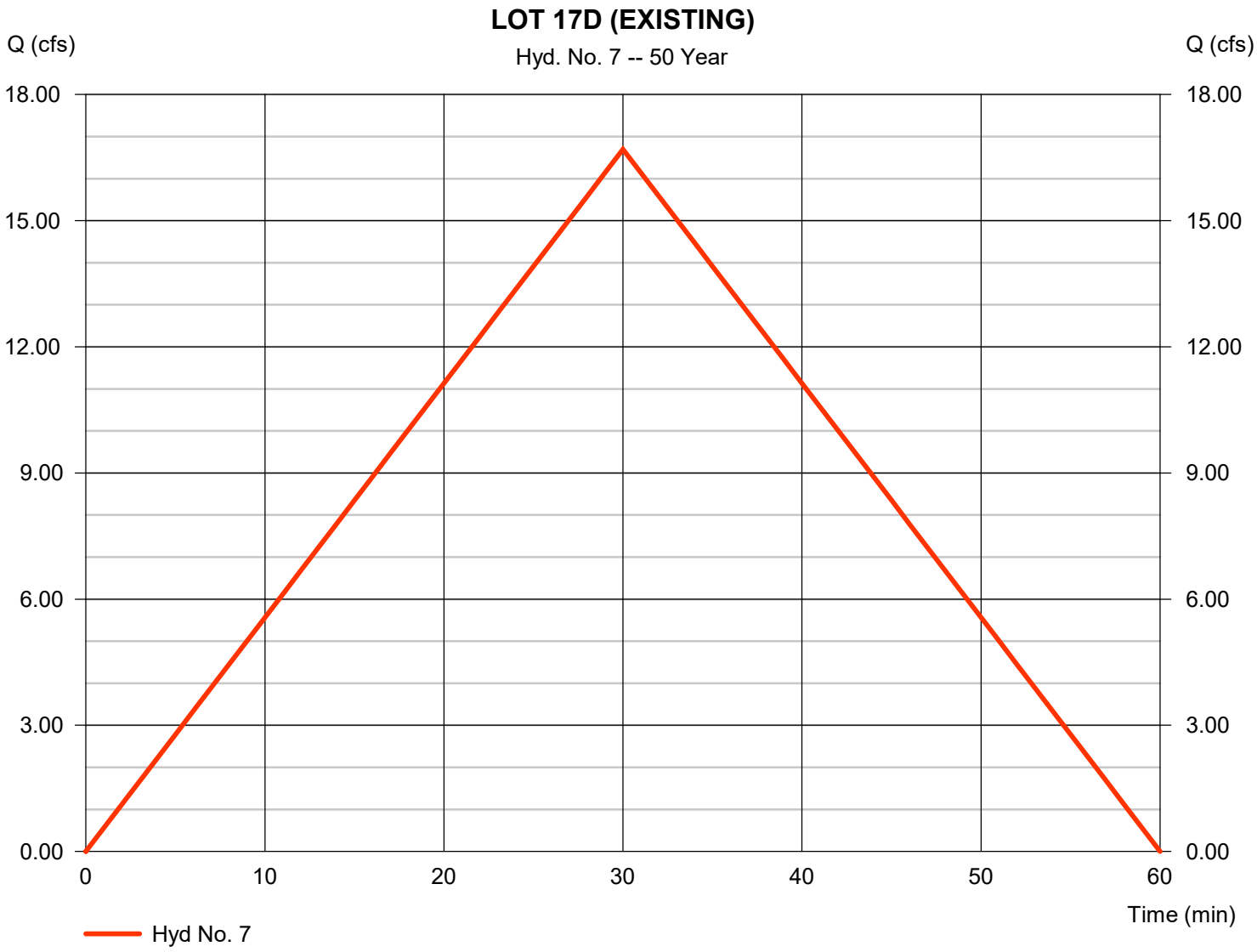


Hydrograph Report

Hyd. No. 7

LOT 17D (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	16.70 cfs
Storm frequency	=	50 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	30,056 cuft
Drainage area	=	6.000 ac	Runoff coeff.	=	0.55
Intensity	=	5.060 in/hr	Tc by User	=	30.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1

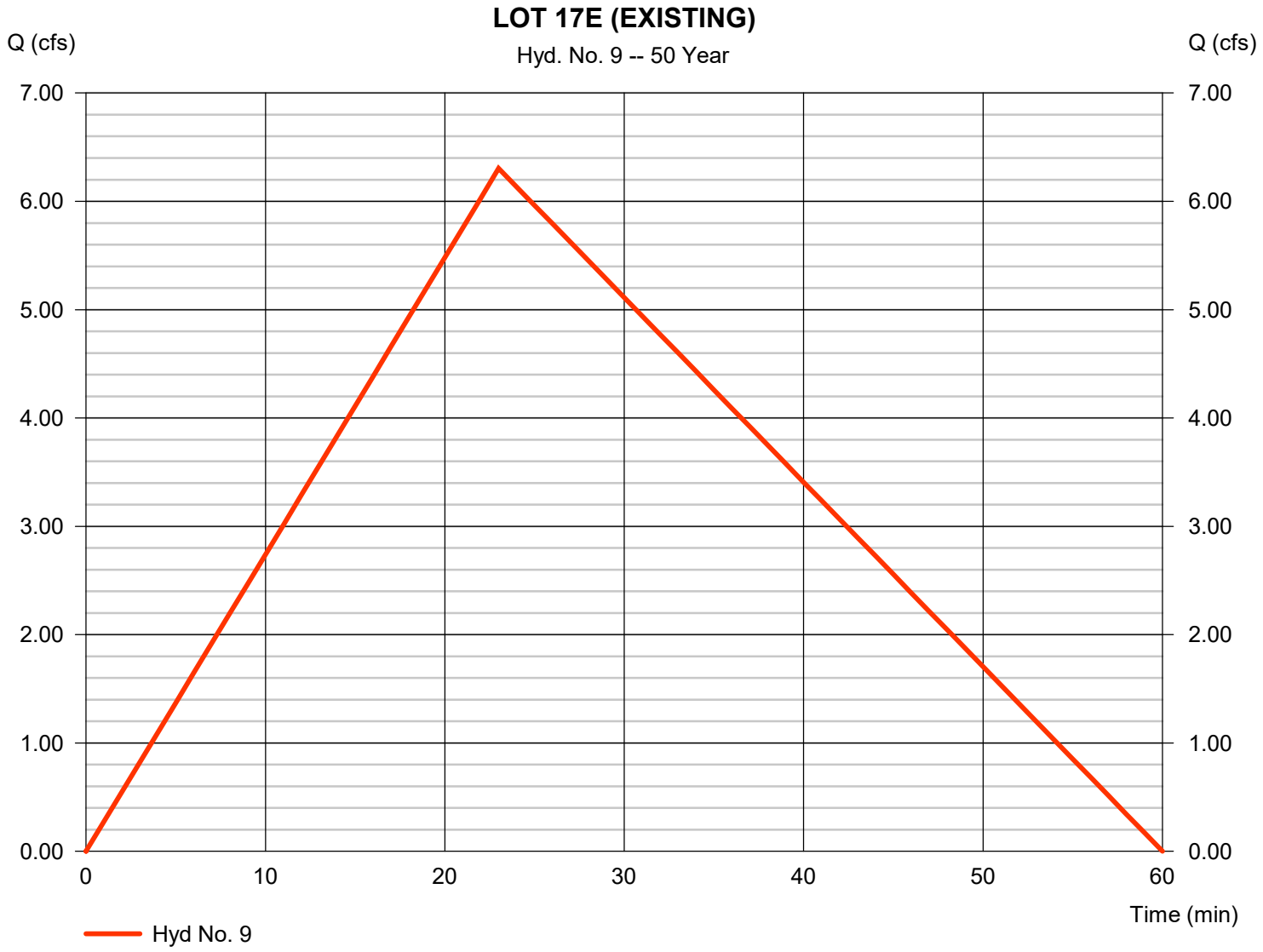


Hydrograph Report

Hyd. No. 9

LOT 17E (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	6.304 cfs
Storm frequency	=	50 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	11,397 cuft
Drainage area	=	1.950 ac	Runoff coeff.	=	0.55
Intensity	=	5.878 in/hr	Tc by User	=	23.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.62

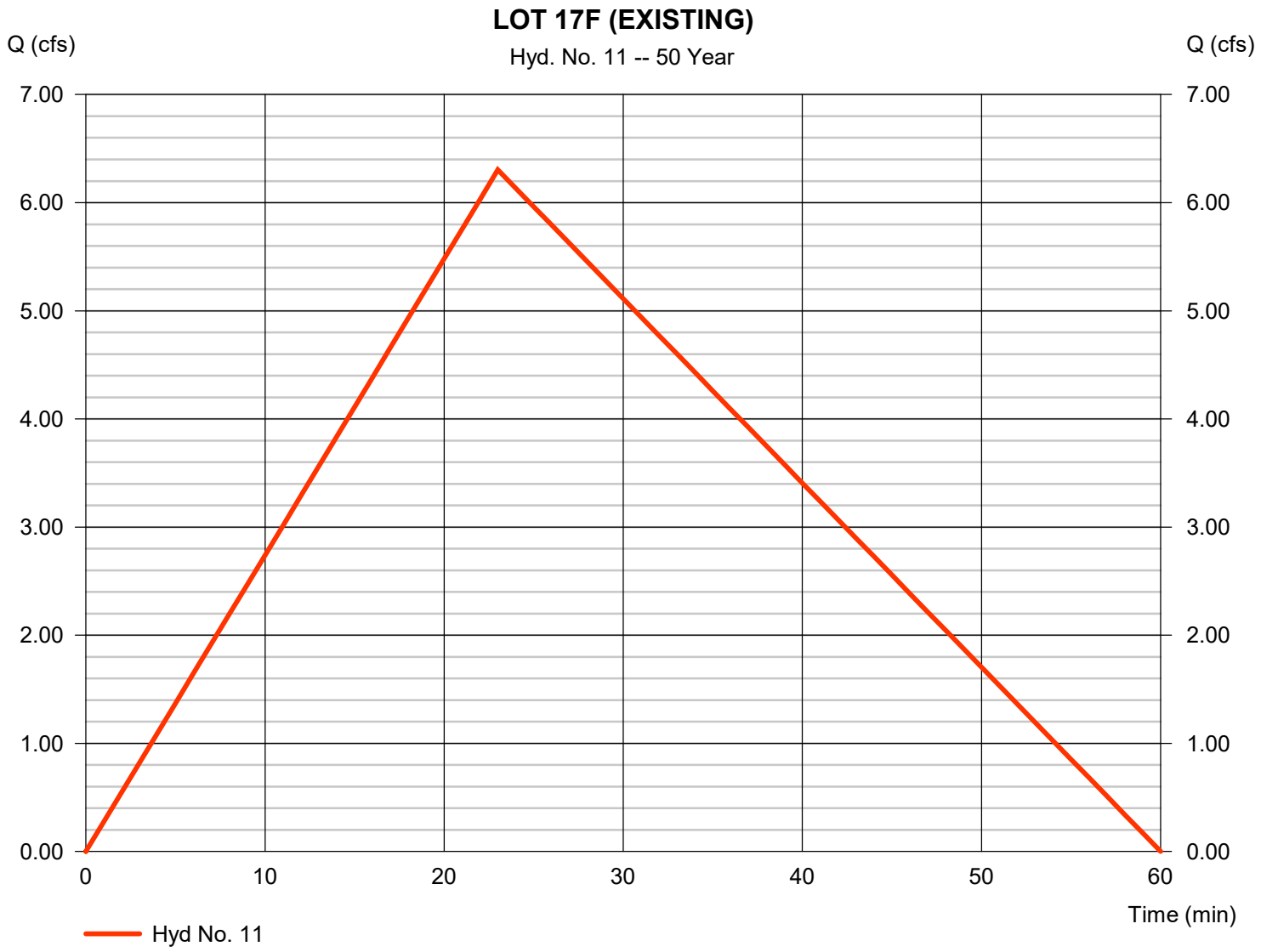


Hydrograph Report

Hyd. No. 11

LOT 17F (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	6.304 cfs
Storm frequency	=	50 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	11,397 cuft
Drainage area	=	1.950 ac	Runoff coeff.	=	0.55
Intensity	=	5.878 in/hr	Tc by User	=	23.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.62

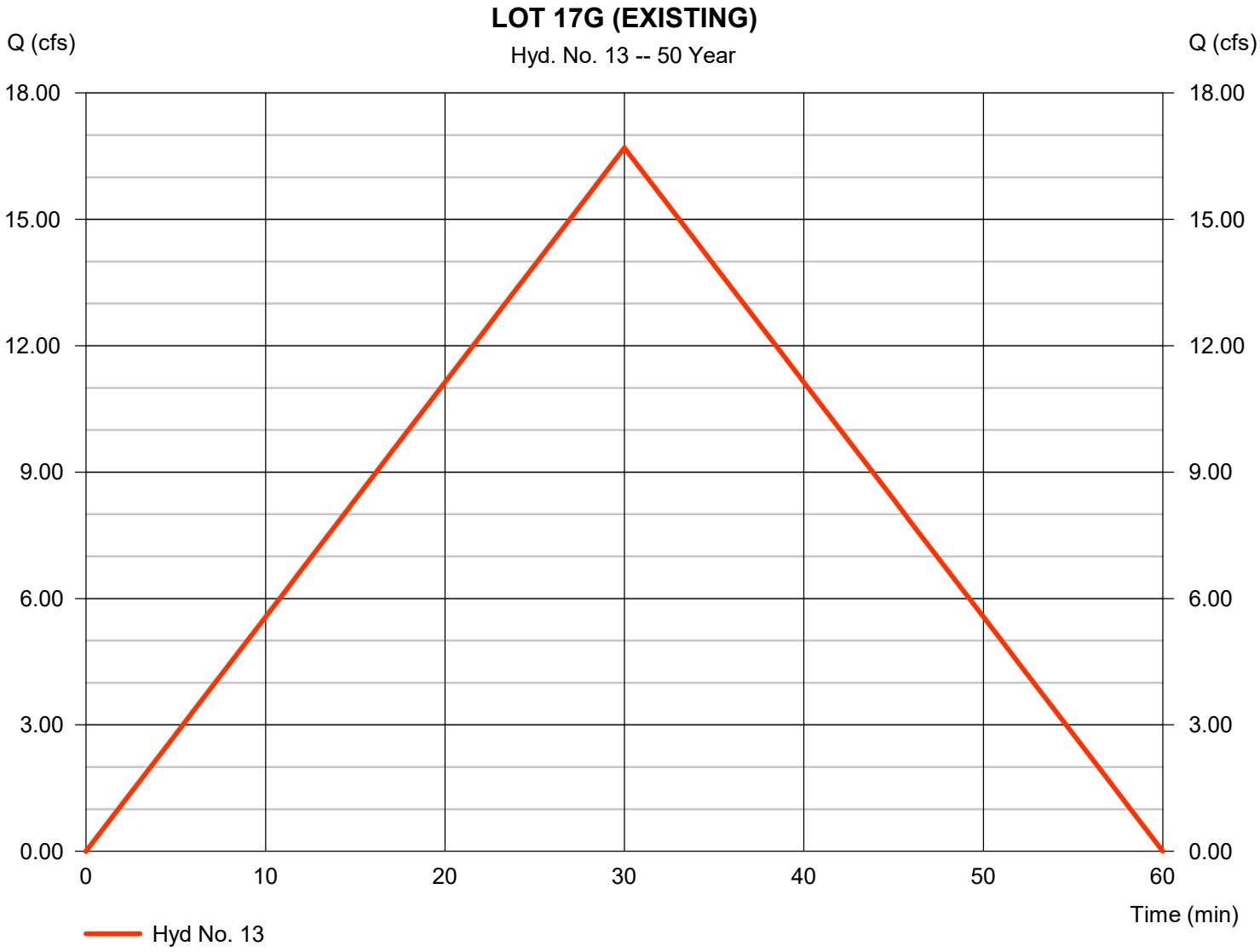


Hydrograph Report

Hyd. No. 13

LOT 17G (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	16.70 cfs
Storm frequency	=	50 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	30,056 cuft
Drainage area	=	6.000 ac	Runoff coeff.	=	0.55
Intensity	=	5.060 in/hr	Tc by User	=	30.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1

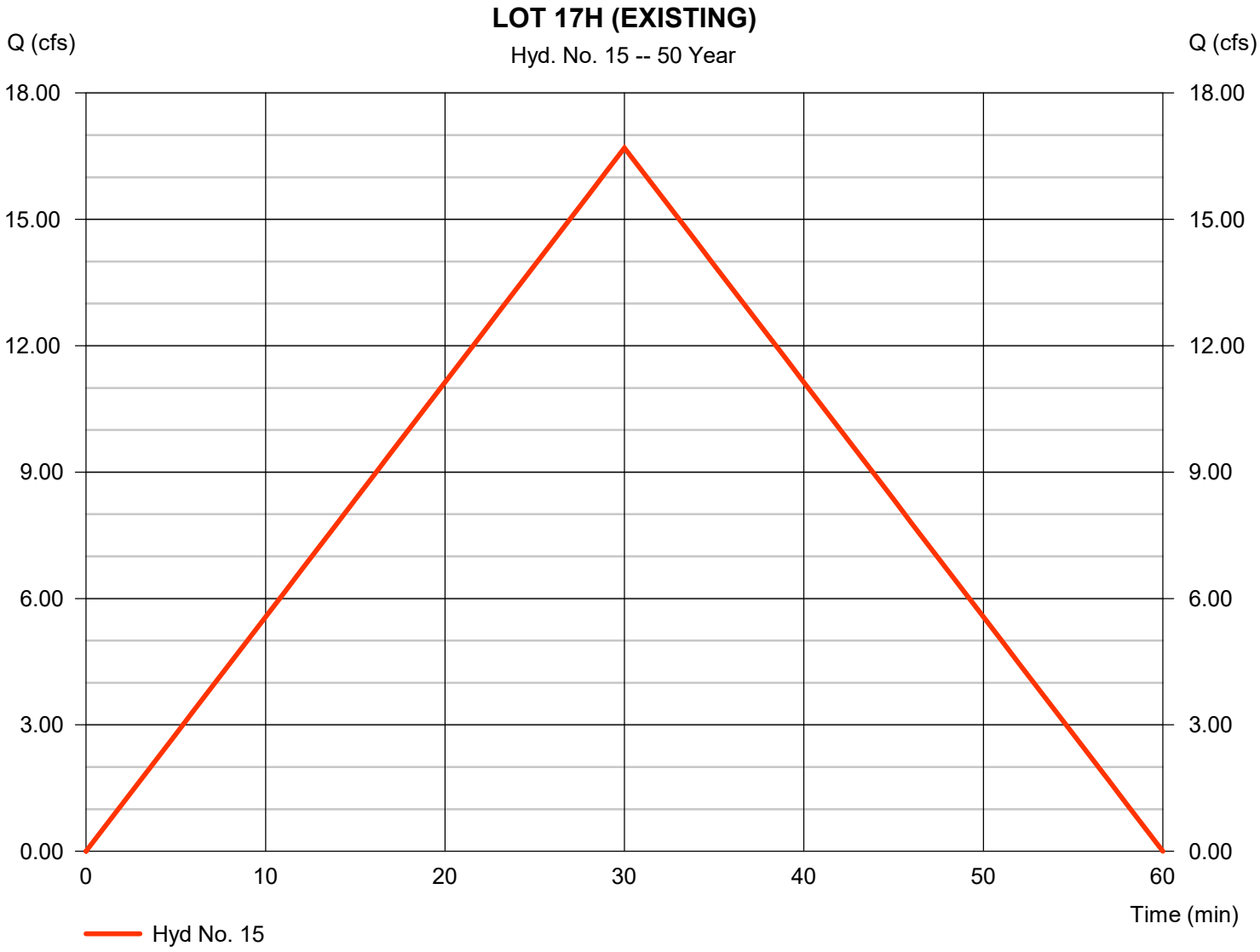


Hydrograph Report

Hyd. No. 15

LOT 17H (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	16.70 cfs
Storm frequency	=	50 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	30,056 cuft
Drainage area	=	6.000 ac	Runoff coeff.	=	0.55
Intensity	=	5.060 in/hr	Tc by User	=	30.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1

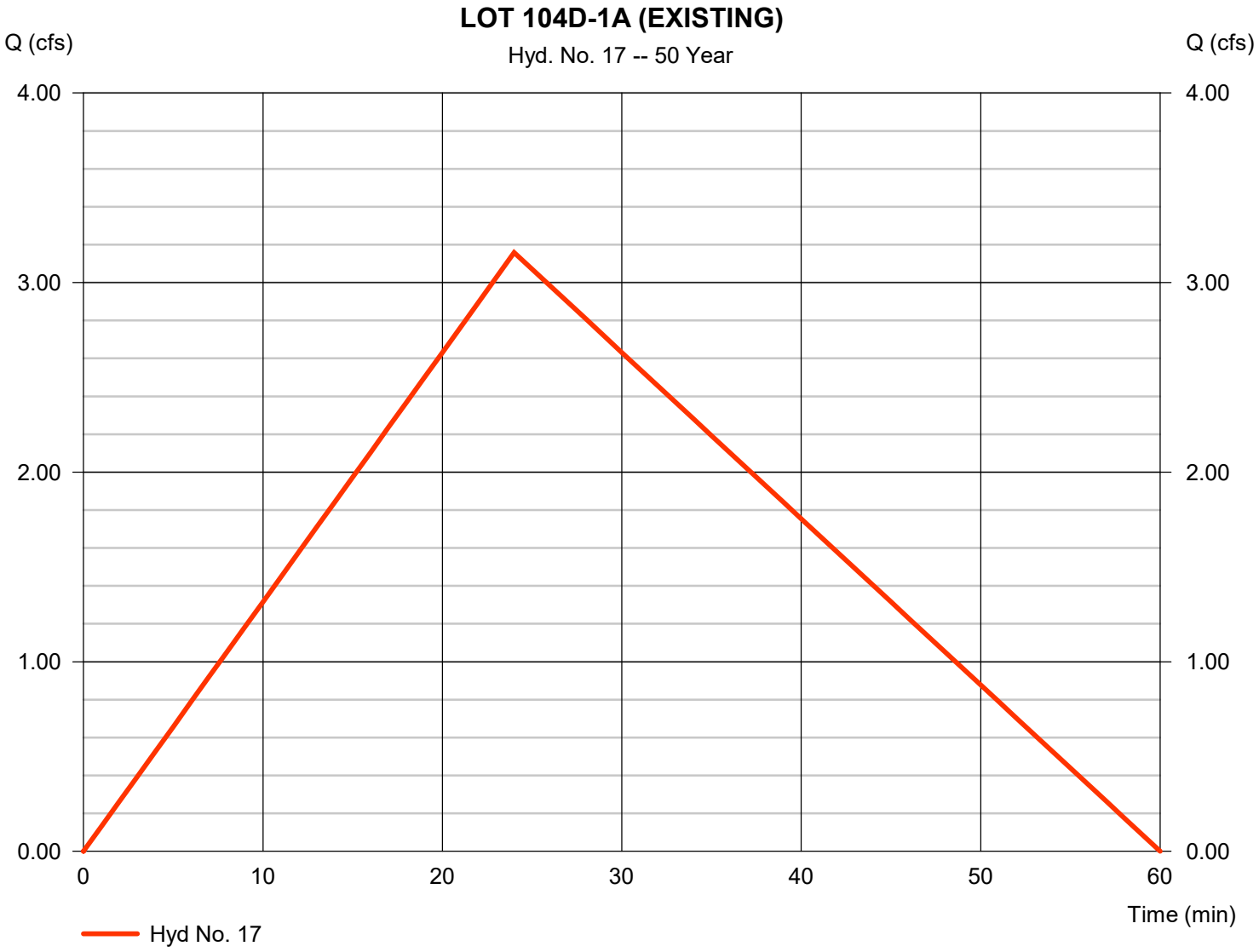


Hydrograph Report

Hyd. No. 17

LOT 104D-1A (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	3.158 cfs
Storm frequency	=	50 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	5,684 cuft
Drainage area	=	1.000 ac	Runoff coeff.	=	0.55
Intensity	=	5.741 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

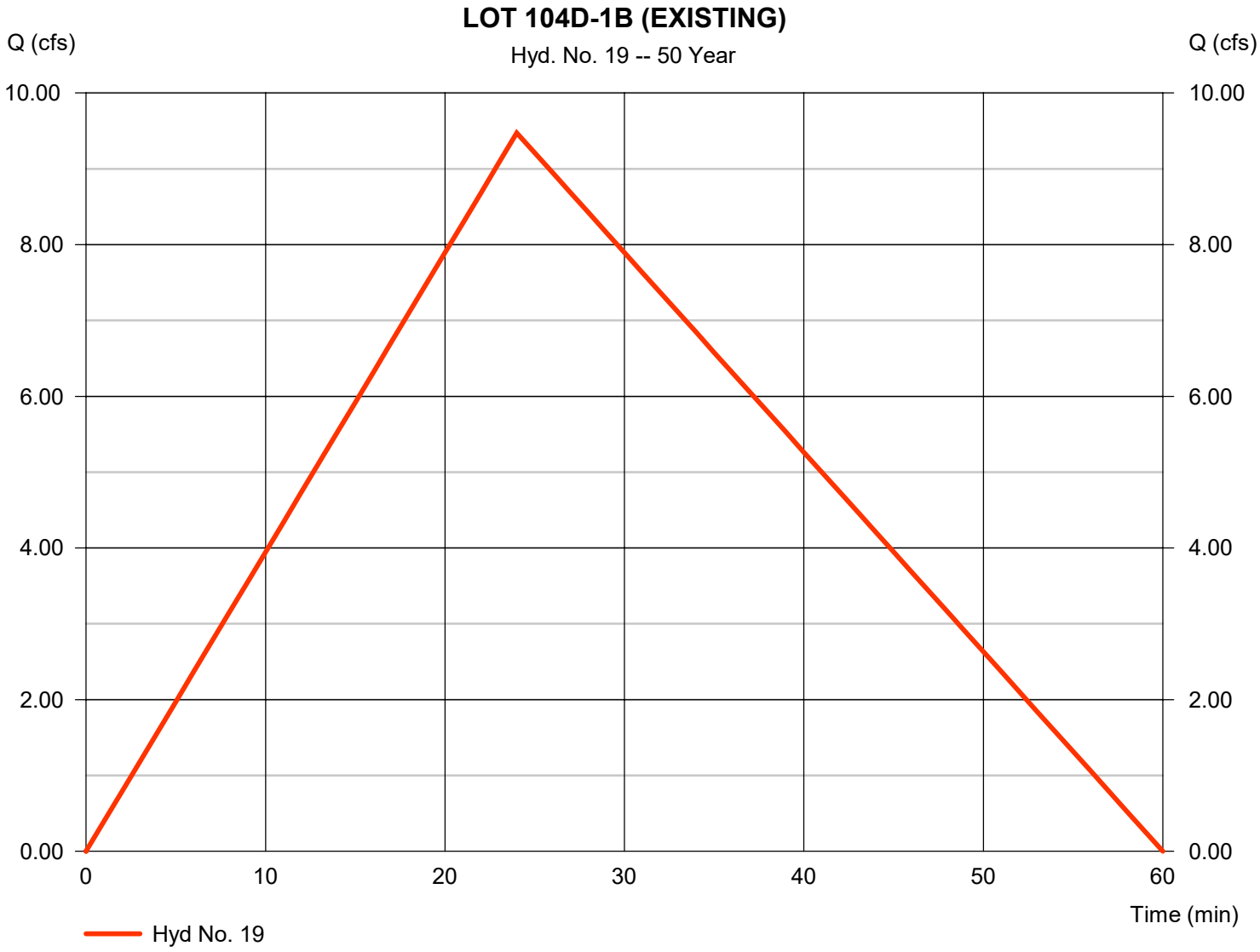


Hydrograph Report

Hyd. No. 19

LOT 104D-1B (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 9.473 cfs
Storm frequency	= 50 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 17,052 cuft
Drainage area	= 3.000 ac	Runoff coeff.	= 0.55
Intensity	= 5.741 in/hr	Tc by User	= 24.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.5

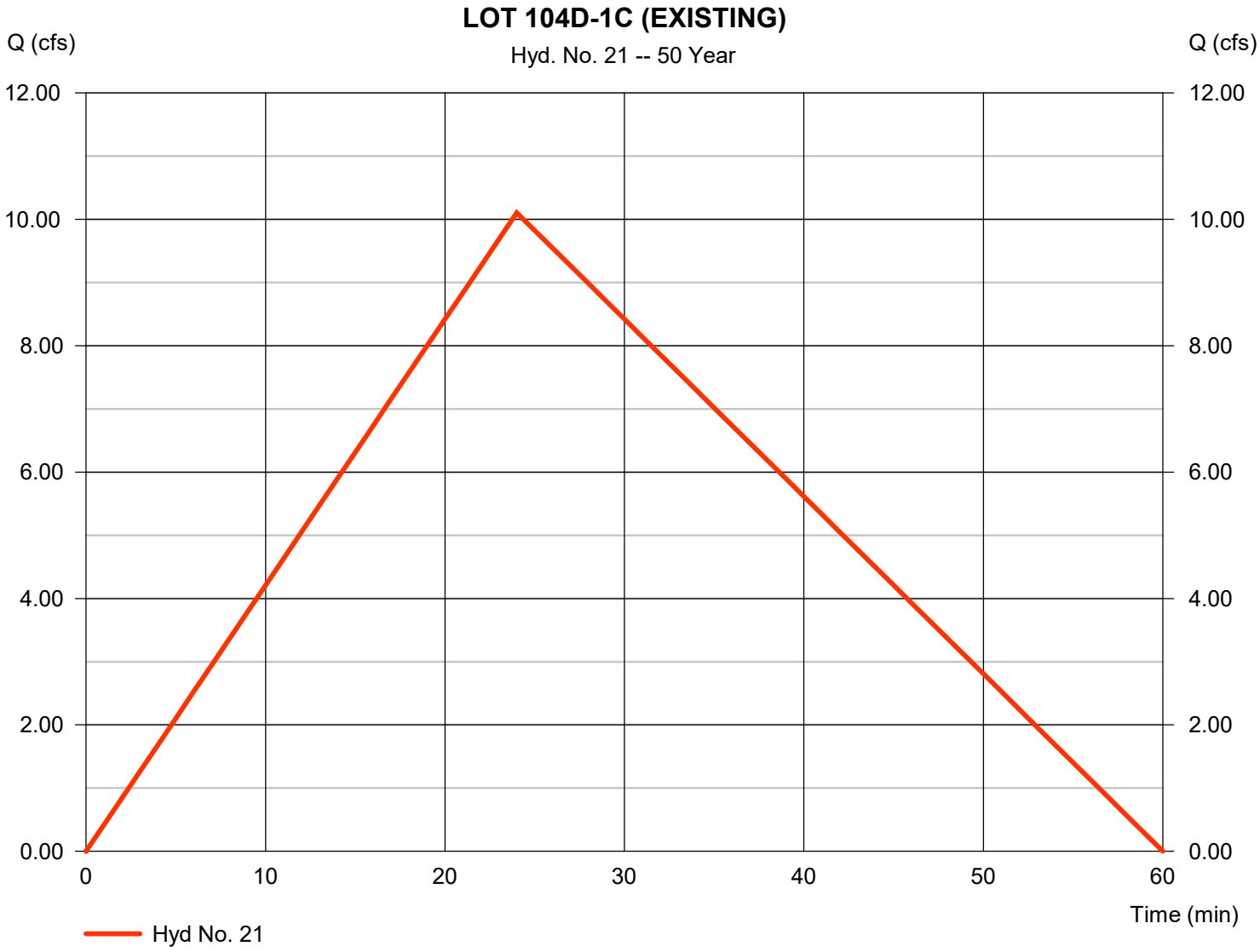


Hydrograph Report

Hyd. No. 21

LOT 104D-1C (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 10.10 cfs
Storm frequency	= 50 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 18,189 cuft
Drainage area	= 3.200 ac	Runoff coeff.	= 0.55
Intensity	= 5.741 in/hr	Tc by User	= 24.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.5



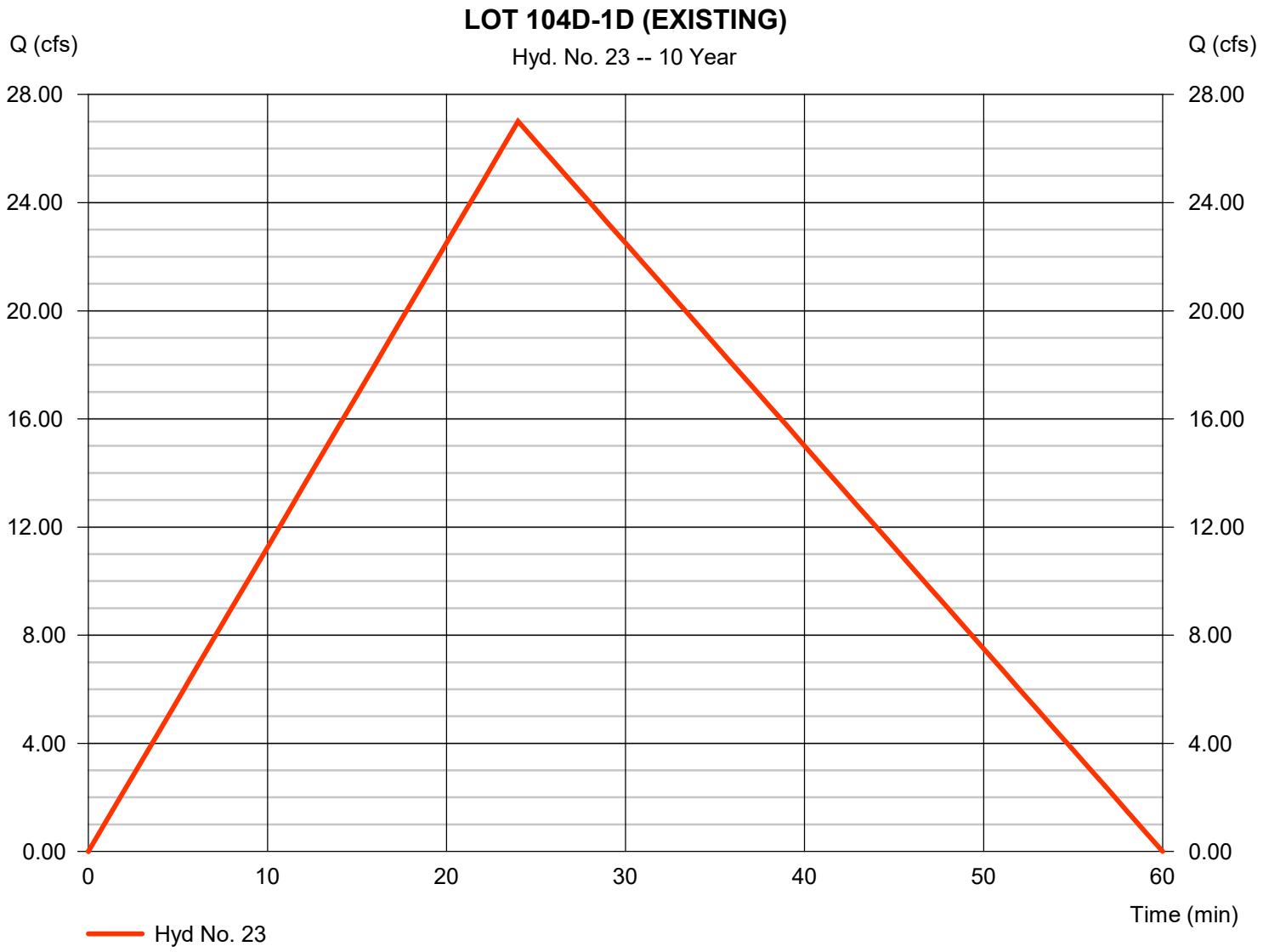
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Thursday, 12 / 21 / 2023

Hyd. No. 23

LOT 104D-1D (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 27.01 cfs
Storm frequency	= 10 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 48,616 cuft
Drainage area	= 12.800 ac	Runoff coeff.	= 0.55
Intensity	= 3.837 in/hr	Tc by User	= 24.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.5



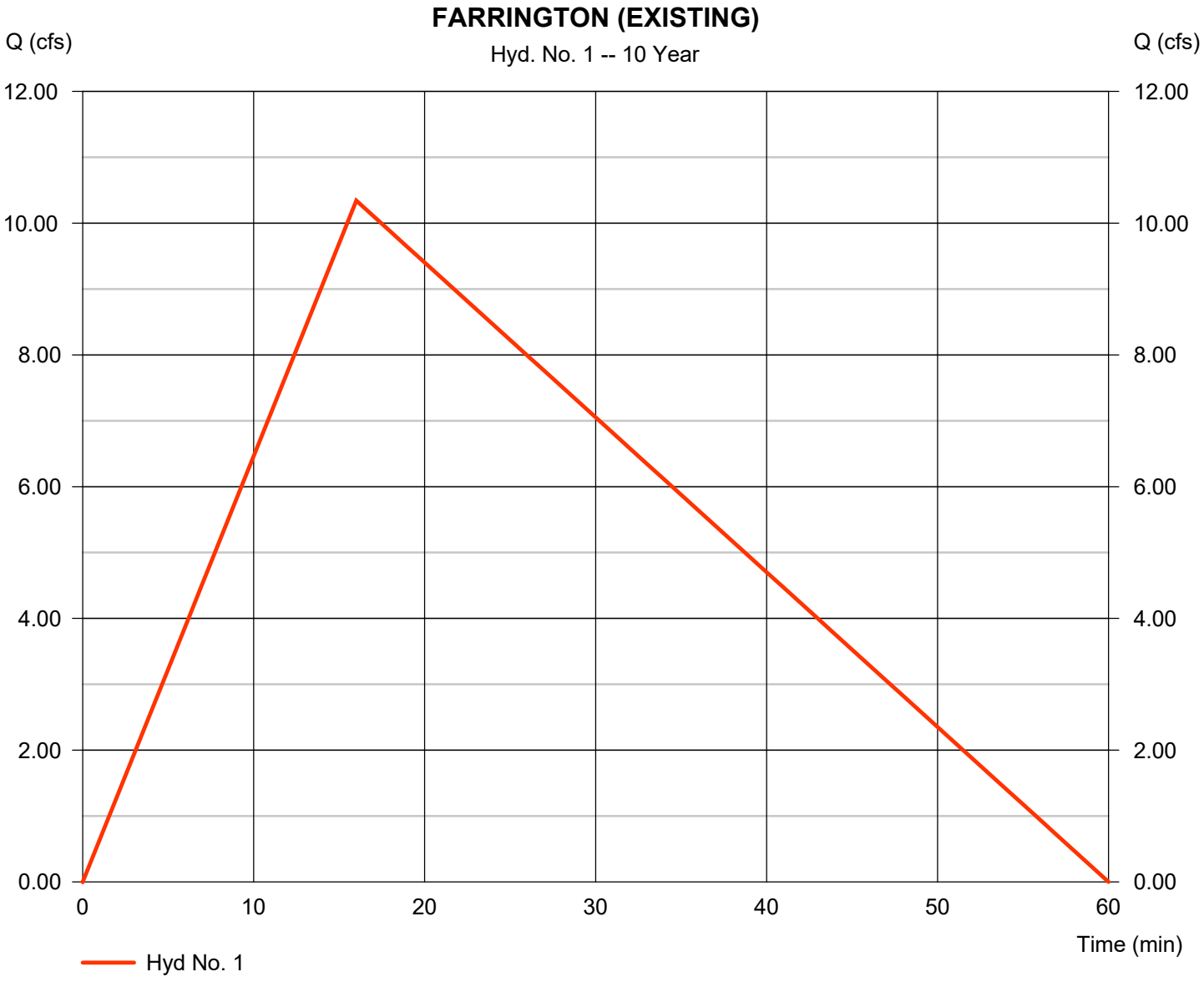
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2019.2 Monday, 11 / 29 / 2021

Hyd. No. 1

FARRINGTON (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 10.34 cfs
Storm frequency	= 10 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 0.427 acft
Drainage area	= 3.950 ac	Runoff coeff.	= 0.55
Intensity	= 4.761 in/hr	Tc by User	= 16.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/2.75

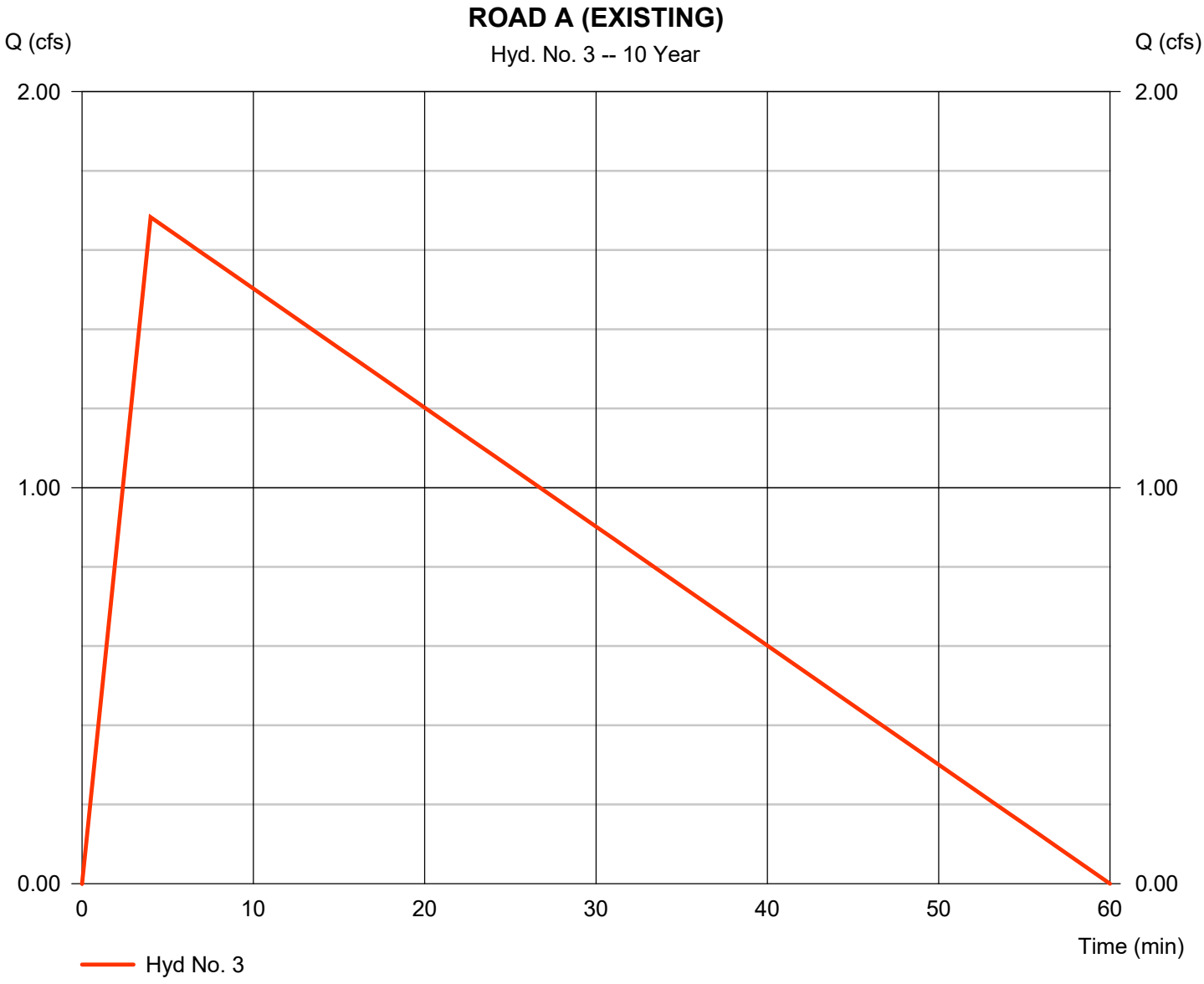


Hydrograph Report

Hyd. No. 3

ROAD A (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 1.683 cfs
Storm frequency	= 10 yrs	Time to peak	= 4 min
Time interval	= 1 min	Hyd. volume	= 0.070 acft
Drainage area	= 0.370 ac	Runoff coeff.	= 0.55
Intensity	= 8.270 in/hr	Tc by User	= 4.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/14

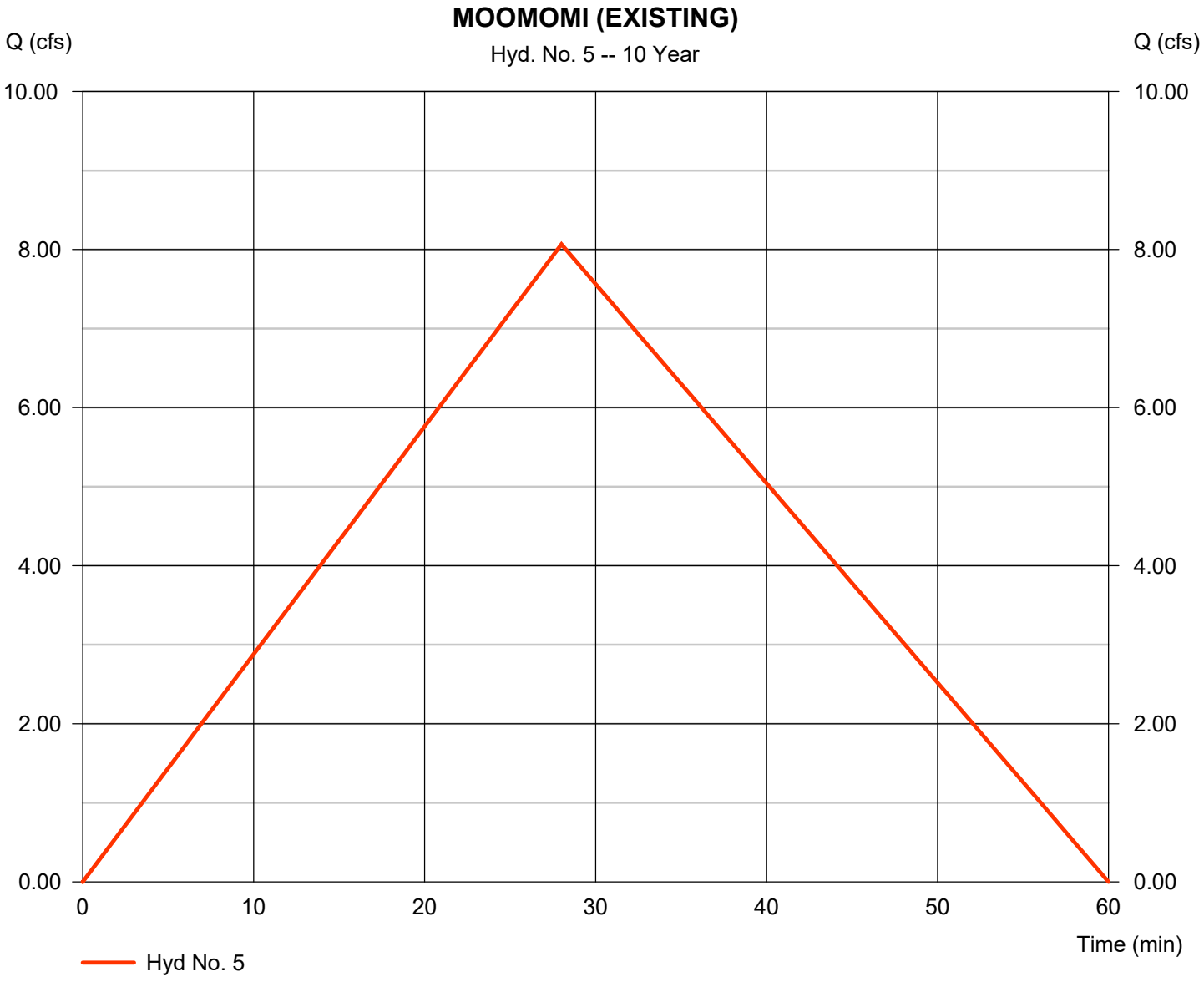


Hydrograph Report

Hyd. No. 5

MOOMOMI (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	8.066 cfs
Storm frequency	=	10 yrs	Time to peak	=	28 min
Time interval	=	1 min	Hyd. volume	=	0.334 acft
Drainage area	=	4.170 ac	Runoff coeff.	=	0.55
Intensity	=	3.517 in/hr	Tc by User	=	28.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.15

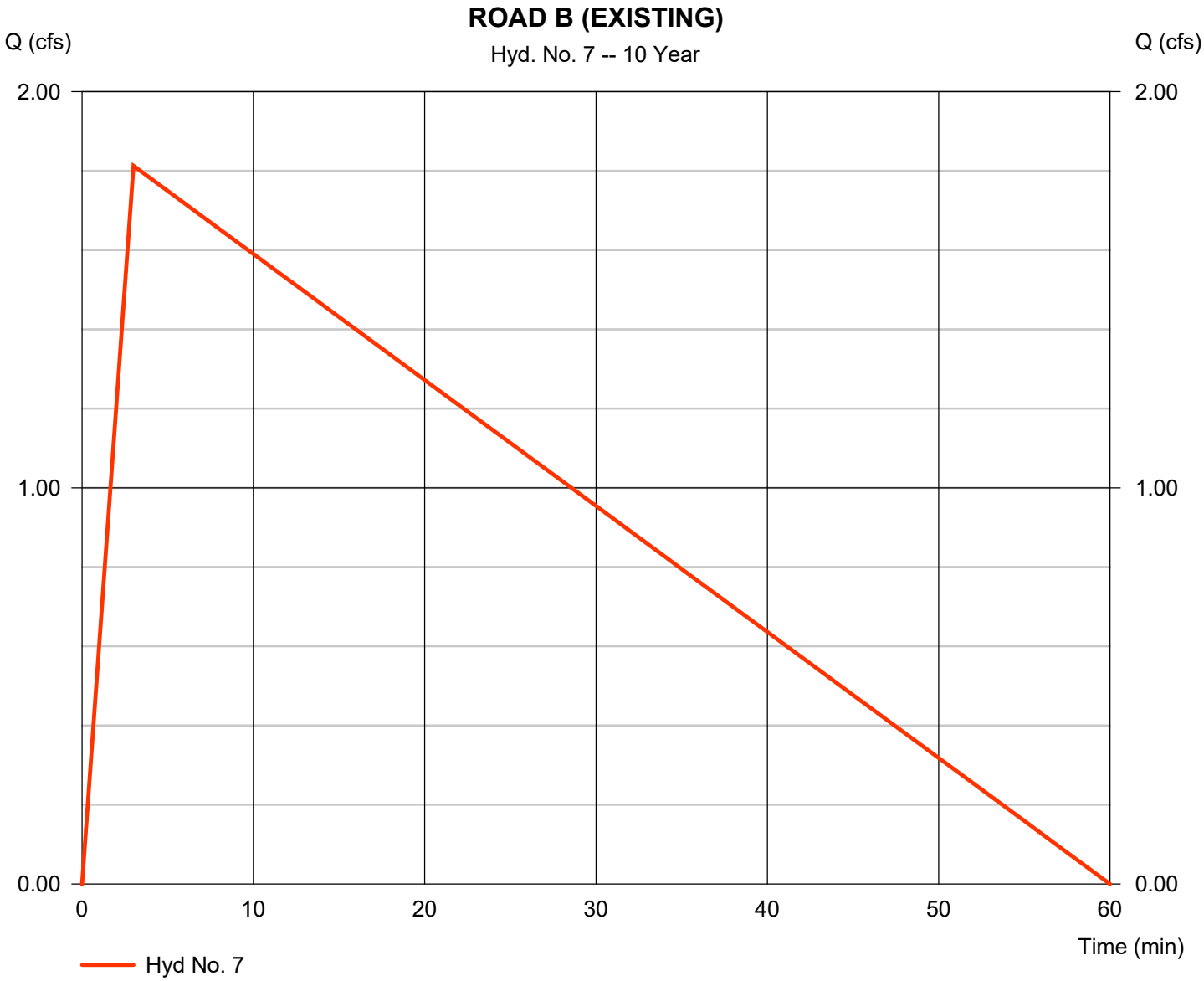


Hydrograph Report

Hyd. No. 7

ROAD B (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	1.813 cfs
Storm frequency	=	10 yrs	Time to peak	=	3 min
Time interval	=	1 min	Hyd. volume	=	0.075 acft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.55
Intensity	=	8.908 in/hr	Tc by User	=	3.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/19

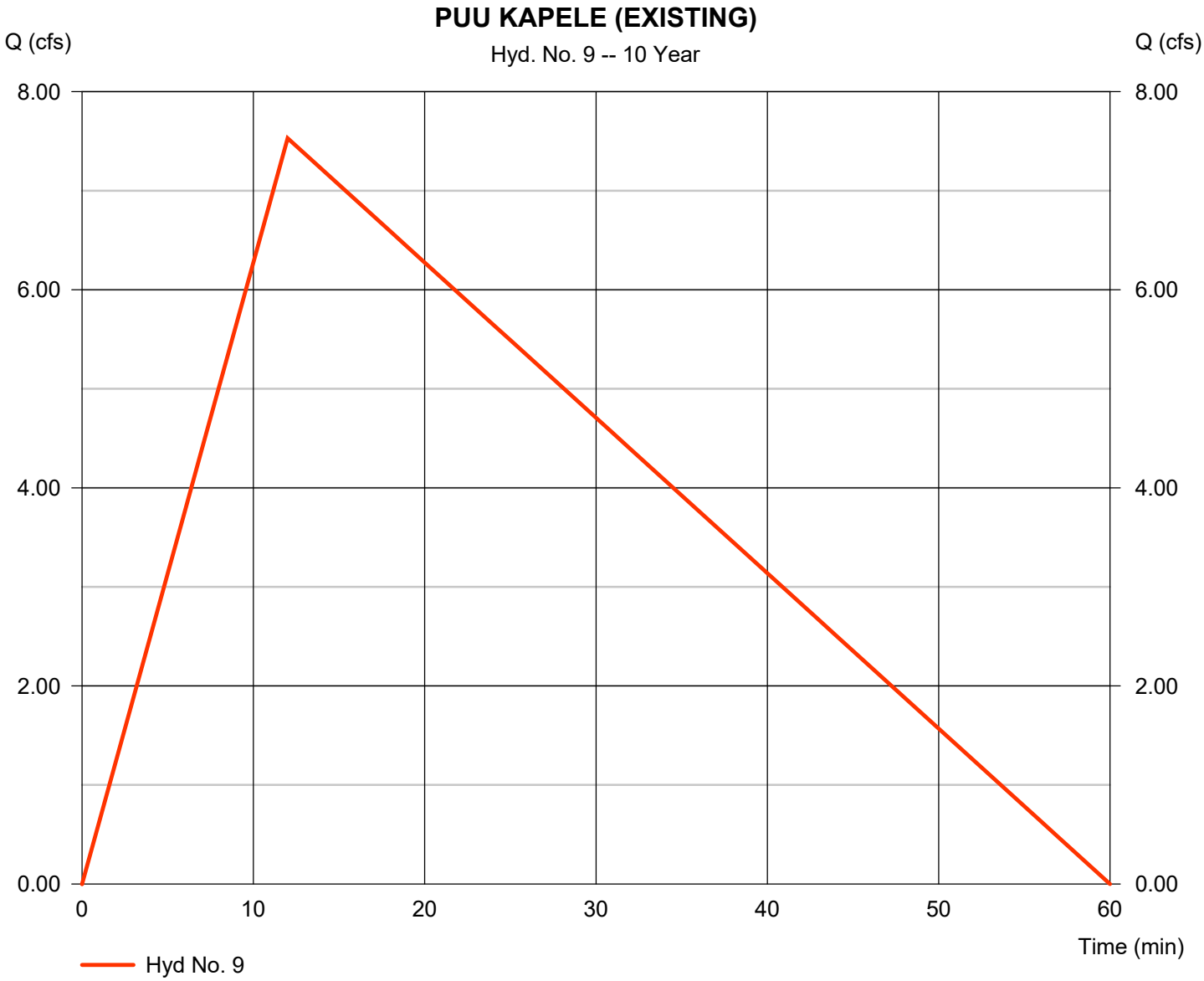


Hydrograph Report

Hyd. No. 9

PUU KAPELE (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 7.530 cfs
Storm frequency	= 10 yrs	Time to peak	= 12 min
Time interval	= 1 min	Hyd. volume	= 0.311 acft
Drainage area	= 2.500 ac	Runoff coeff.	= 0.55
Intensity	= 5.476 in/hr	Tc by User	= 12.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/4

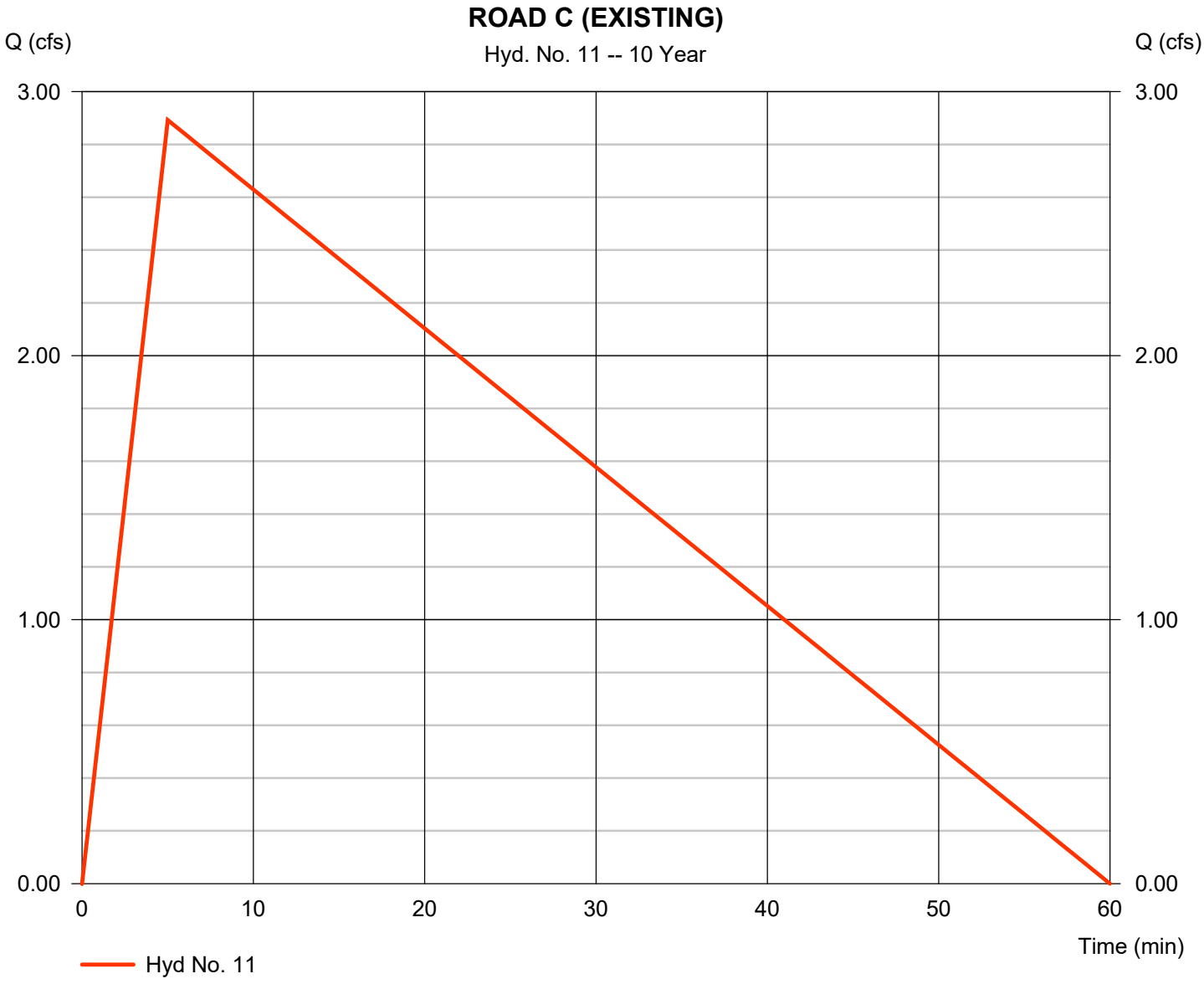


Hydrograph Report

Hyd. No. 11

ROAD C (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	2.892 cfs
Storm frequency	=	10 yrs	Time to peak	=	5 min
Time interval	=	1 min	Hyd. volume	=	0.120 acft
Drainage area	=	0.680 ac	Runoff coeff.	=	0.55
Intensity	=	7.733 in/hr	Tc by User	=	5.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/11

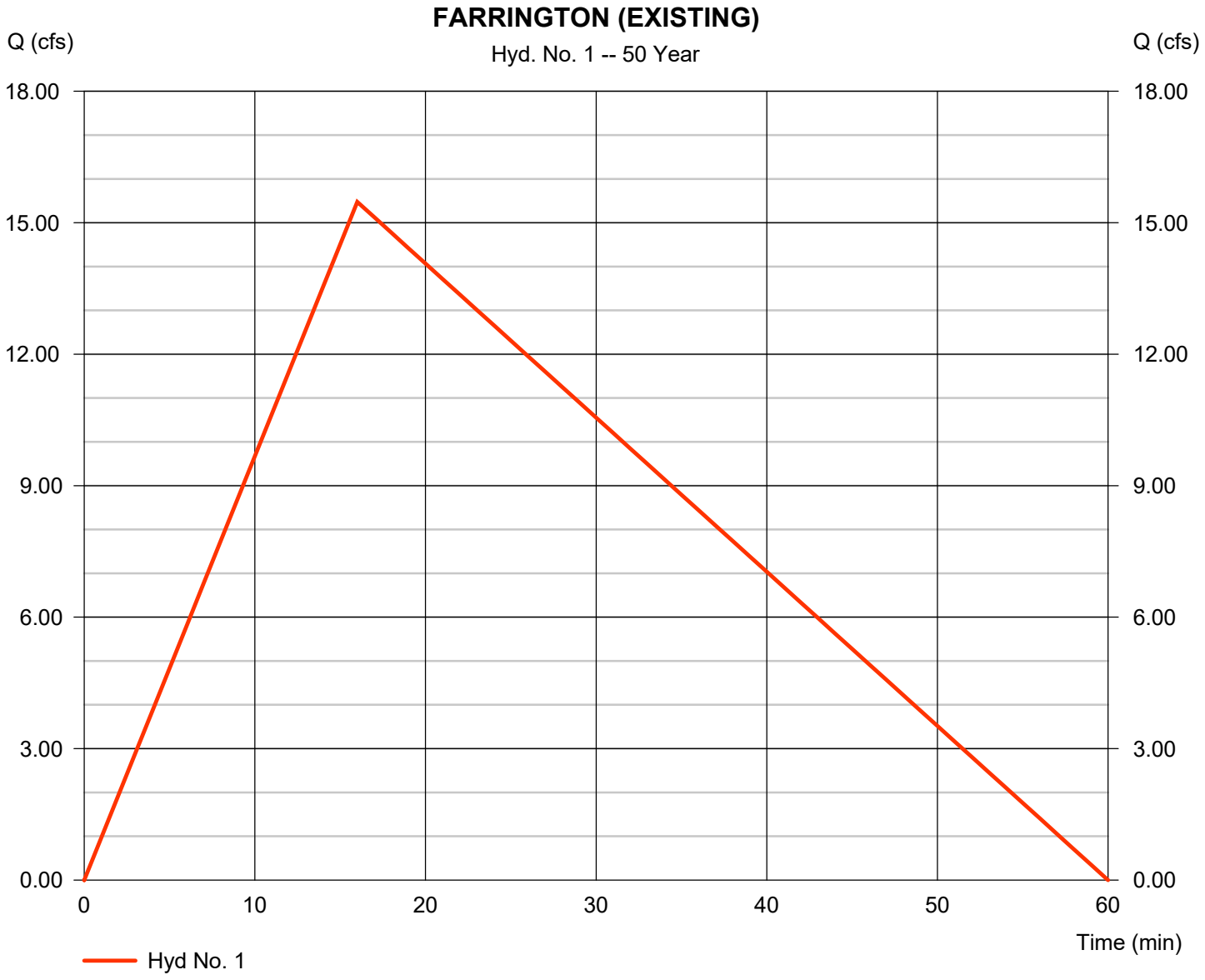


Hydrograph Report

Hyd. No. 1

FARRINGTON (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	15.48 cfs
Storm frequency	=	50 yrs	Time to peak	=	16 min
Time interval	=	1 min	Hyd. volume	=	0.639 acft
Drainage area	=	3.950 ac	Runoff coeff.	=	0.55
Intensity	=	7.123 in/hr	Tc by User	=	16.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/2.75

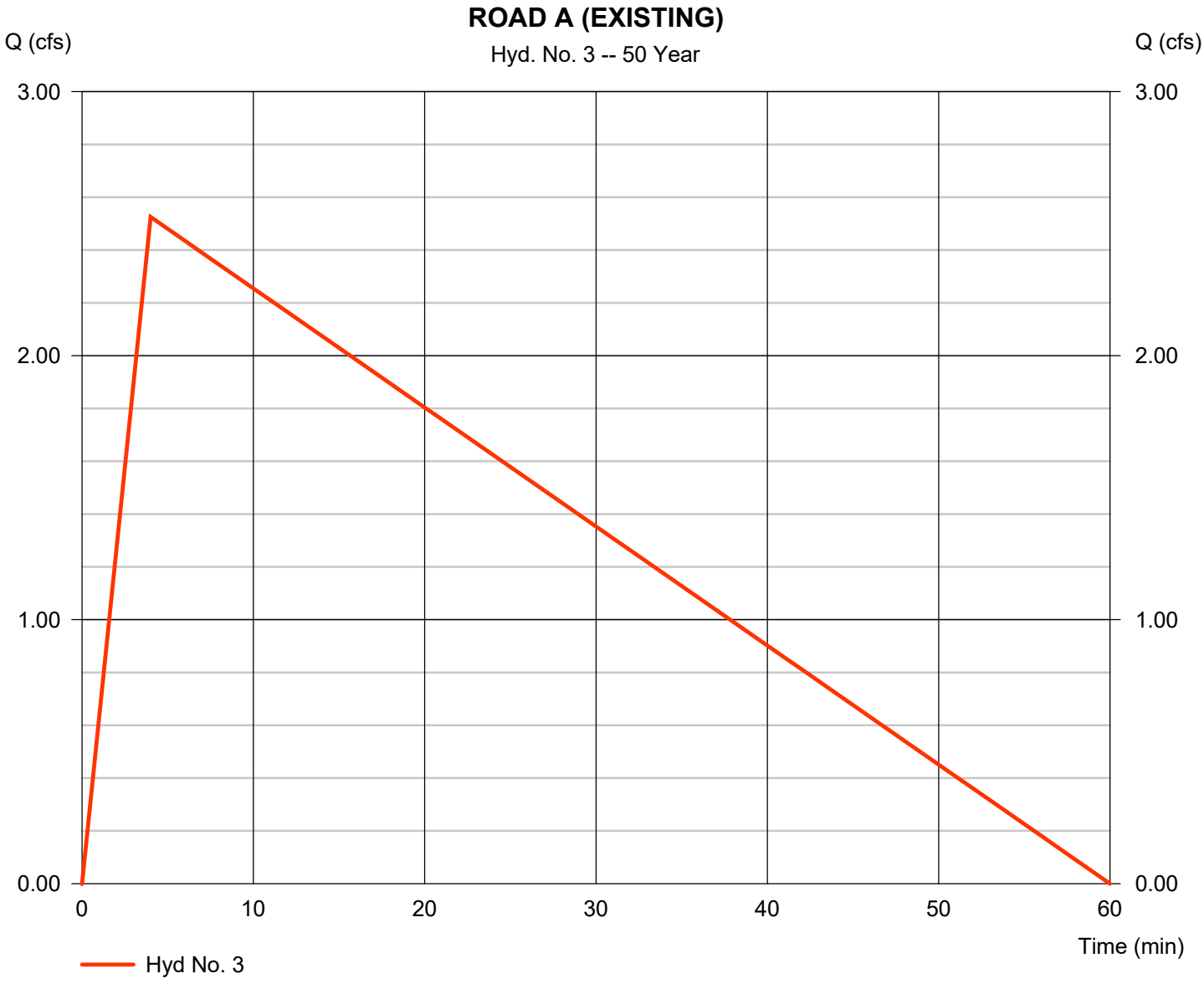


Hydrograph Report

Hyd. No. 3

ROAD A (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	2.525 cfs
Storm frequency	=	50 yrs	Time to peak	=	4 min
Time interval	=	1 min	Hyd. volume	=	0.104 acft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.55
Intensity	=	12.410 in/hr	Tc by User	=	4.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/14

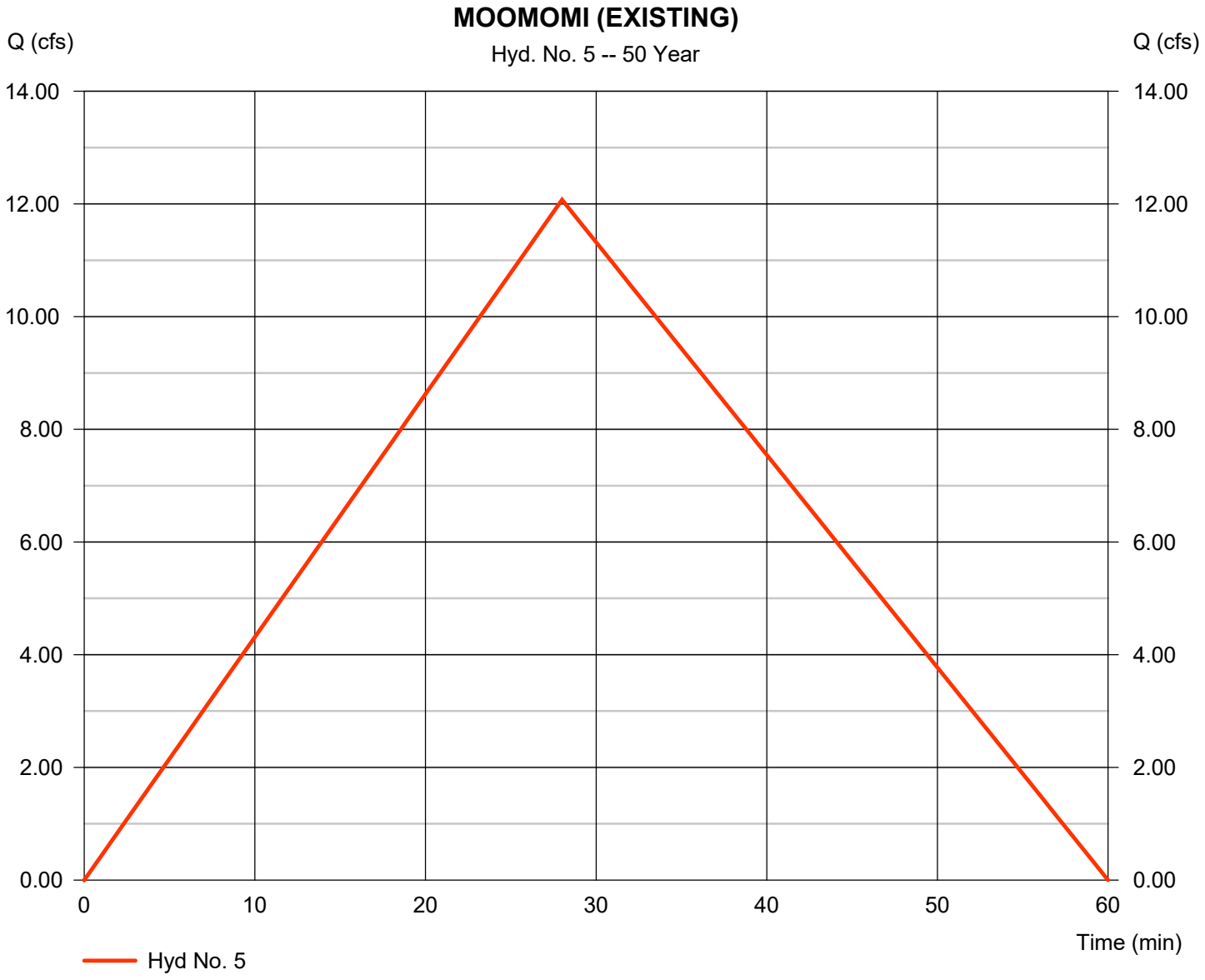


Hydrograph Report

Hyd. No. 5

MOOMOMI (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 12.07 cfs
Storm frequency	= 50 yrs	Time to peak	= 28 min
Time interval	= 1 min	Hyd. volume	= 0.501 acft
Drainage area	= 4.170 ac	Runoff coeff.	= 0.55
Intensity	= 5.264 in/hr	Tc by User	= 28.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.15

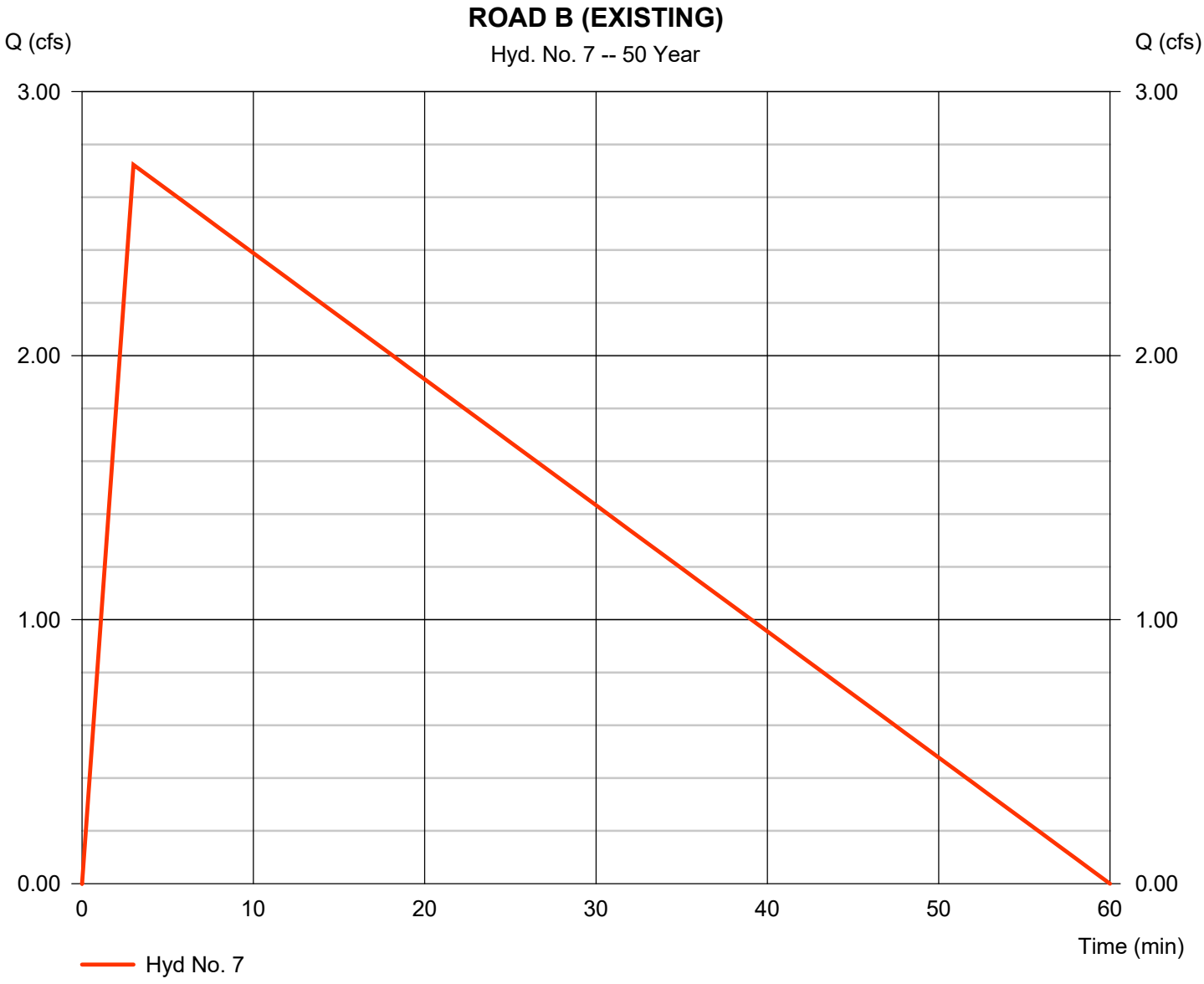


Hydrograph Report

Hyd. No. 7

ROAD B (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	2.723 cfs
Storm frequency	=	50 yrs	Time to peak	=	3 min
Time interval	=	1 min	Hyd. volume	=	0.113 acft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.55
Intensity	=	13.380 in/hr	Tc by User	=	3.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/19

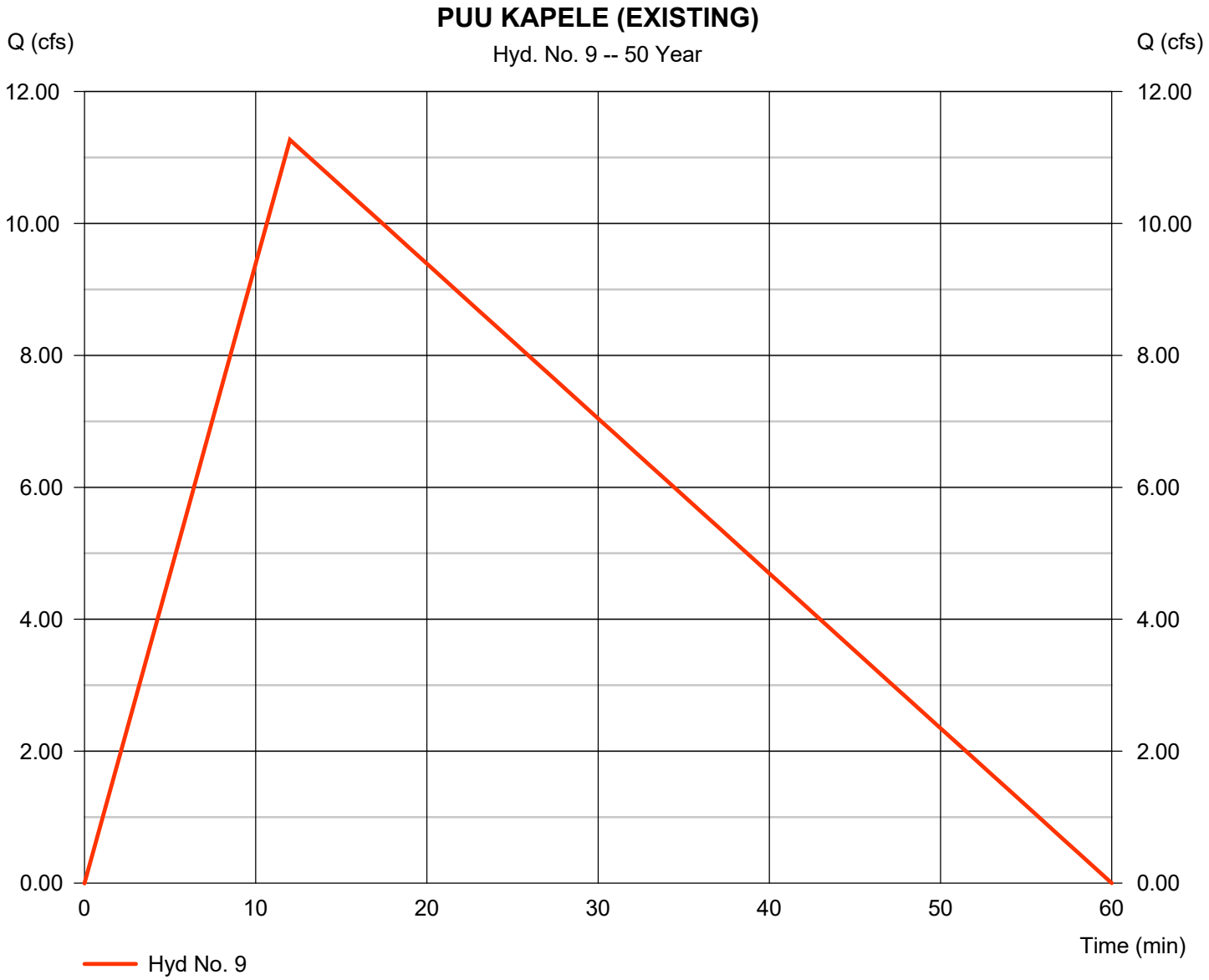


Hydrograph Report

Hyd. No. 9

PUU KAPELE (EXISTING)

Hydrograph type	= Rational	Peak discharge	= 11.27 cfs
Storm frequency	= 50 yrs	Time to peak	= 12 min
Time interval	= 1 min	Hyd. volume	= 0.466 acft
Drainage area	= 2.500 ac	Runoff coeff.	= 0.55
Intensity	= 8.195 in/hr	Tc by User	= 12.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/4

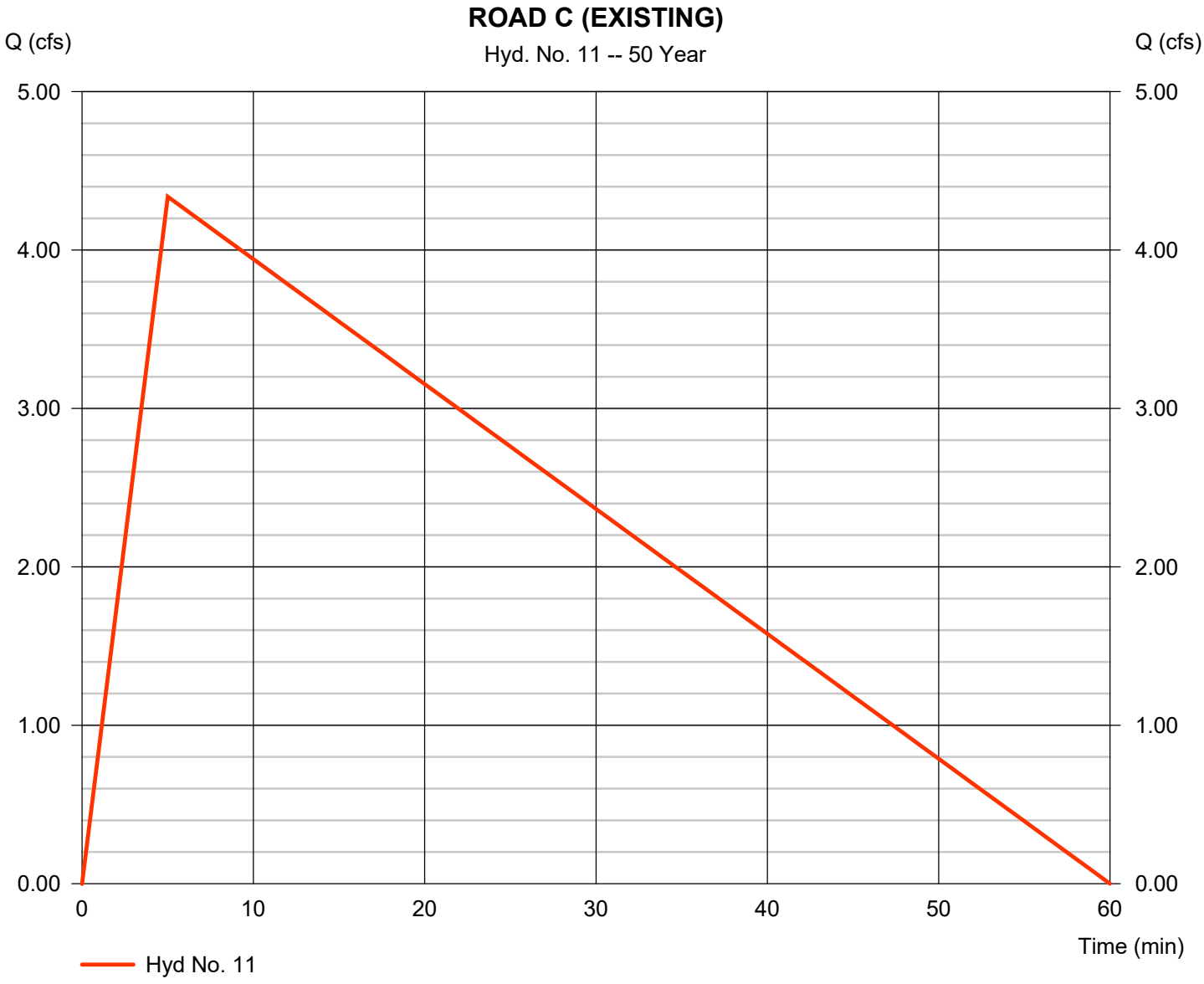


Hydrograph Report

Hyd. No. 11

ROAD C (EXISTING)

Hydrograph type	=	Rational	Peak discharge	=	4.337 cfs
Storm frequency	=	50 yrs	Time to peak	=	5 min
Time interval	=	1 min	Hyd. volume	=	0.179 acft
Drainage area	=	0.680 ac	Runoff coeff.	=	0.55
Intensity	=	11.596 in/hr	Tc by User	=	5.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/11



Hydrograph Report

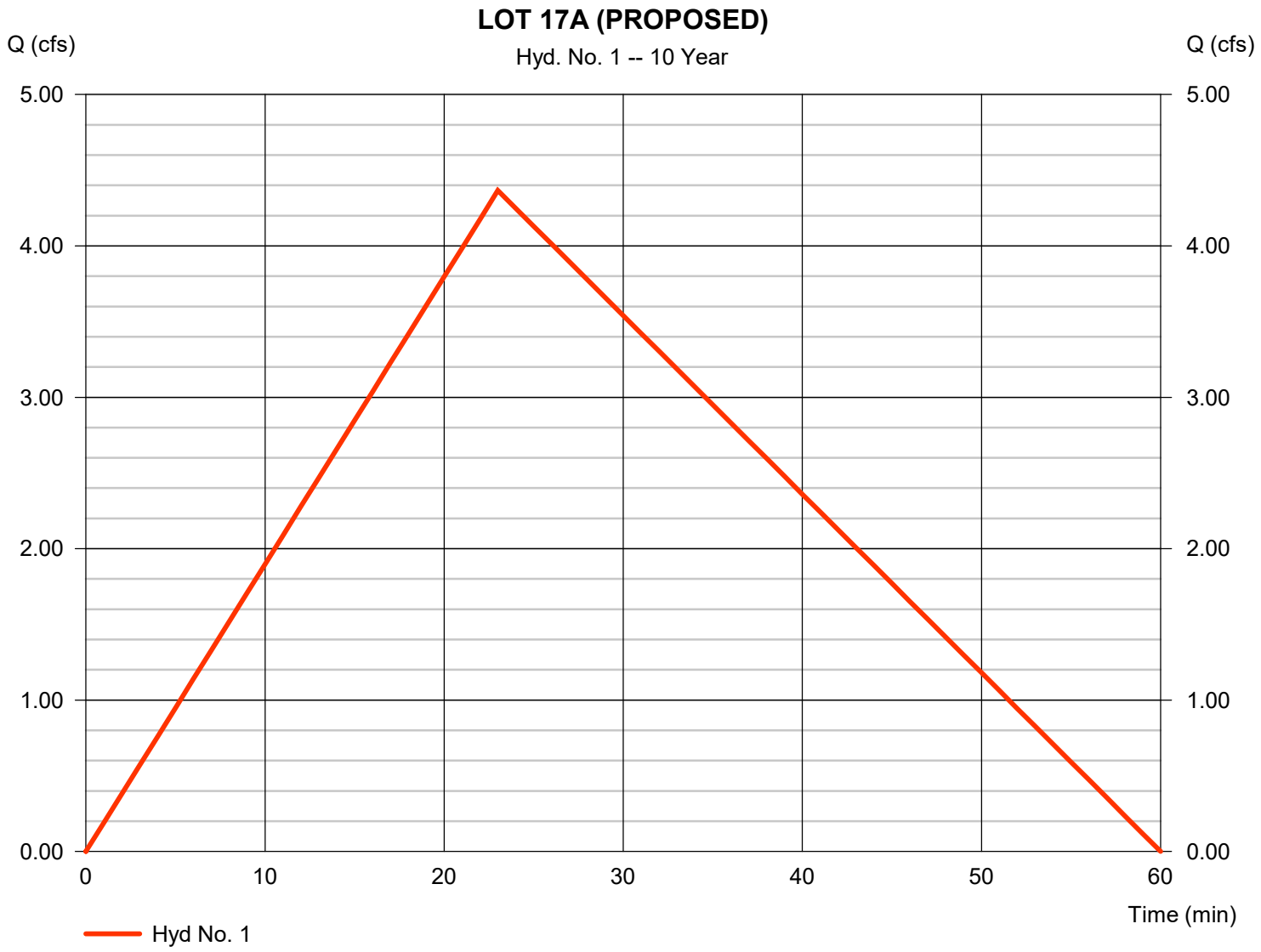
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Monday, 10 / 23 / 2023

Hyd. No. 1

LOT 17A (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 4.366 cfs
Storm frequency	= 10 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 7,923 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.57*
Intensity	= 3.928 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.63

* Composite (Area/C) = [(0.110 x 0.95) + (1.890 x 0.55)] / 1.950



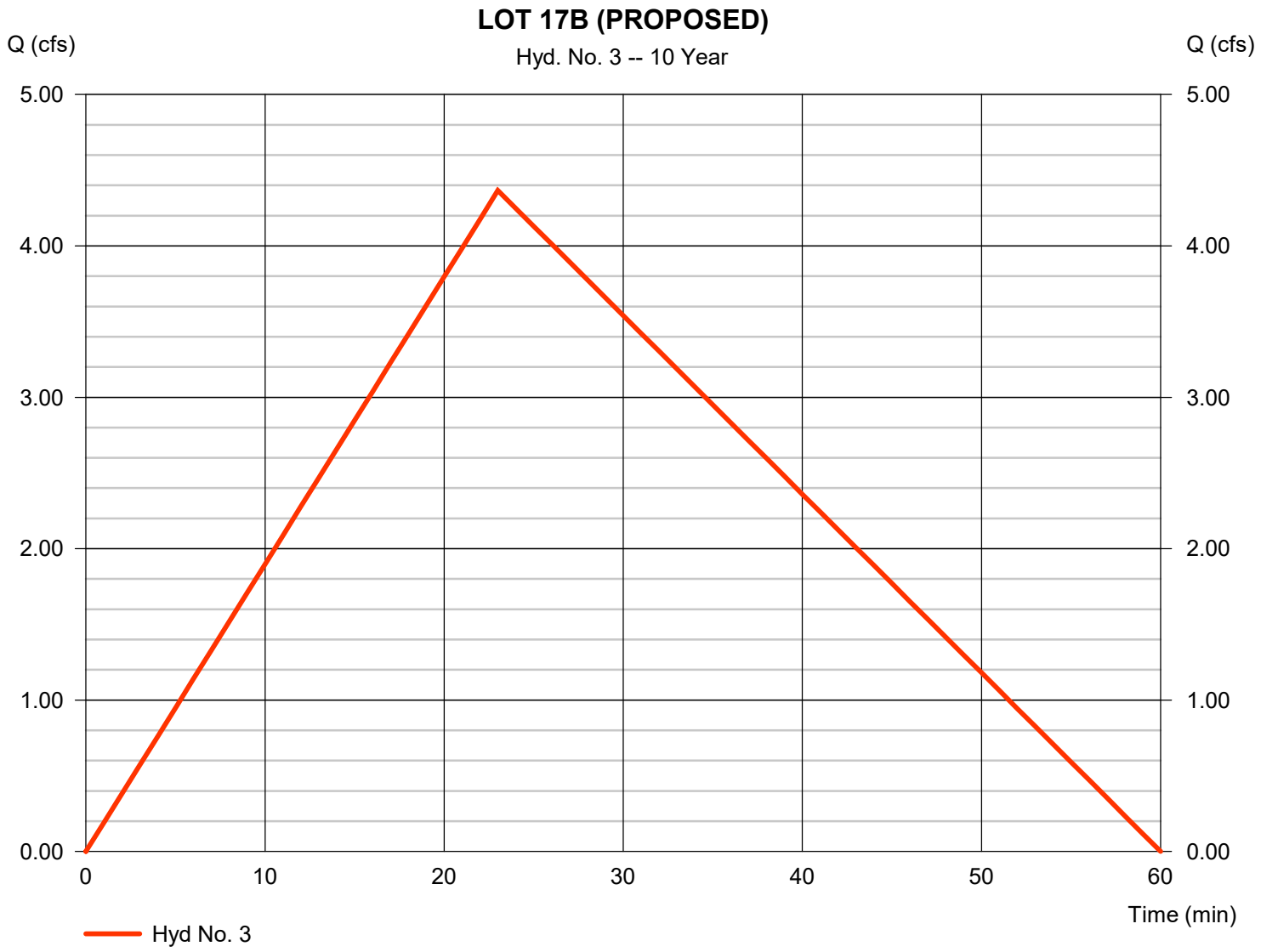
Hydrograph Report

Hyd. No. 3

LOT 17B (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 4.366 cfs
Storm frequency	= 10 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 7,923 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.57*
Intensity	= 3.928 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.63

* Composite (Area/C) = [(0.110 x 0.95) + (1.890 x 0.55)] / 1.950



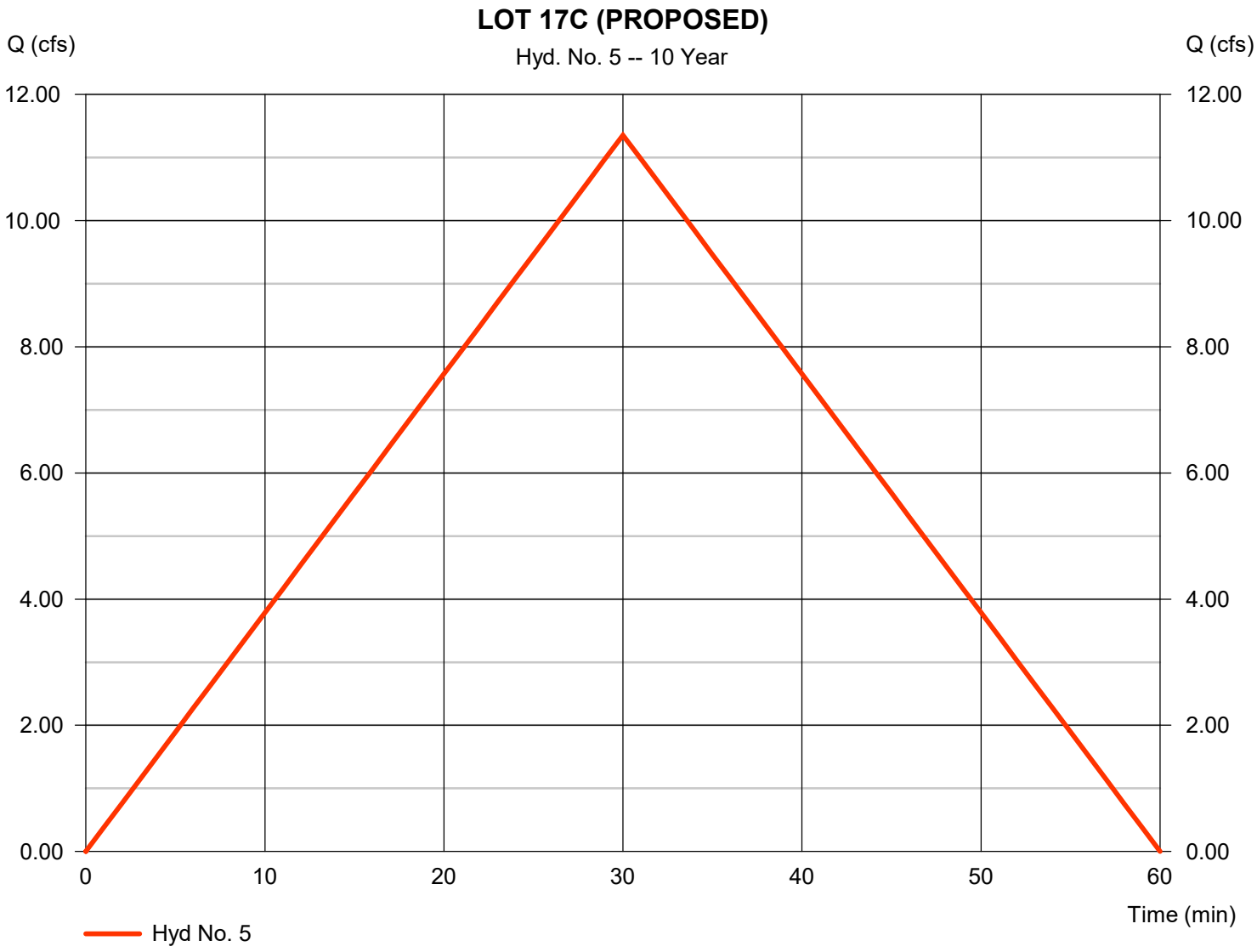
Hydrograph Report

Hyd. No. 5

LOT 17C (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 11.36 cfs
Storm frequency	= 10 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 20,442 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.56*
Intensity	= 3.380 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.110 x 0.95) + (5.690 x 0.55)] / 6.000



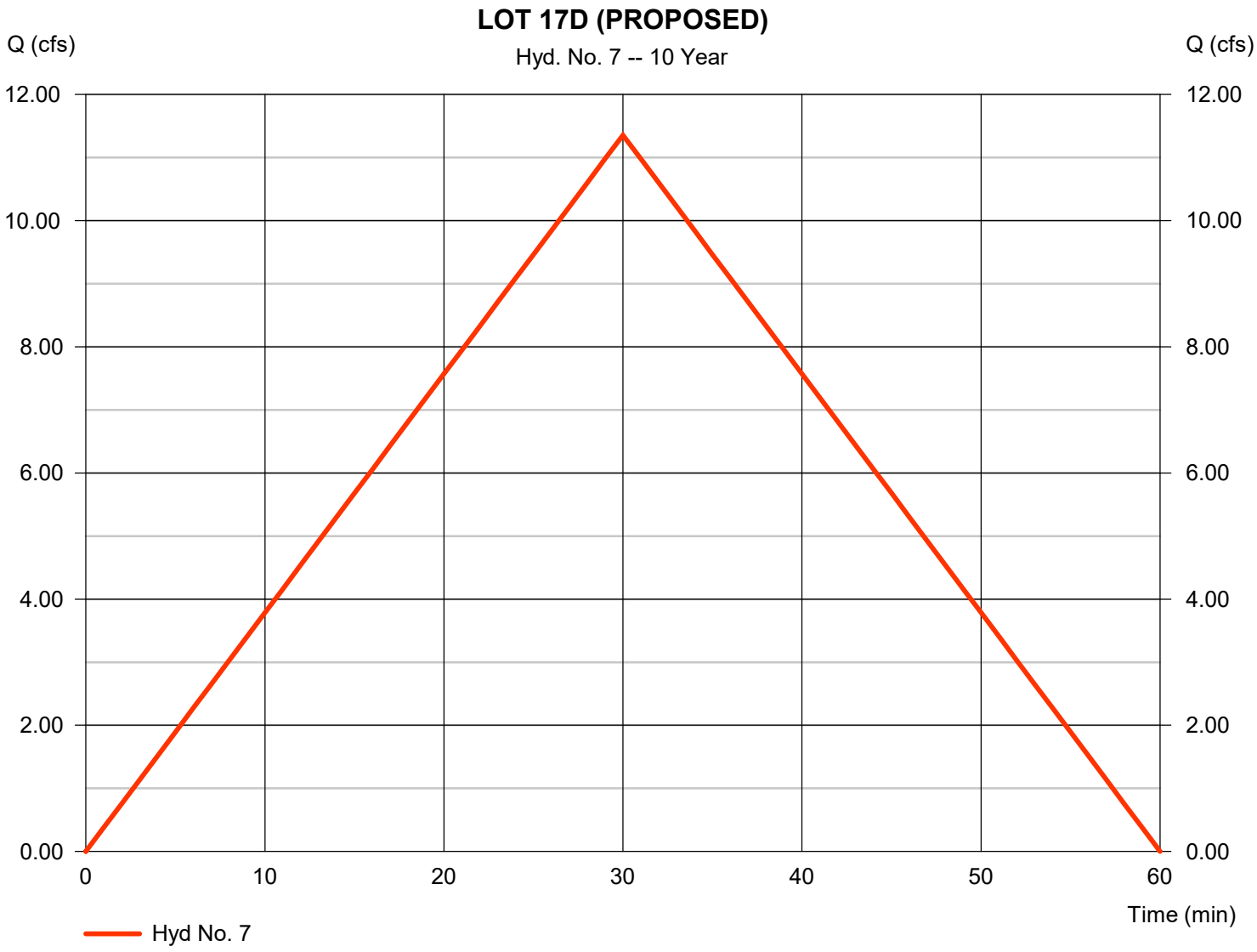
Hydrograph Report

Hyd. No. 7

LOT 17D (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 11.36 cfs
Storm frequency	= 10 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 20,442 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.56*
Intensity	= 3.380 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.110 x 0.95) + (5.690 x 0.55)] / 6.000



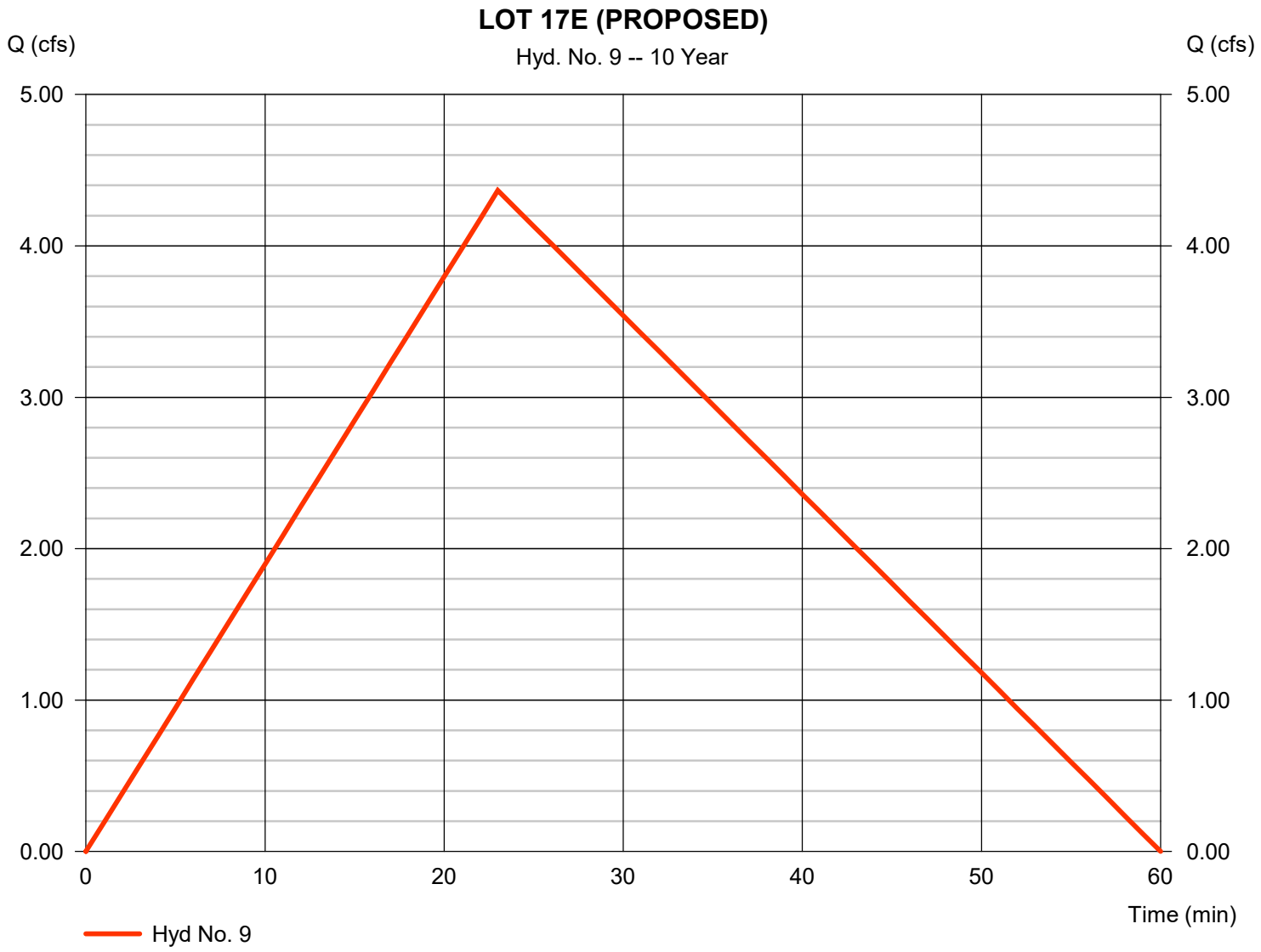
Hydrograph Report

Hyd. No. 9

LOT 17E (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	4.366 cfs
Storm frequency	=	10 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	7,923 cuft
Drainage area	=	1.950 ac	Runoff coeff.	=	0.57*
Intensity	=	3.928 in/hr	Tc by User	=	23.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.63

* Composite (Area/C) = [(0.110 x 0.95) + (1.890 x 0.55)] / 1.950



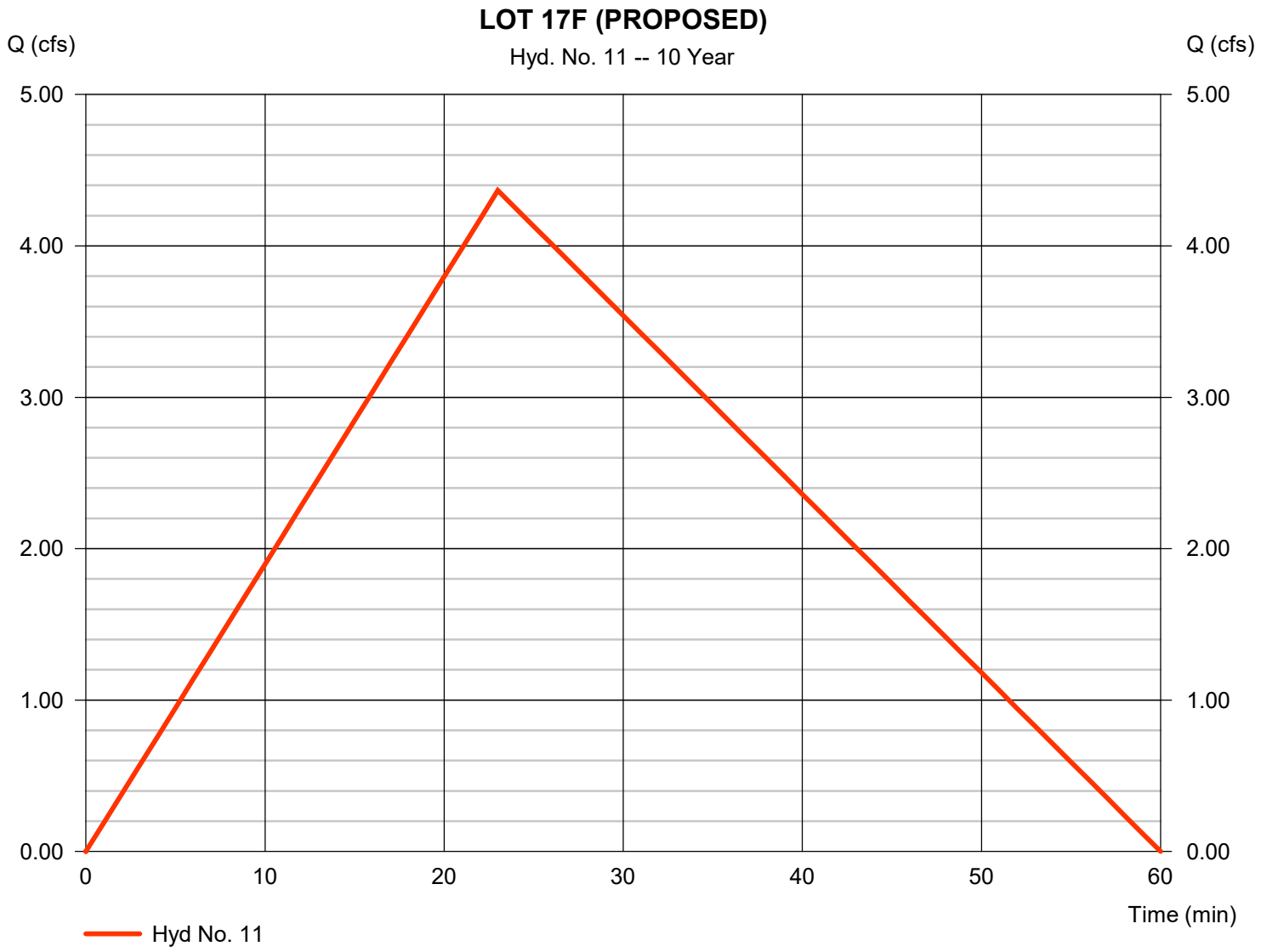
Hydrograph Report

Hyd. No. 11

LOT 17F (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 4.366 cfs
Storm frequency	= 10 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 7,923 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.57*
Intensity	= 3.928 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.63

* Composite (Area/C) = [(0.110 x 0.95) + (1.890 x 0.55)] / 1.950



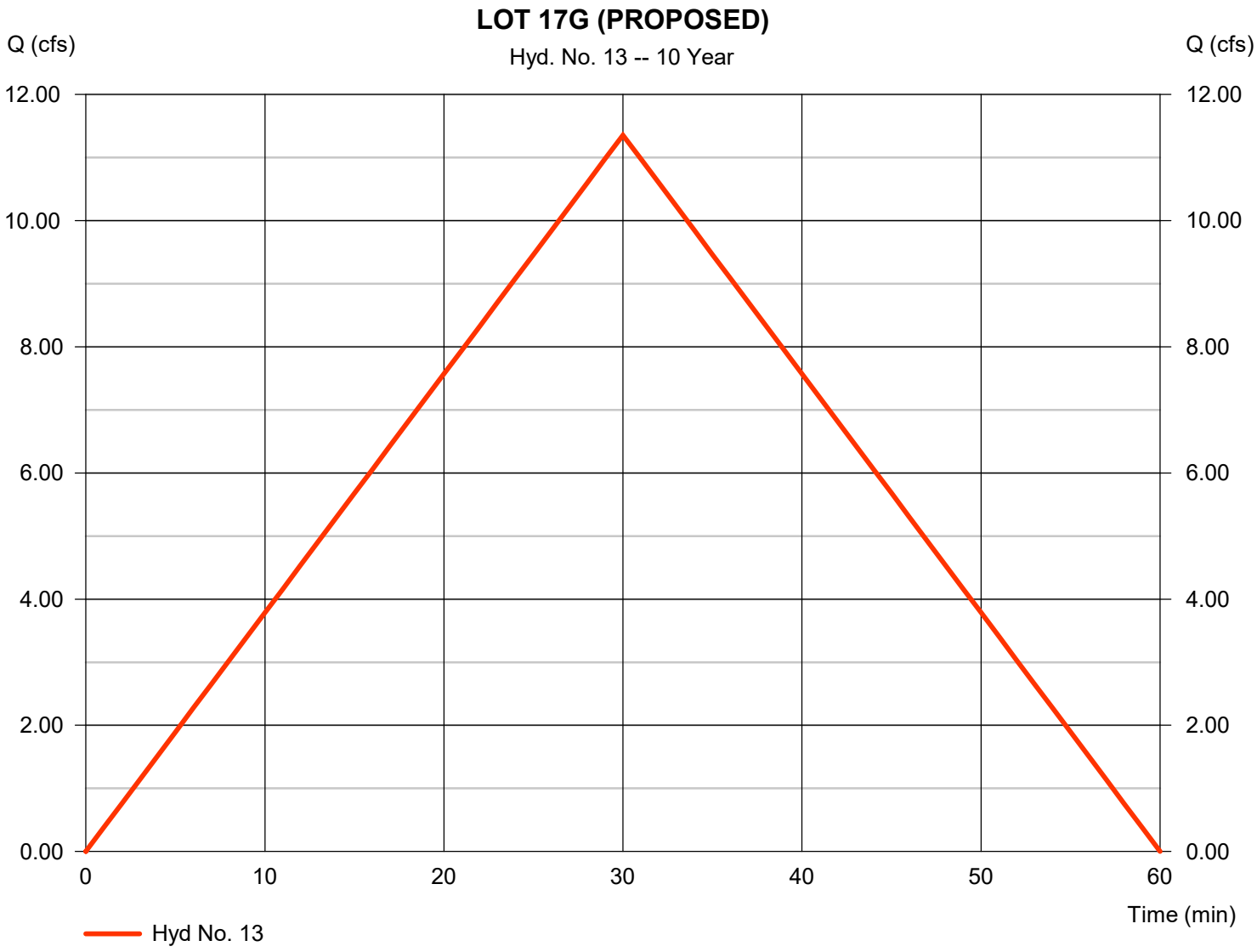
Hydrograph Report

Hyd. No. 13

LOT 17G (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 11.36 cfs
Storm frequency	= 10 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 20,442 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.56*
Intensity	= 3.380 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.110 x 0.95) + (5.690 x 0.55)] / 6.000



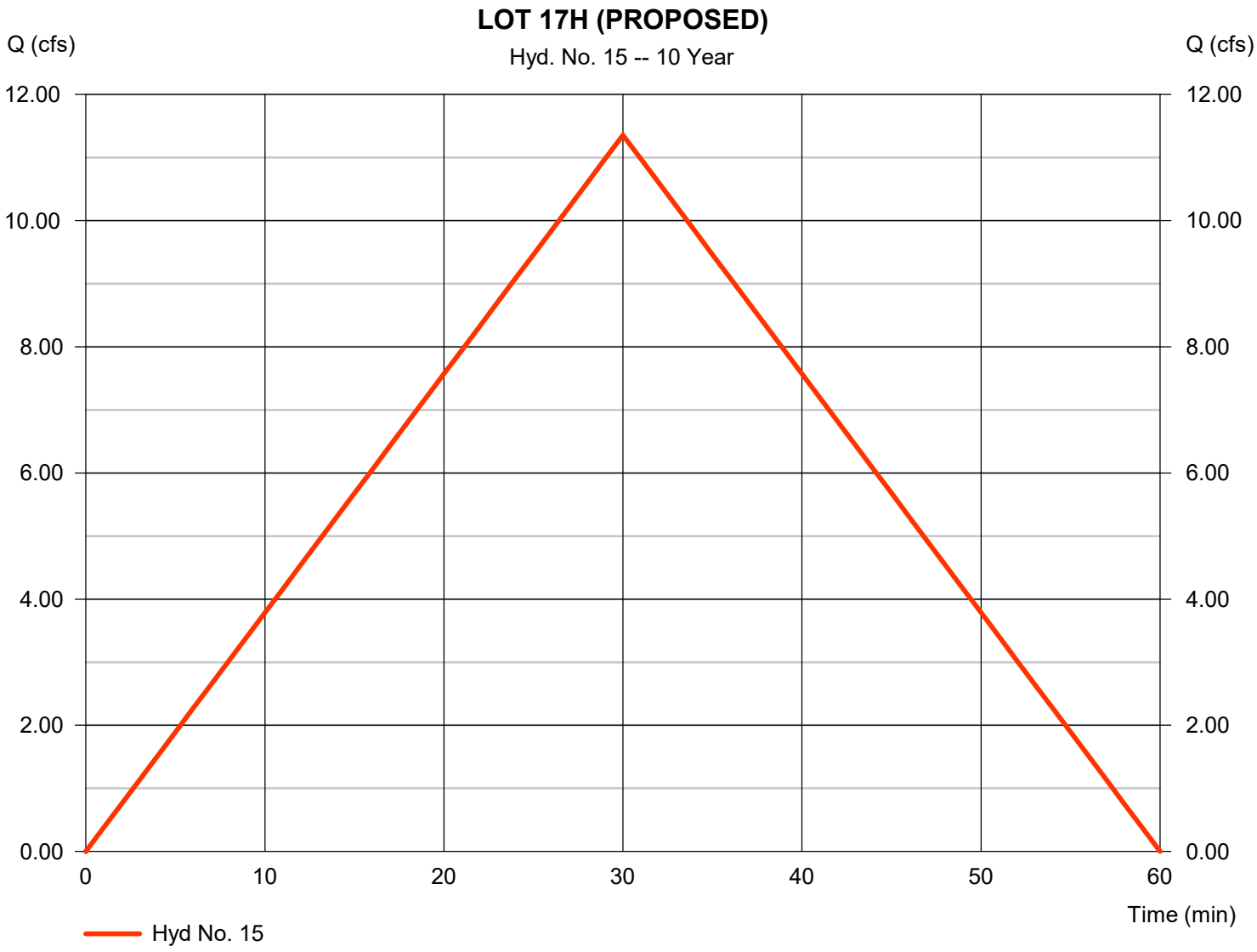
Hydrograph Report

Hyd. No. 15

LOT 17H (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 11.36 cfs
Storm frequency	= 10 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 20,442 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.56*
Intensity	= 3.380 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.110 x 0.95) + (5.690 x 0.55)] / 6.000



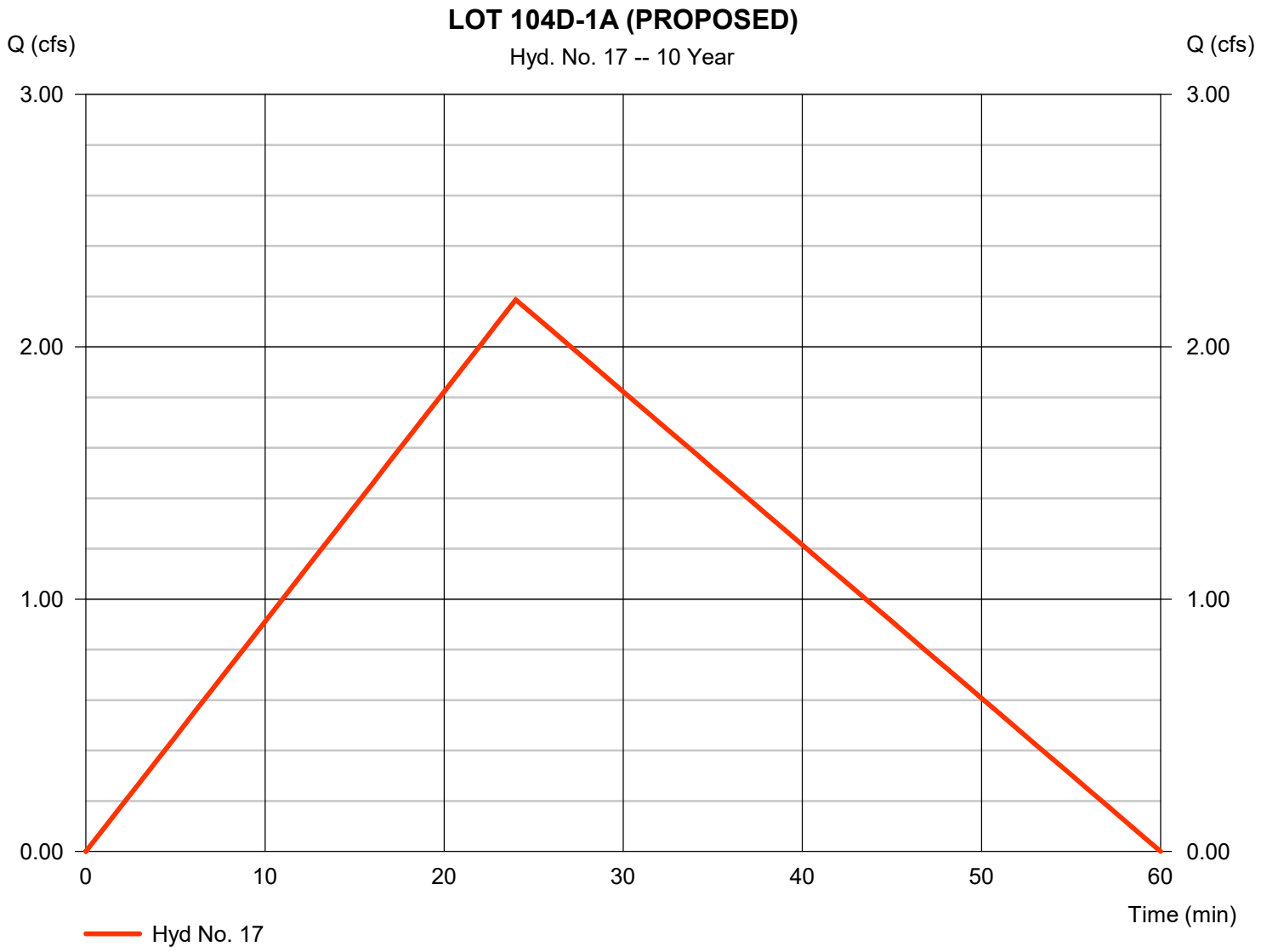
Hydrograph Report

Hyd. No. 17

LOT 104D-1A (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	2.187 cfs
Storm frequency	=	10 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	3,936 cuft
Drainage area	=	1.000 ac	Runoff coeff.	=	0.57*
Intensity	=	3.837 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

* Composite (Area/C) = [(0.110 x 0.95) + (2.090 x 0.55)] / 1.000



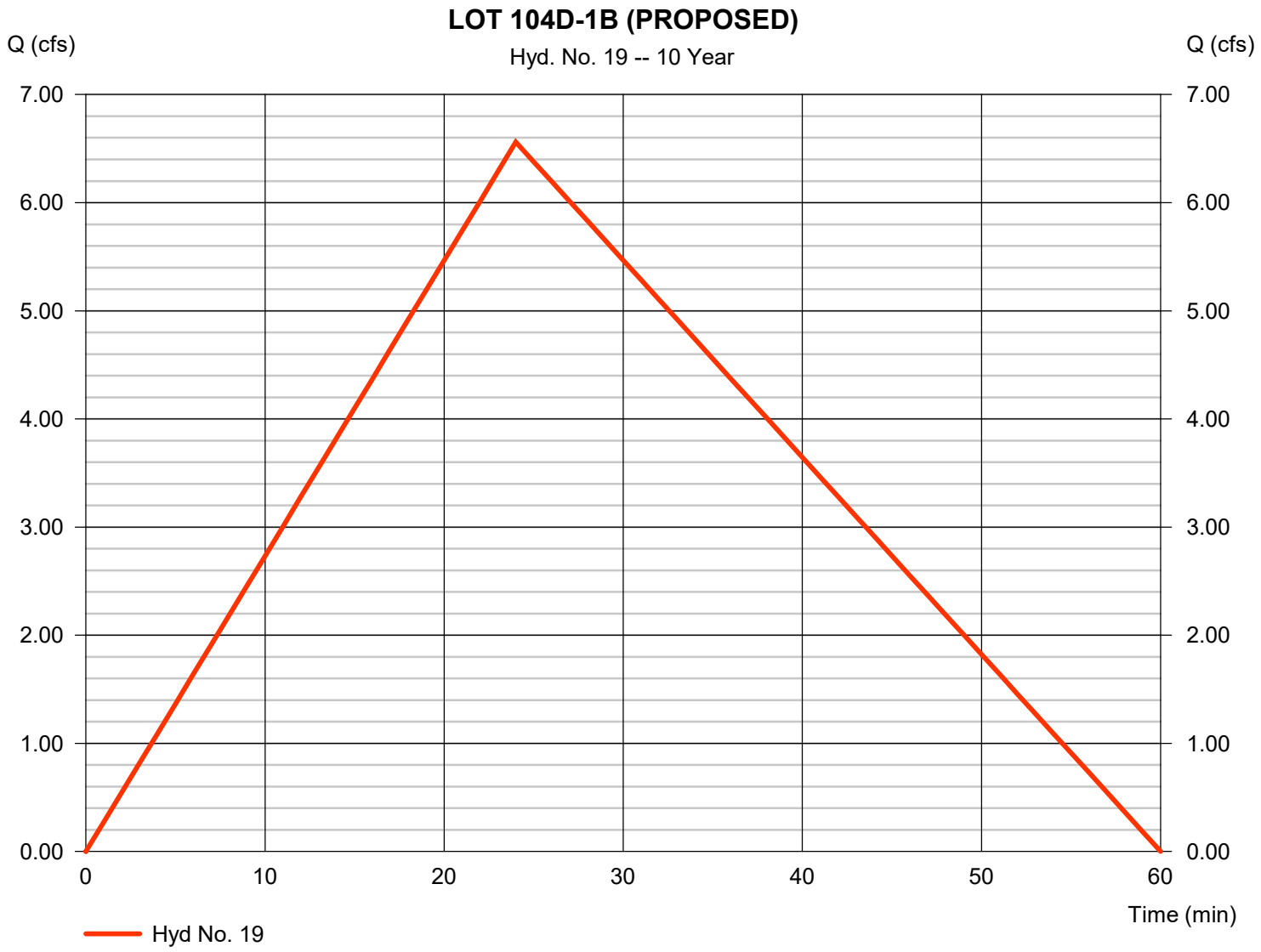
Hydrograph Report

Hyd. No. 19

LOT 104D-1B (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	6.560 cfs
Storm frequency	=	10 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	11,809 cuft
Drainage area	=	3.000 ac	Runoff coeff.	=	0.57*
Intensity	=	3.837 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

* Composite (Area/C) = [(0.110 x 0.95) + (2.390 x 0.55)] / 3.000



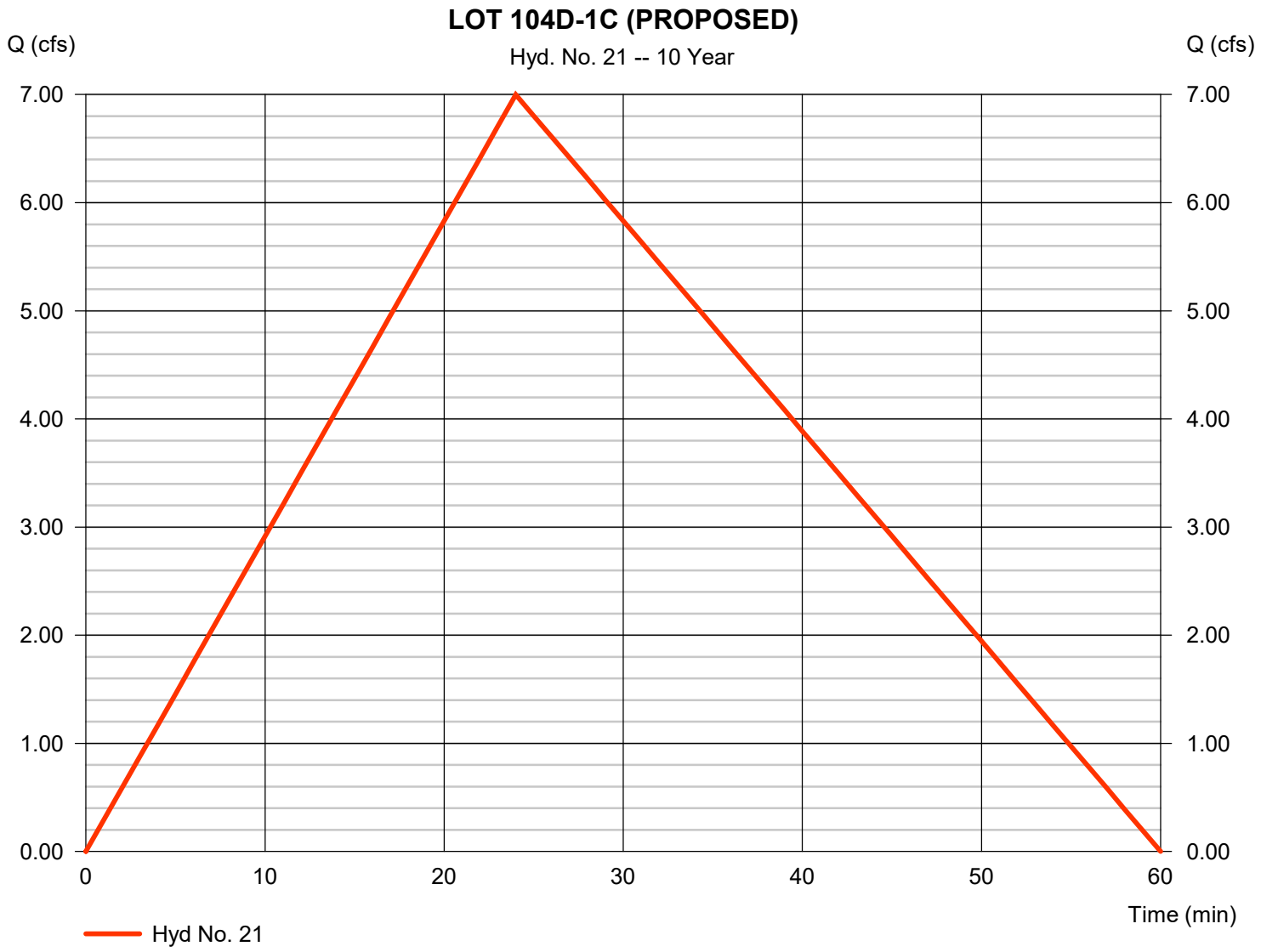
Hydrograph Report

Hyd. No. 21

LOT 104D-1C (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	6.998 cfs
Storm frequency	=	10 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	12,596 cuft
Drainage area	=	3.200 ac	Runoff coeff.	=	0.57*
Intensity	=	3.837 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

* Composite (Area/C) = [(0.110 x 0.95) + (2.390 x 0.55)] / 3.200



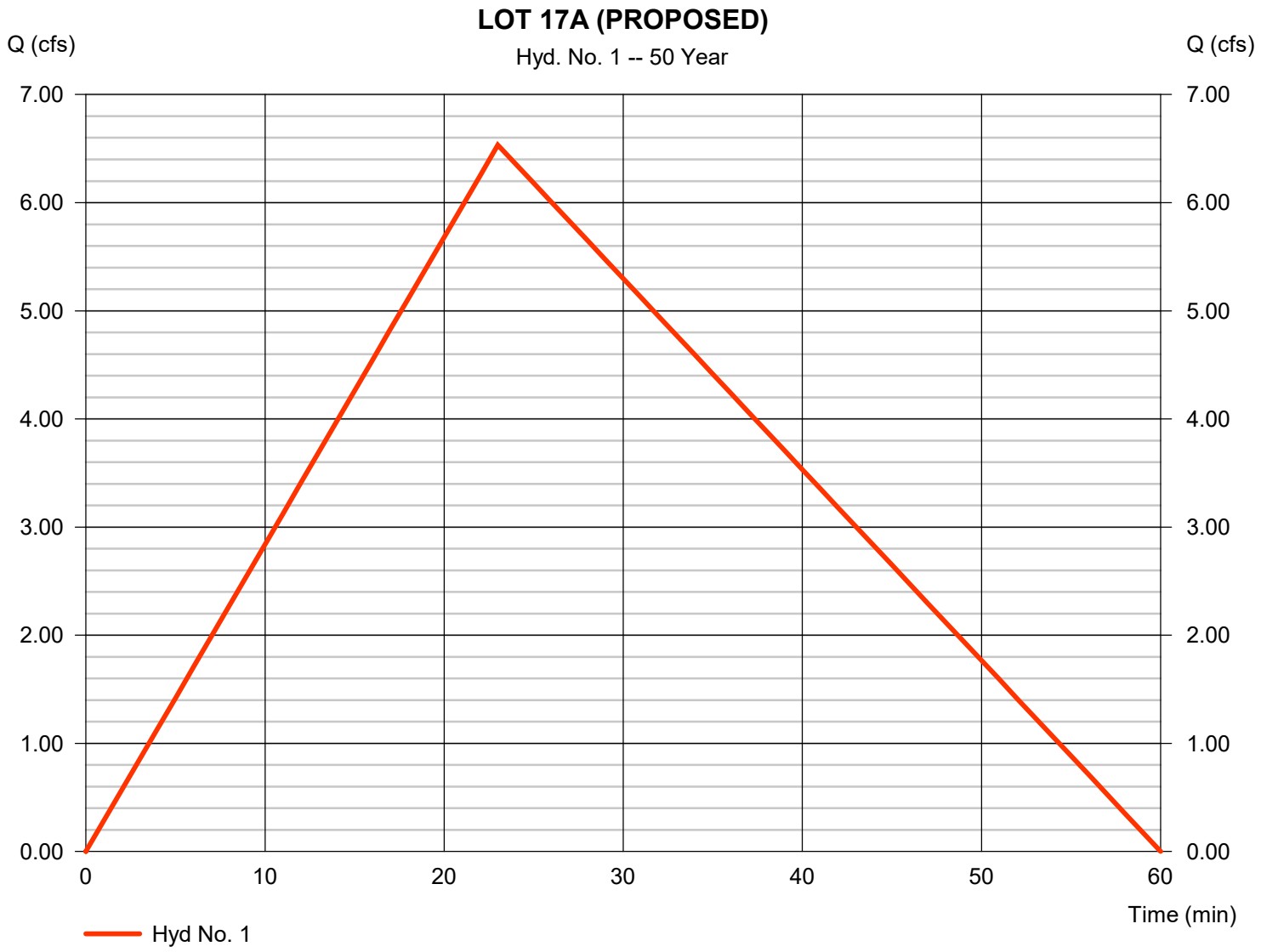
Hydrograph Report

Hyd. No. 1

LOT 17A (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 6.534 cfs
Storm frequency	= 50 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 11,856 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.57*
Intensity	= 5.878 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.63

* Composite (Area/C) = [(0.110 x 0.95) + (1.890 x 0.55)] / 1.950



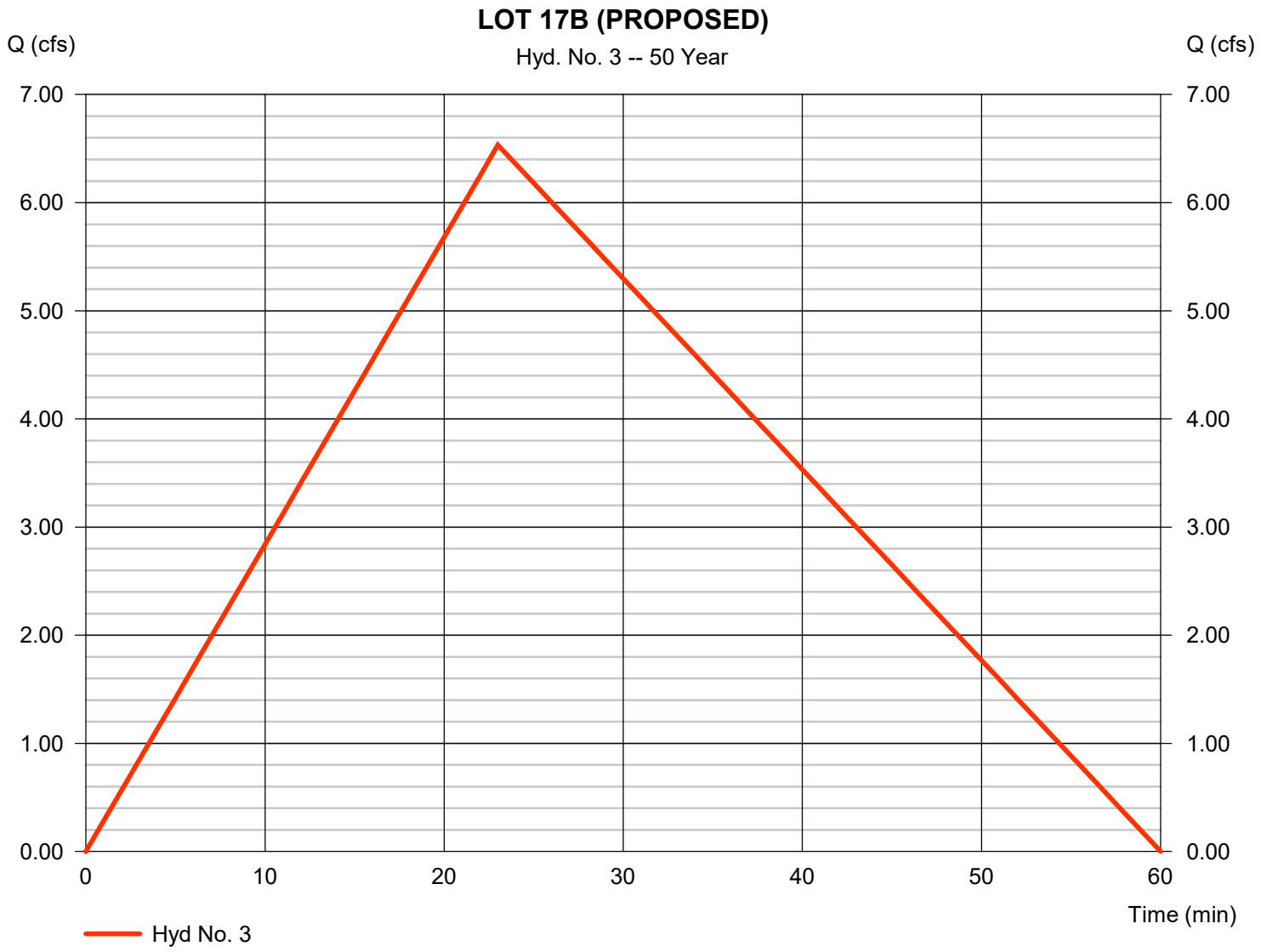
Hydrograph Report

Hyd. No. 3

LOT 17B (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	6.534 cfs
Storm frequency	=	50 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	11,856 cuft
Drainage area	=	1.950 ac	Runoff coeff.	=	0.57*
Intensity	=	5.878 in/hr	Tc by User	=	23.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.63

* Composite (Area/C) = [(0.110 x 0.95) + (1.890 x 0.55)] / 1.950



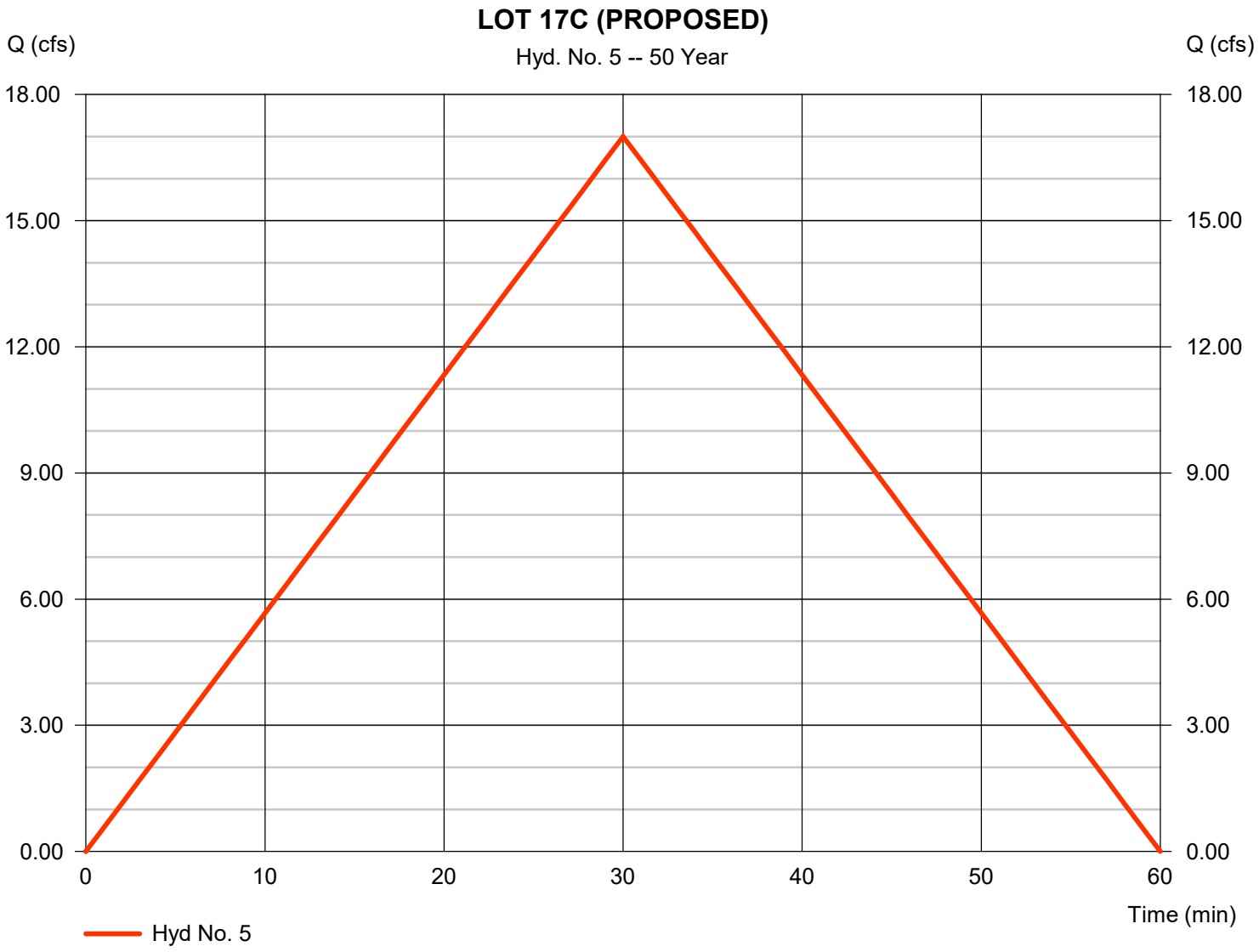
Hydrograph Report

Hyd. No. 5

LOT 17C (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	17.00 cfs
Storm frequency	=	50 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	30,603 cuft
Drainage area	=	6.000 ac	Runoff coeff.	=	0.56*
Intensity	=	5.060 in/hr	Tc by User	=	30.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1

* Composite (Area/C) = [(0.110 x 0.95) + (5.690 x 0.55)] / 6.000



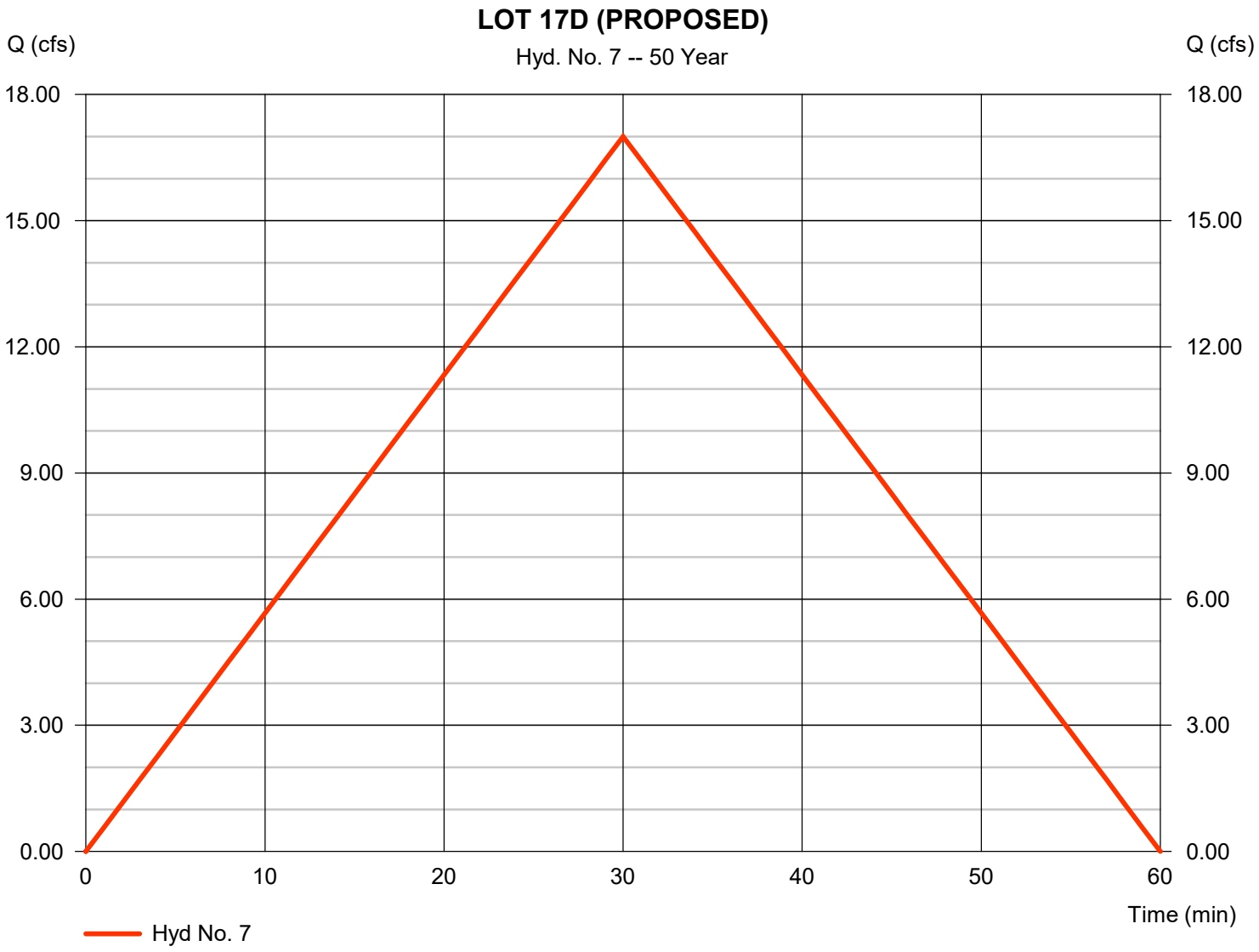
Hydrograph Report

Hyd. No. 7

LOT 17D (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	17.00 cfs
Storm frequency	=	50 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	30,603 cuft
Drainage area	=	6.000 ac	Runoff coeff.	=	0.56*
Intensity	=	5.060 in/hr	Tc by User	=	30.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1

* Composite (Area/C) = [(0.110 x 0.95) + (5.690 x 0.55)] / 6.000



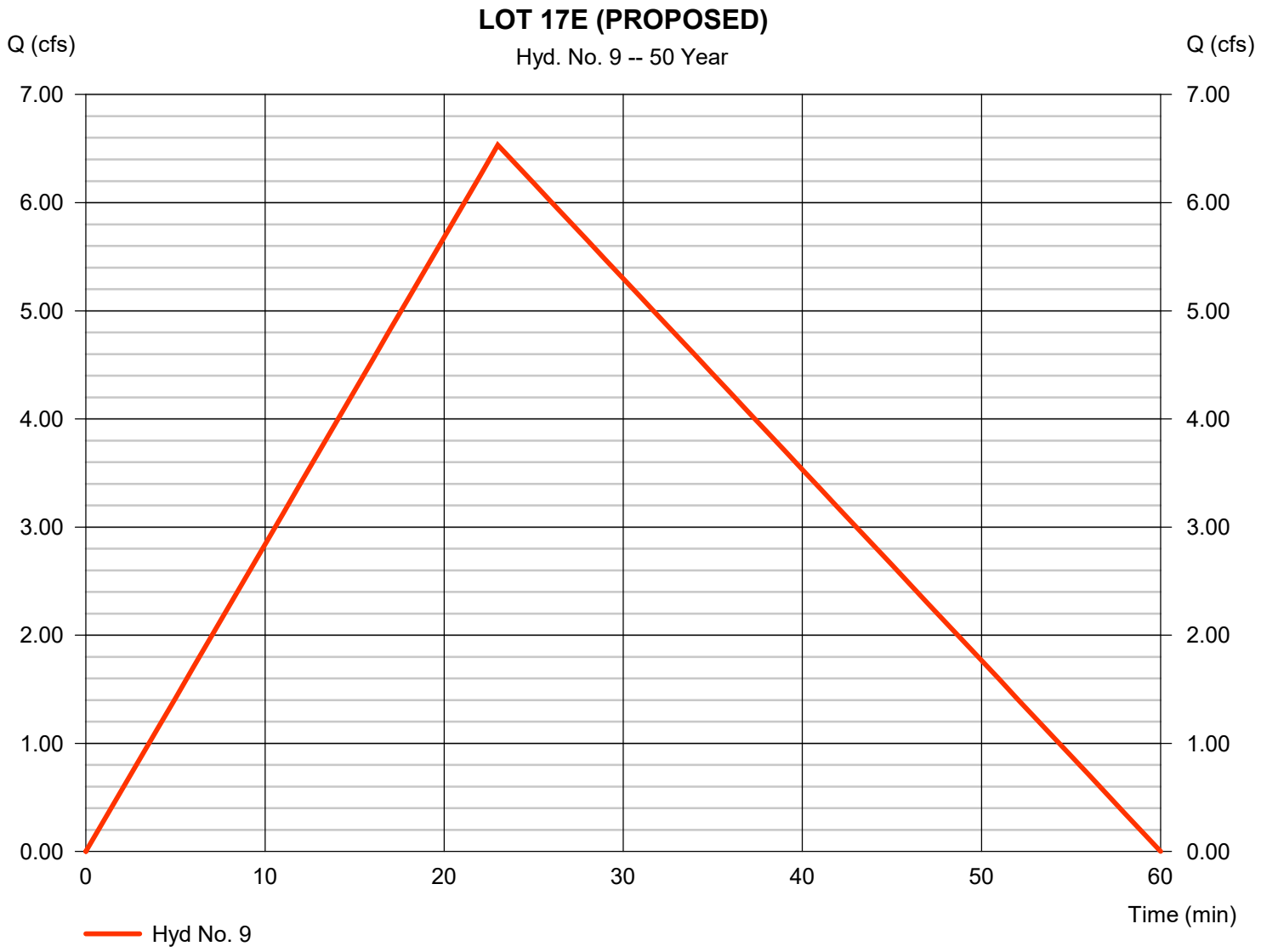
Hydrograph Report

Hyd. No. 9

LOT 17E (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 6.534 cfs
Storm frequency	= 50 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 11,856 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.57*
Intensity	= 5.878 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.63

* Composite (Area/C) = [(0.110 x 0.95) + (1.890 x 0.55)] / 1.950



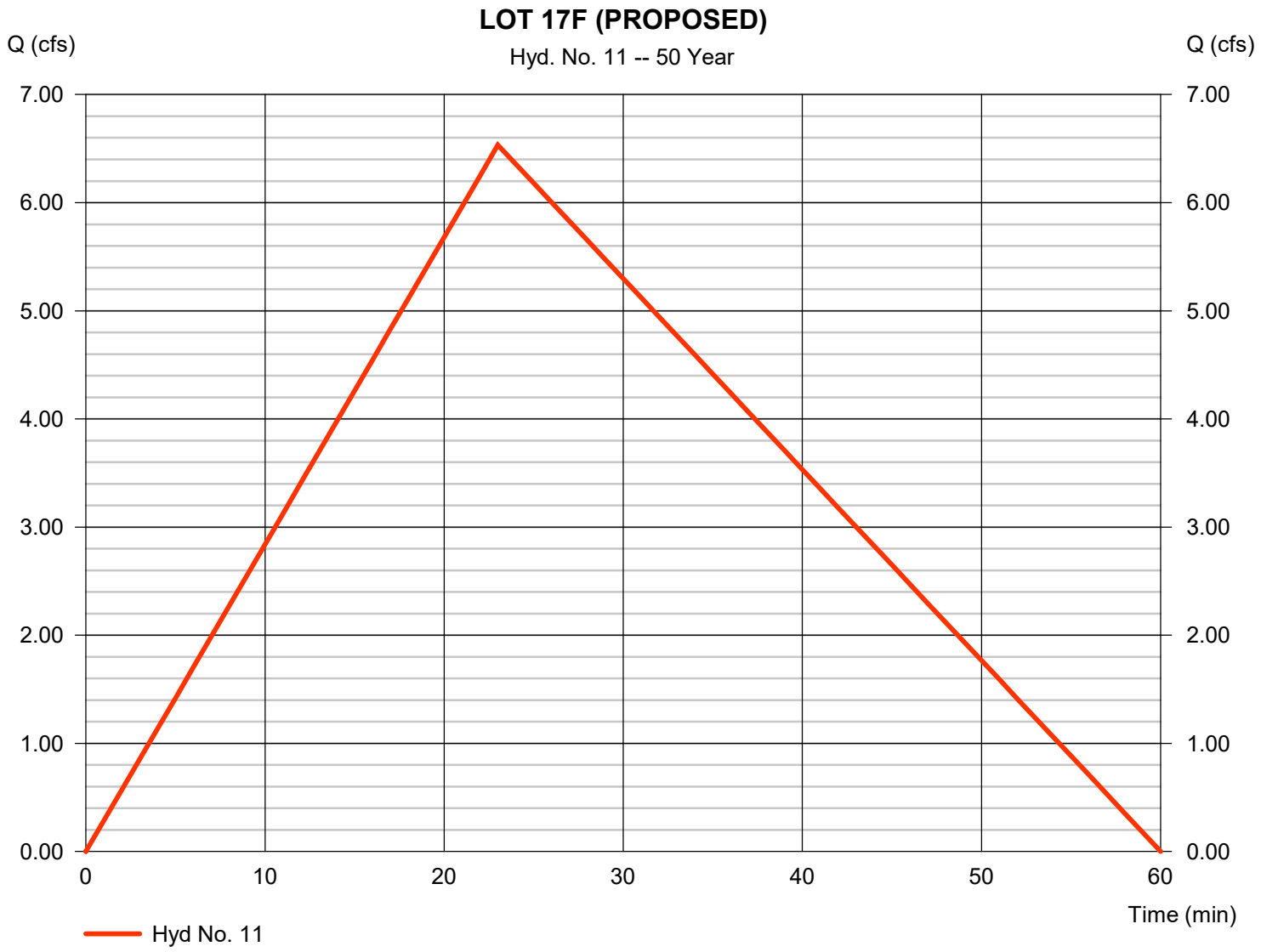
Hydrograph Report

Hyd. No. 11

LOT 17F (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 6.534 cfs
Storm frequency	= 50 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 11,856 cuft
Drainage area	= 1.950 ac	Runoff coeff.	= 0.57*
Intensity	= 5.878 in/hr	Tc by User	= 23.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.63

* Composite (Area/C) = [(0.110 x 0.95) + (1.890 x 0.55)] / 1.950



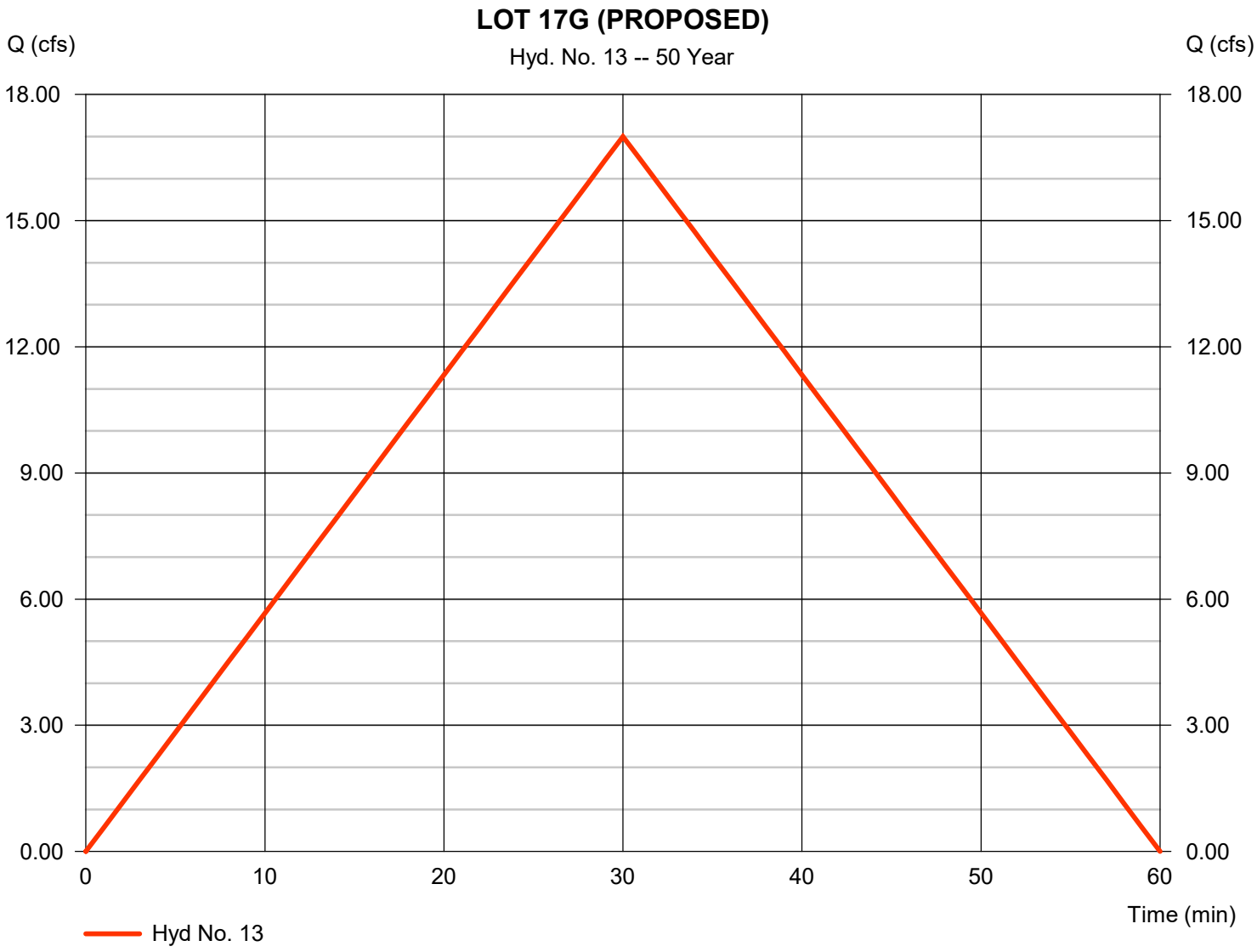
Hydrograph Report

Hyd. No. 13

LOT 17G (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	17.00 cfs
Storm frequency	=	50 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	30,603 cuft
Drainage area	=	6.000 ac	Runoff coeff.	=	0.56*
Intensity	=	5.060 in/hr	Tc by User	=	30.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1

* Composite (Area/C) = [(0.110 x 0.95) + (5.690 x 0.55)] / 6.000



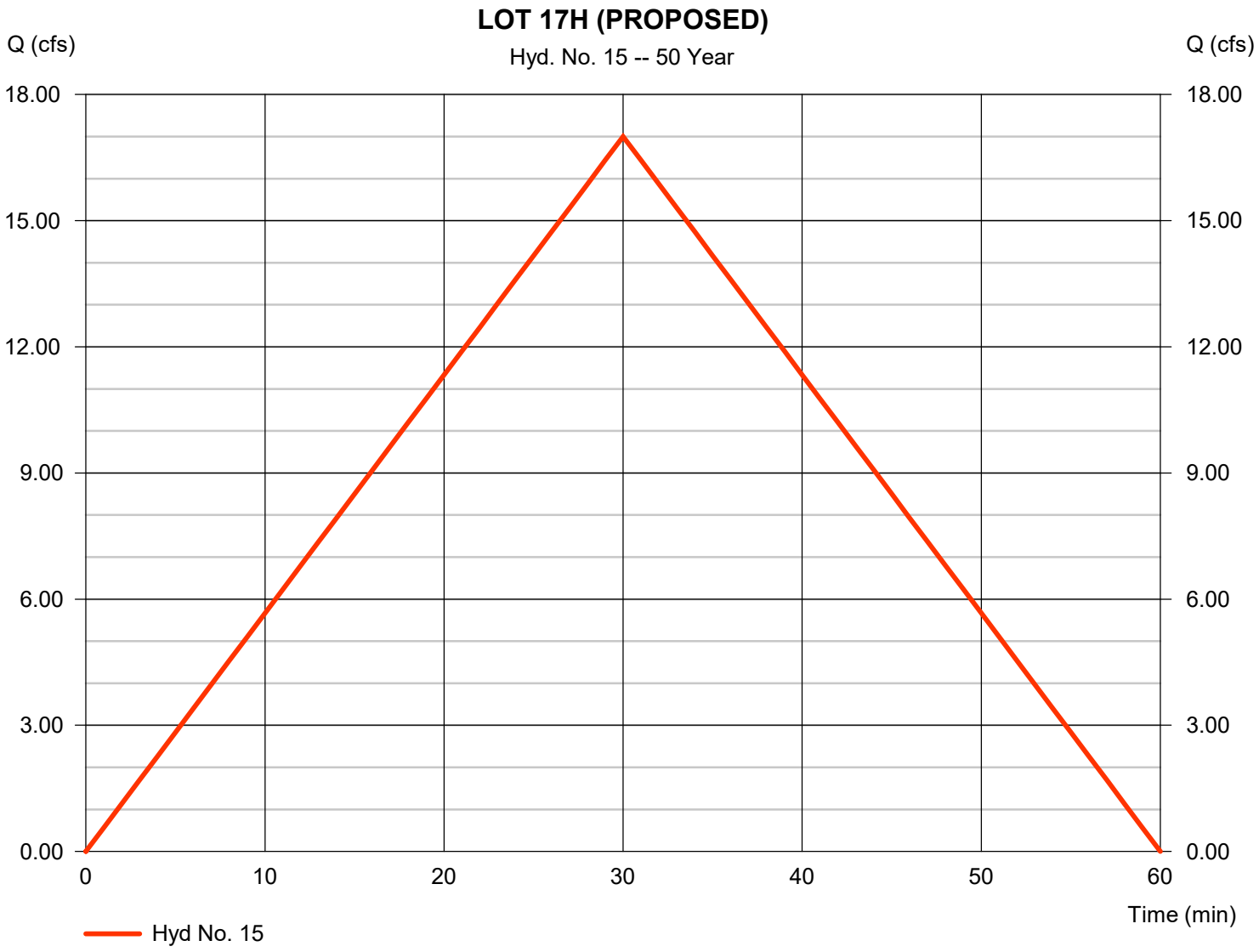
Hydrograph Report

Hyd. No. 15

LOT 17H (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 17.00 cfs
Storm frequency	= 50 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 30,603 cuft
Drainage area	= 6.000 ac	Runoff coeff.	= 0.56*
Intensity	= 5.060 in/hr	Tc by User	= 30.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.110 x 0.95) + (5.690 x 0.55)] / 6.000



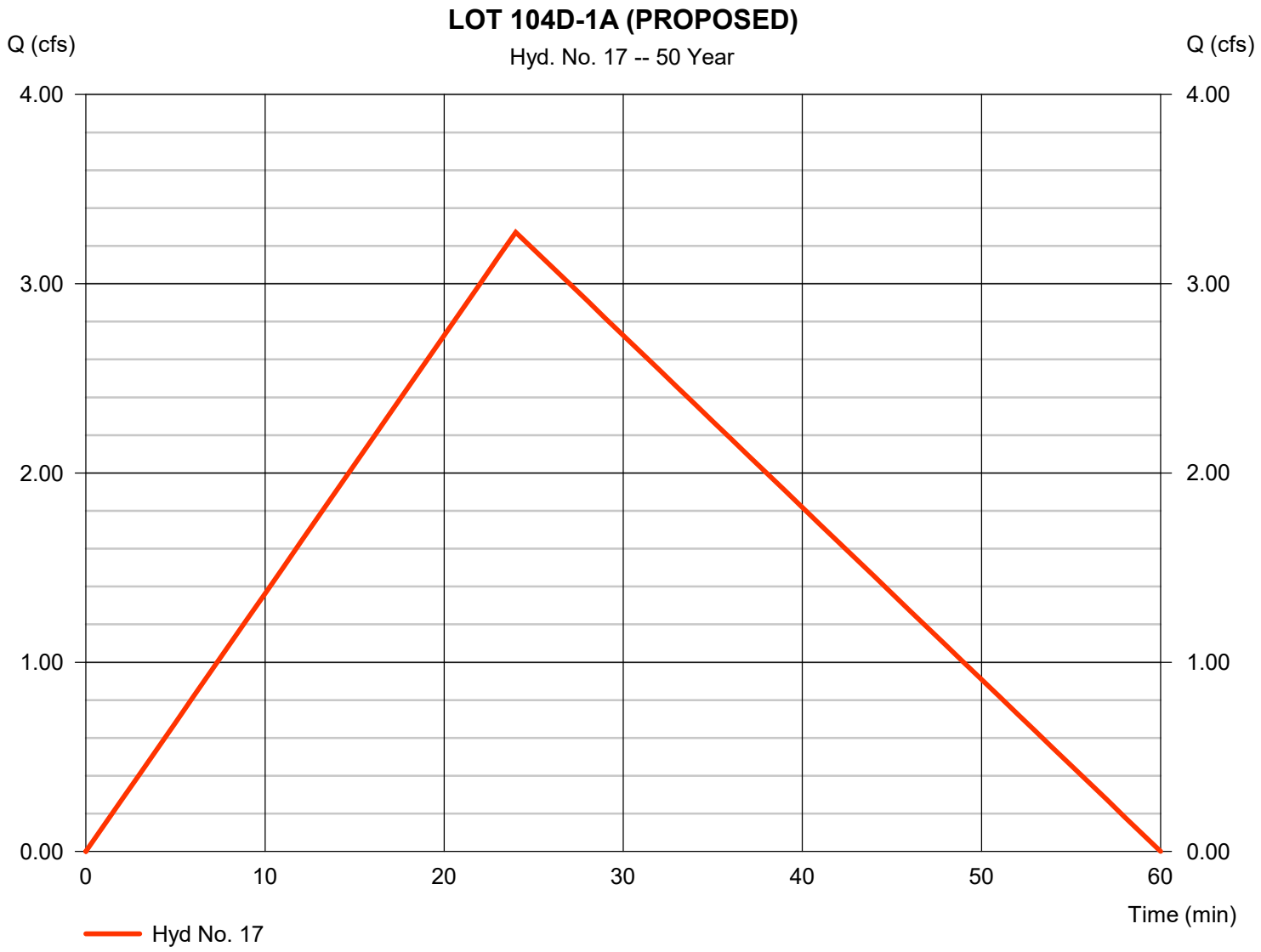
Hydrograph Report

Hyd. No. 17

LOT 104D-1A (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	3.273 cfs
Storm frequency	=	50 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	5,891 cuft
Drainage area	=	1.000 ac	Runoff coeff.	=	0.57*
Intensity	=	5.741 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

* Composite (Area/C) = [(0.110 x 0.95) + (2.090 x 0.55)] / 1.000



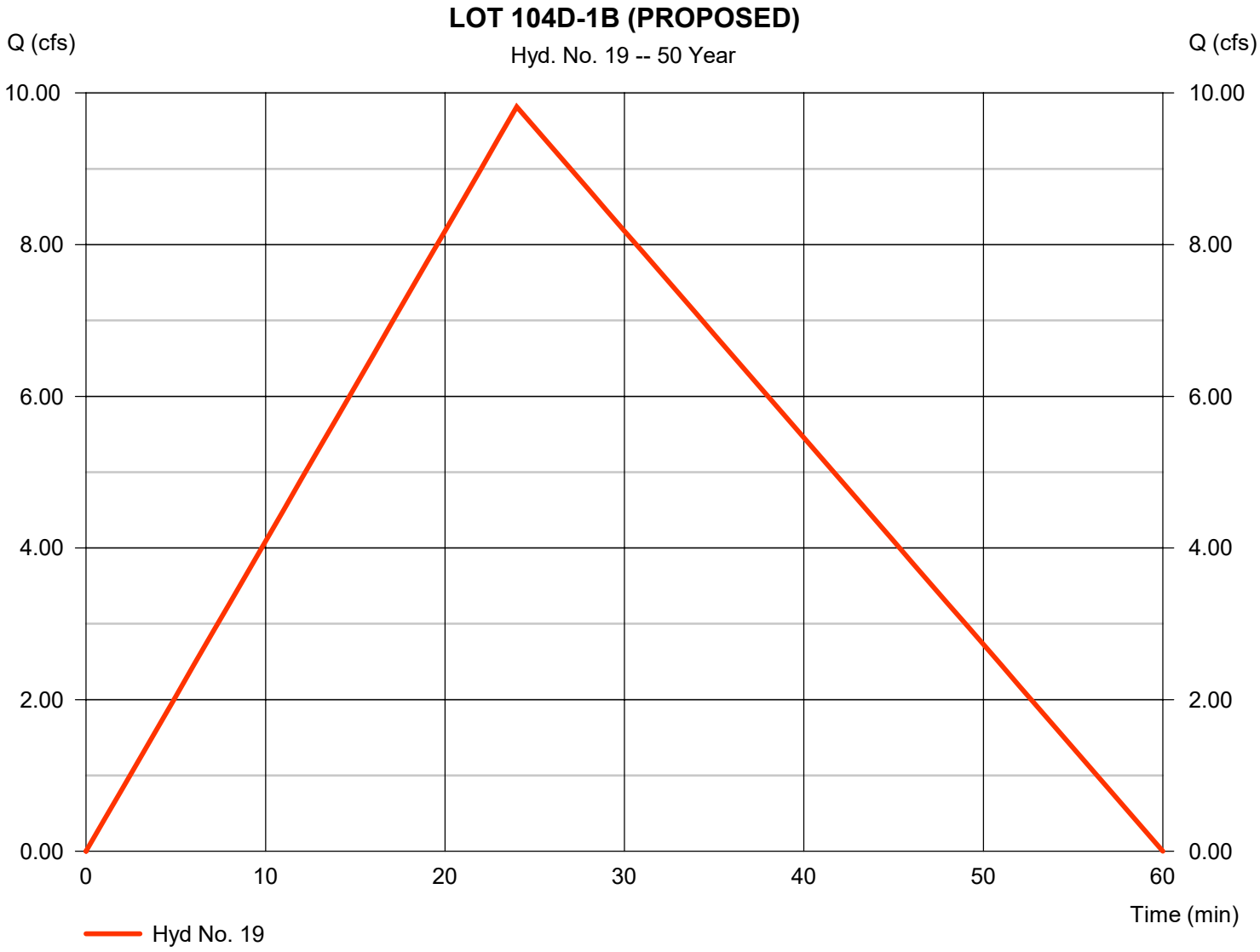
Hydrograph Report

Hyd. No. 19

LOT 104D-1B (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 9.818 cfs
Storm frequency	= 50 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 17,672 cuft
Drainage area	= 3.000 ac	Runoff coeff.	= 0.57*
Intensity	= 5.741 in/hr	Tc by User	= 24.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.5

* Composite (Area/C) = [(0.110 x 0.95) + (2.390 x 0.55)] / 3.000



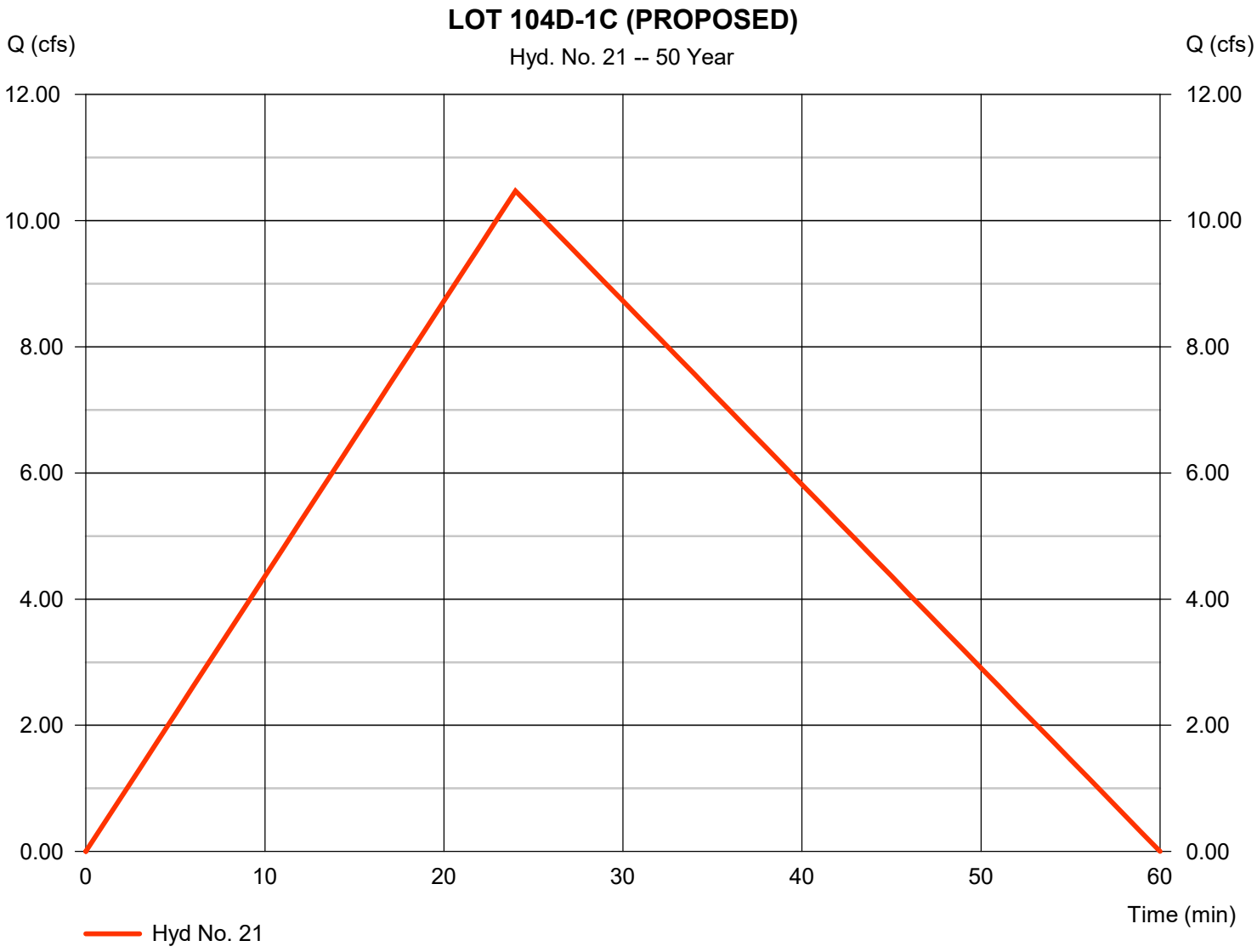
Hydrograph Report

Hyd. No. 21

LOT 104D-1C (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	10.47 cfs
Storm frequency	=	50 yrs	Time to peak	=	24 min
Time interval	=	1 min	Hyd. volume	=	18,850 cuft
Drainage area	=	3.200 ac	Runoff coeff.	=	0.57*
Intensity	=	5.741 in/hr	Tc by User	=	24.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/1.5

* Composite (Area/C) = [(0.110 x 0.95) + (2.390 x 0.55)] / 3.200



Hydrograph Report

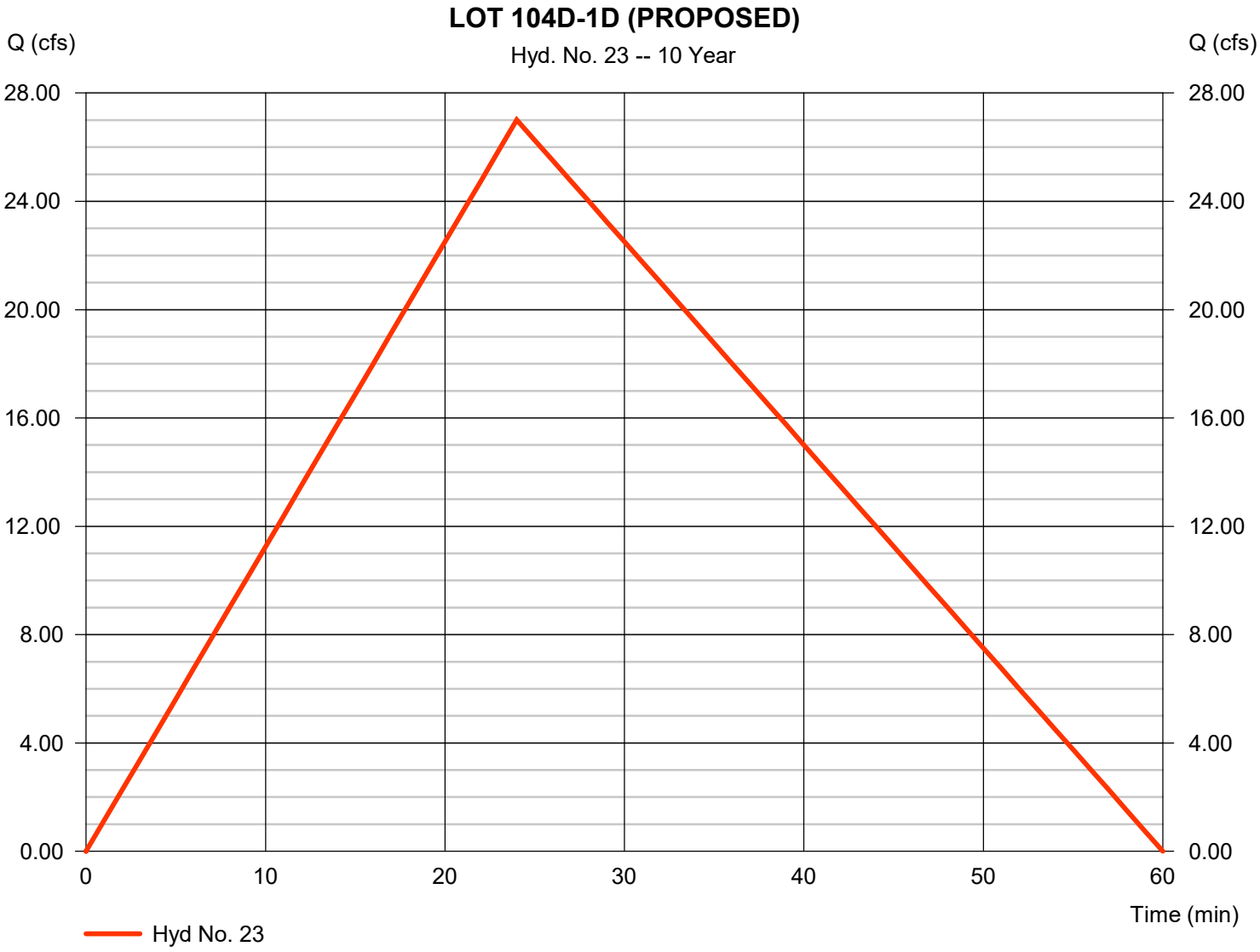
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Thursday, 12 / 21 / 2023

Hyd. No. 23

LOT 104D-1D (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 27.01 cfs
Storm frequency	= 10 yrs	Time to peak	= 24 min
Time interval	= 1 min	Hyd. volume	= 48,616 cuft
Drainage area	= 12.800 ac	Runoff coeff.	= 0.55*
Intensity	= 3.837 in/hr	Tc by User	= 24.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/1.5

* Composite (Area/C) = [(0.110 x 0.95) + (2.390 x 0.55)] / 12.800



Hydrograph Report

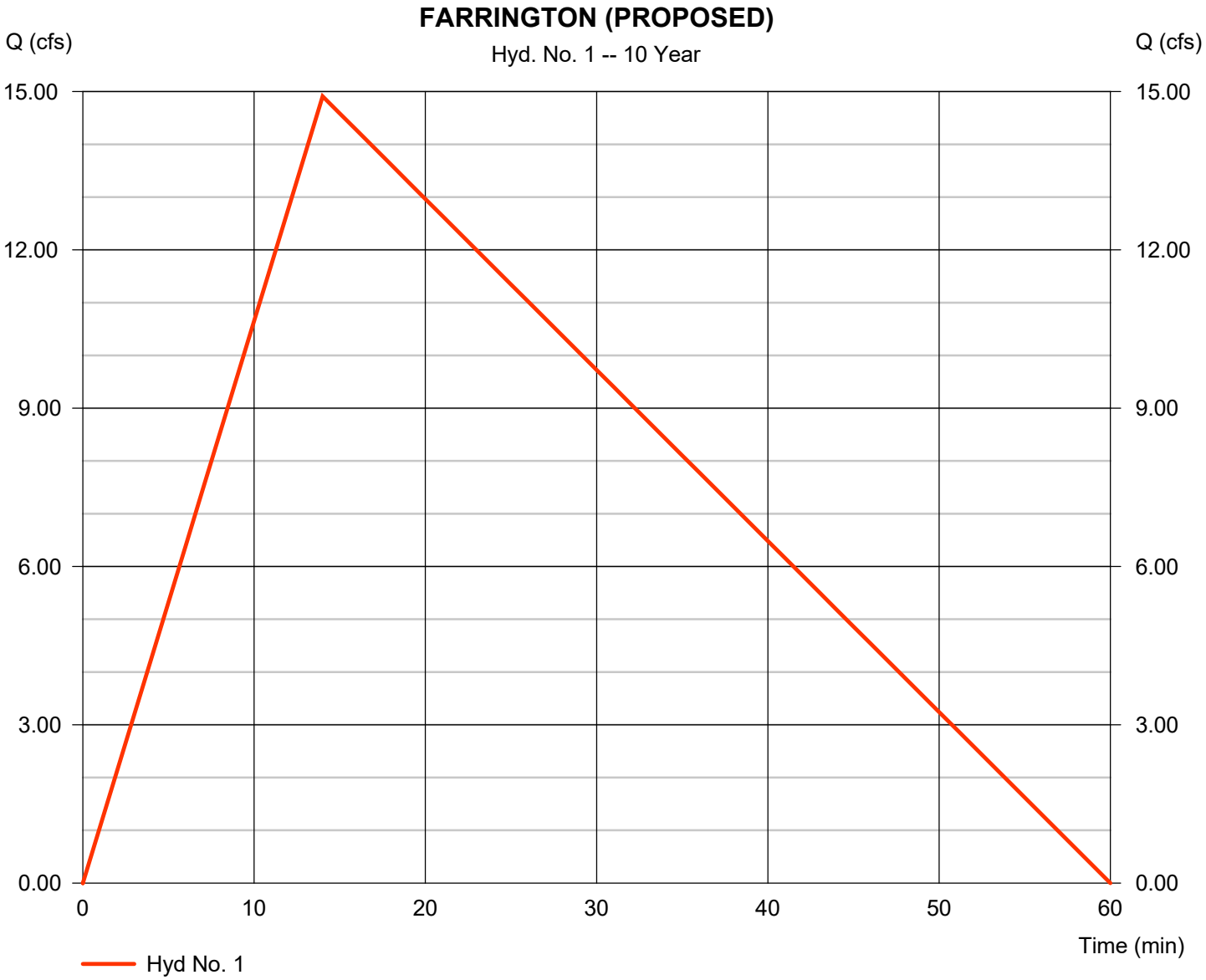
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2019.2 Monday, 11 / 29 / 2021

Hyd. No. 1

FARRINGTON (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 14.91 cfs
Storm frequency	= 10 yrs	Time to peak	= 14 min
Time interval	= 1 min	Hyd. volume	= 0.618 acft
Drainage area	= 3.960 ac	Runoff coeff.	= 0.74*
Intensity	= 5.088 in/hr	Tc by User	= 14.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/3.3

* Composite (Area/C) = [(1.900 x 0.95) + (2.060 x 0.55)] / 3.960



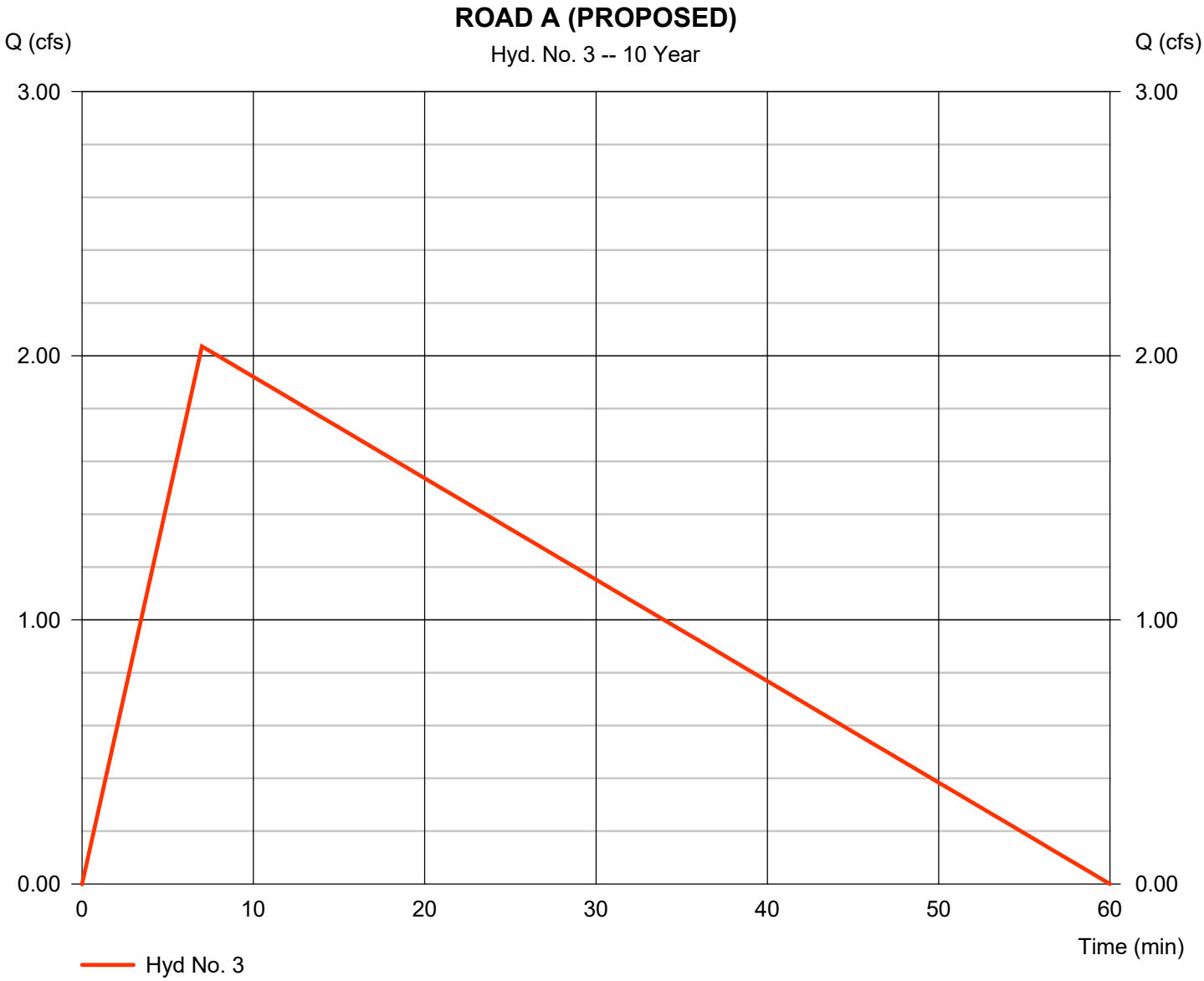
Hydrograph Report

Hyd. No. 3

ROAD A (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	2.036 cfs
Storm frequency	=	10 yrs	Time to peak	=	7 min
Time interval	=	1 min	Hyd. volume	=	0.084 acft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.8*
Intensity	=	6.877 in/hr	Tc by User	=	7.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/7.6

* Composite (Area/C) = [(0.230 x 0.95) + (0.140 x 0.55)] / 0.370



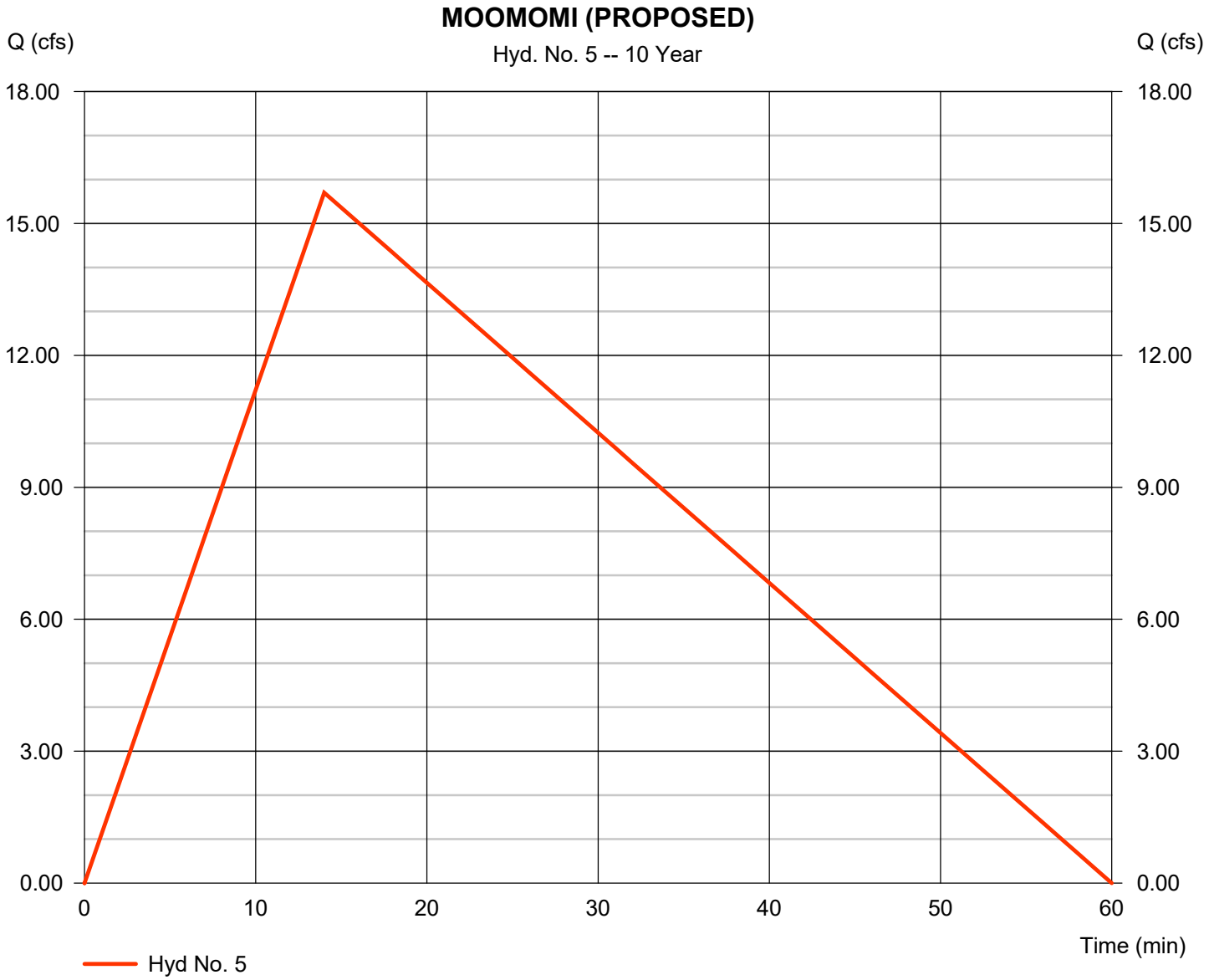
Hydrograph Report

Hyd. No. 5

MOOMOMI (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	15.70 cfs
Storm frequency	=	10 yrs	Time to peak	=	14 min
Time interval	=	1 min	Hyd. volume	=	0.651 acft
Drainage area	=	4.170 ac	Runoff coeff.	=	0.74*
Intensity	=	5.088 in/hr	Tc by User	=	14.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/3.3

* Composite (Area/C) = [(2.000 x 0.95) + (2.170 x 0.55)] / 4.170



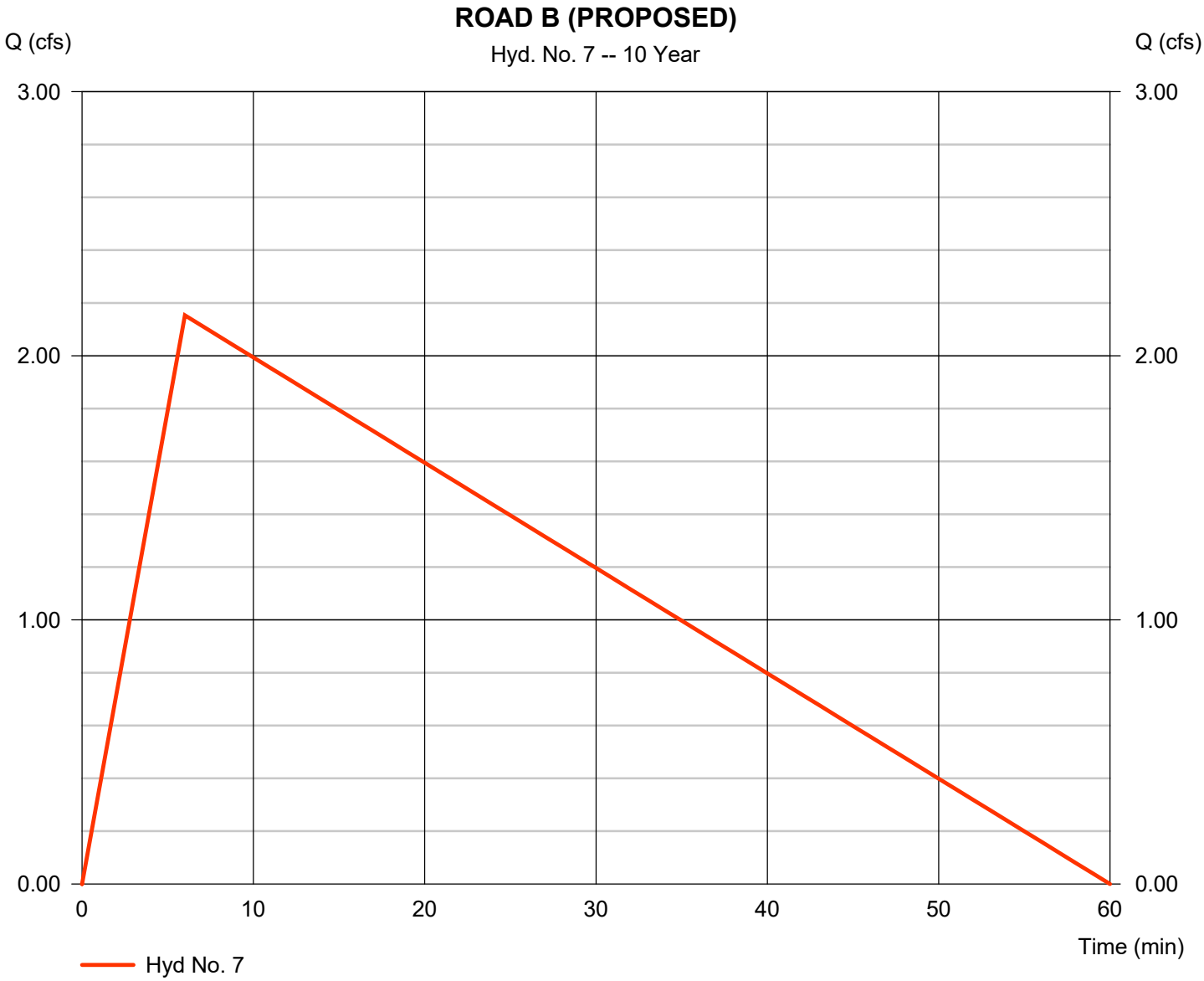
Hydrograph Report

Hyd. No. 7

ROAD B (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	2.153 cfs
Storm frequency	=	10 yrs	Time to peak	=	6 min
Time interval	=	1 min	Hyd. volume	=	0.089 acft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.8*
Intensity	=	7.274 in/hr	Tc by User	=	6.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/9

* Composite (Area/C) = [(0.230 x 0.95) + (0.140 x 0.55)] / 0.370



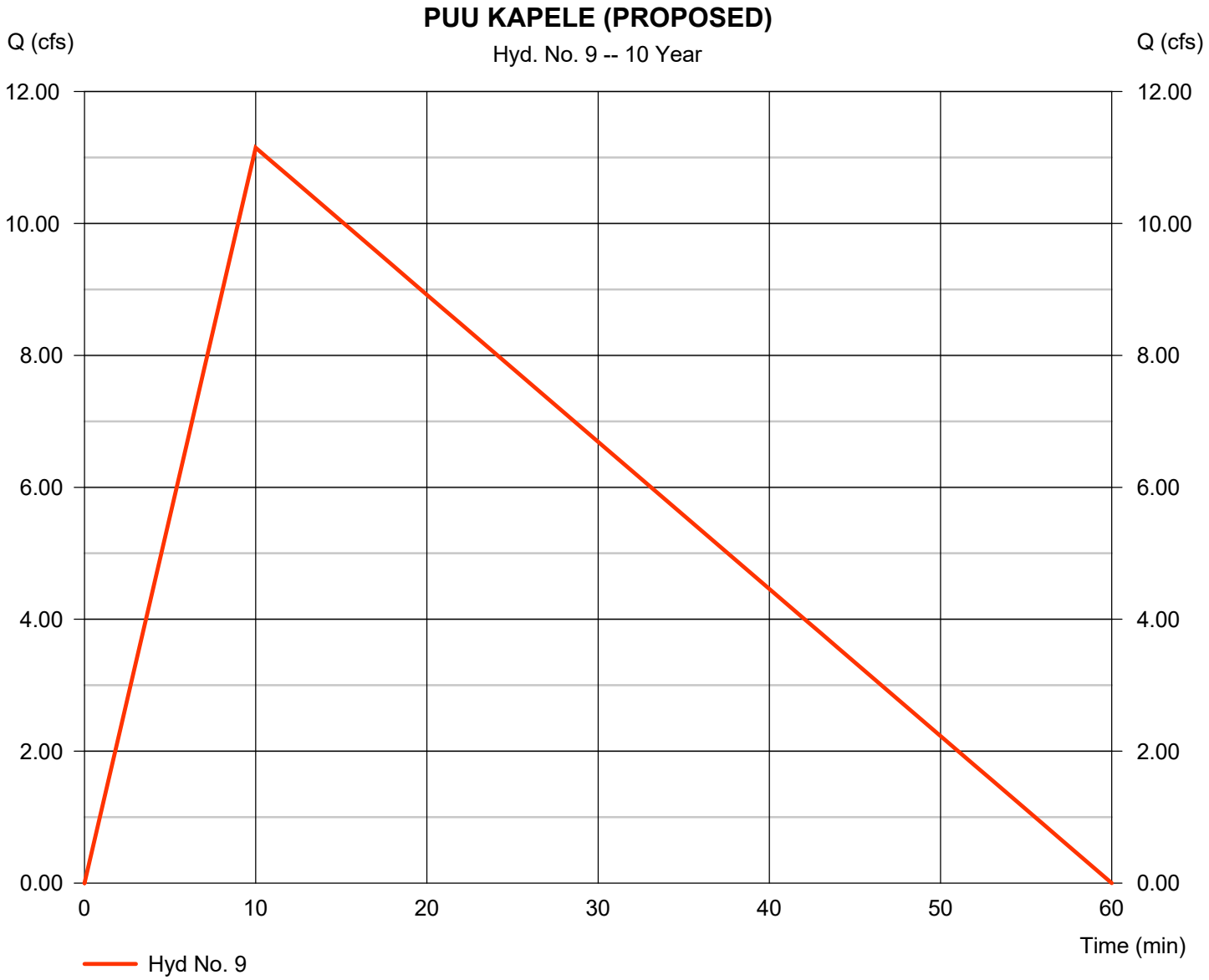
Hydrograph Report

Hyd. No. 9

PUU KAPELE (PROPOSED)

Hydrograph type	= Rational	Peak discharge	= 11.15 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 0.461 acft
Drainage area	= 2.500 ac	Runoff coeff.	= 0.75*
Intensity	= 5.946 in/hr	Tc by User	= 10.00 min
IDF Curve	= NAIWA.IDF	Asc/Rec limb fact	= 1/5

* Composite (Area/C) = [(1.250 x 0.95) + (1.250 x 0.55)] / 2.500



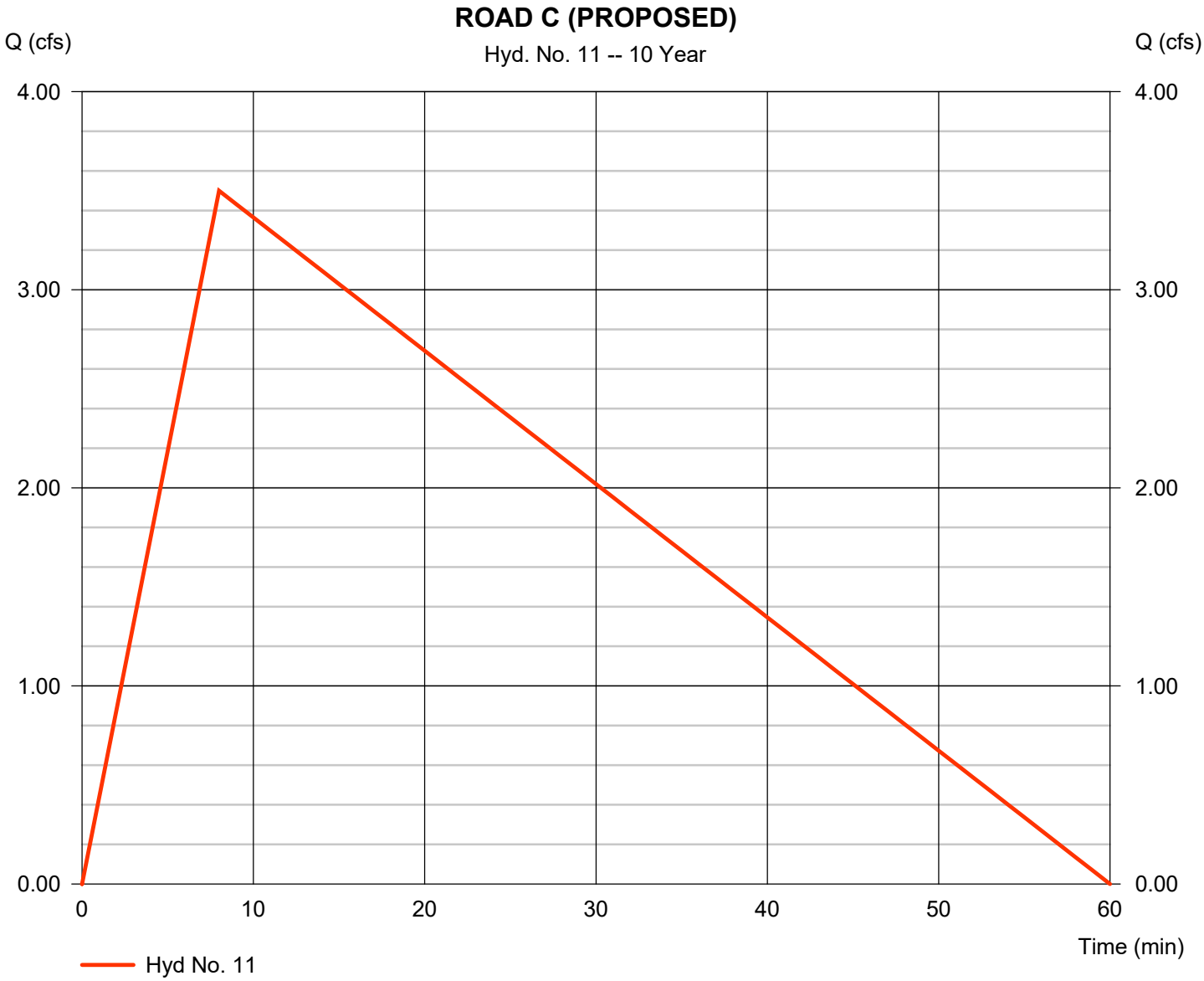
Hydrograph Report

Hyd. No. 11

ROAD C (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	3.500 cfs
Storm frequency	=	10 yrs	Time to peak	=	8 min
Time interval	=	1 min	Hyd. volume	=	0.145 acft
Drainage area	=	0.670 ac	Runoff coeff.	=	0.8*
Intensity	=	6.529 in/hr	Tc by User	=	8.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/6.5

* Composite (Area/C) = [(0.420 x 0.95) + (0.250 x 0.55)] / 0.670



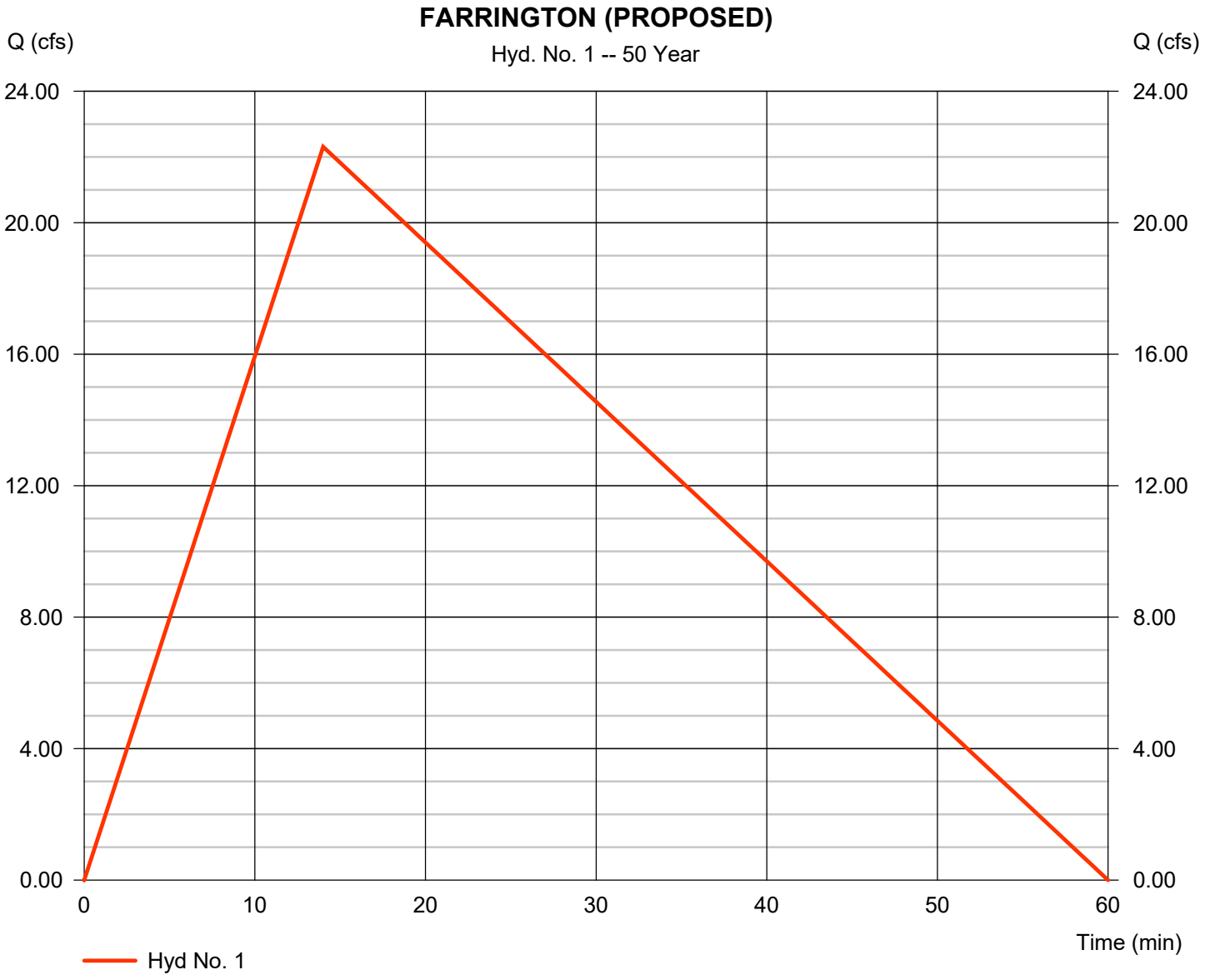
Hydrograph Report

Hyd. No. 1

FARRINGTON (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	22.31 cfs
Storm frequency	=	50 yrs	Time to peak	=	14 min
Time interval	=	1 min	Hyd. volume	=	0.925 acft
Drainage area	=	3.960 ac	Runoff coeff.	=	0.74*
Intensity	=	7.613 in/hr	Tc by User	=	14.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/3.3

* Composite (Area/C) = [(1.900 x 0.95) + (2.060 x 0.55)] / 3.960



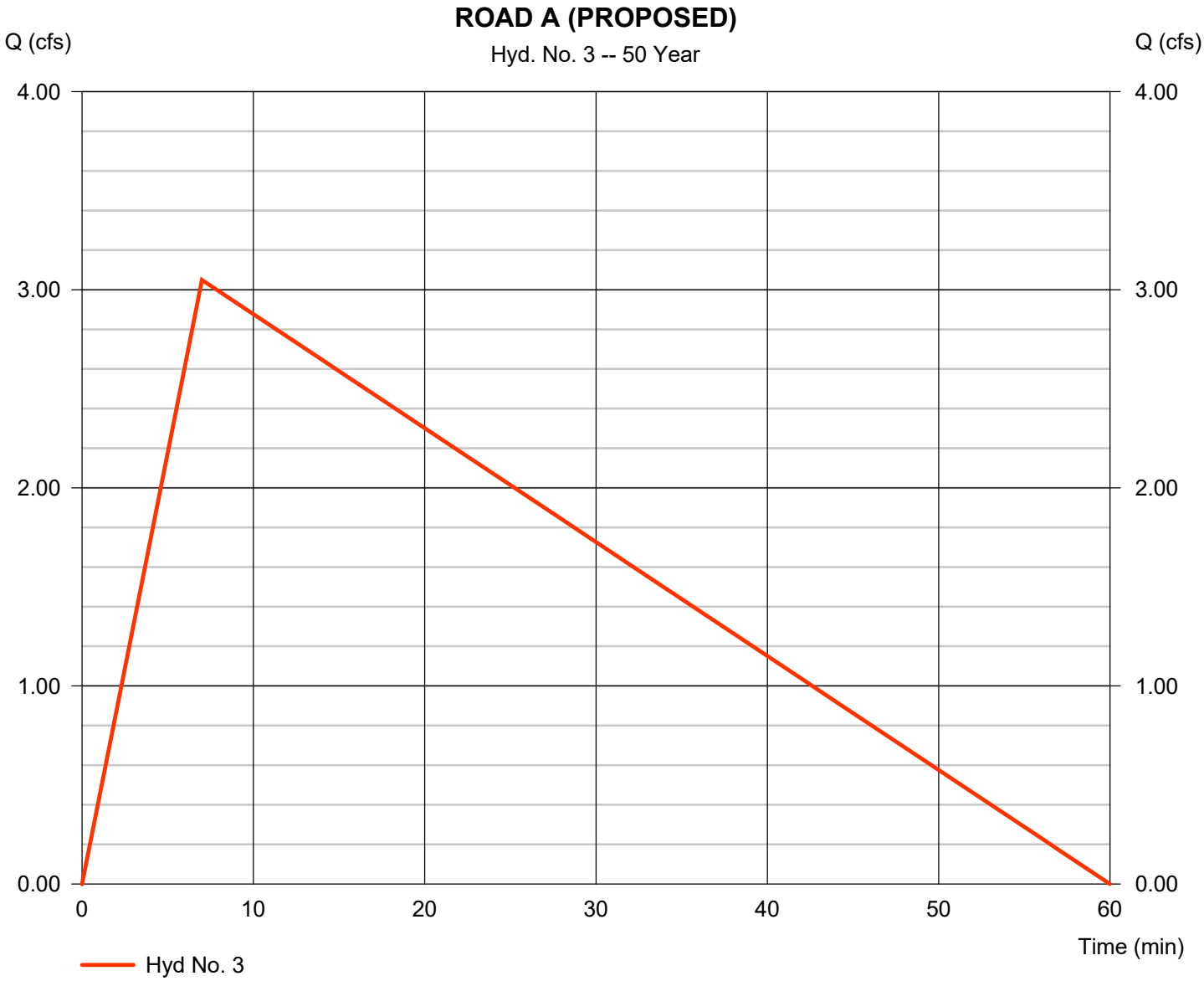
Hydrograph Report

Hyd. No. 3

ROAD A (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	3.049 cfs
Storm frequency	=	50 yrs	Time to peak	=	7 min
Time interval	=	1 min	Hyd. volume	=	0.126 acft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.8*
Intensity	=	10.302 in/hr	Tc by User	=	7.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/7.6

* Composite (Area/C) = [(0.230 x 0.95) + (0.140 x 0.55)] / 0.370



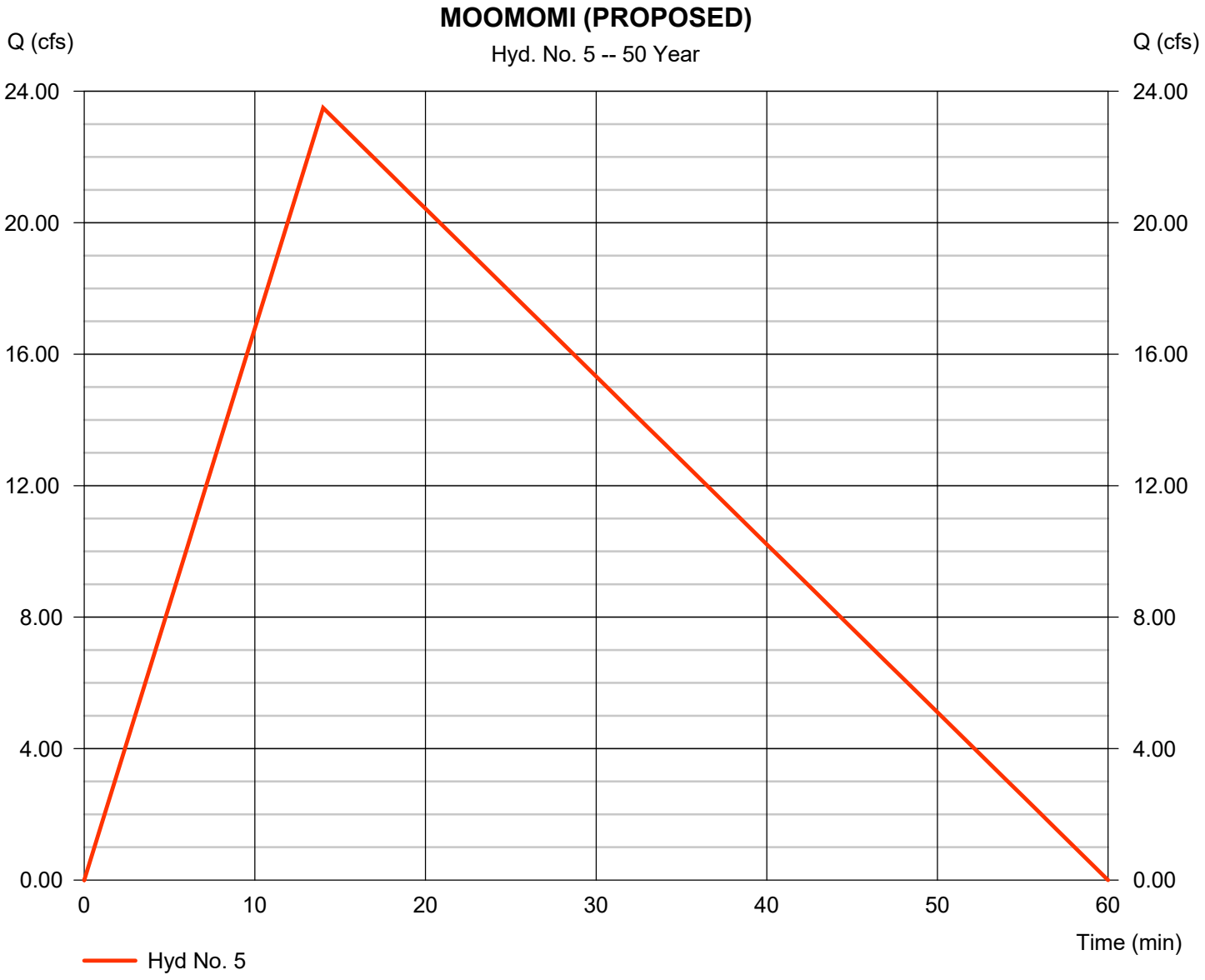
Hydrograph Report

Hyd. No. 5

MOOMOMI (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	23.49 cfs
Storm frequency	=	50 yrs	Time to peak	=	14 min
Time interval	=	1 min	Hyd. volume	=	0.974 acft
Drainage area	=	4.170 ac	Runoff coeff.	=	0.74*
Intensity	=	7.613 in/hr	Tc by User	=	14.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/3.3

* Composite (Area/C) = [(2.000 x 0.95) + (2.170 x 0.55)] / 4.170



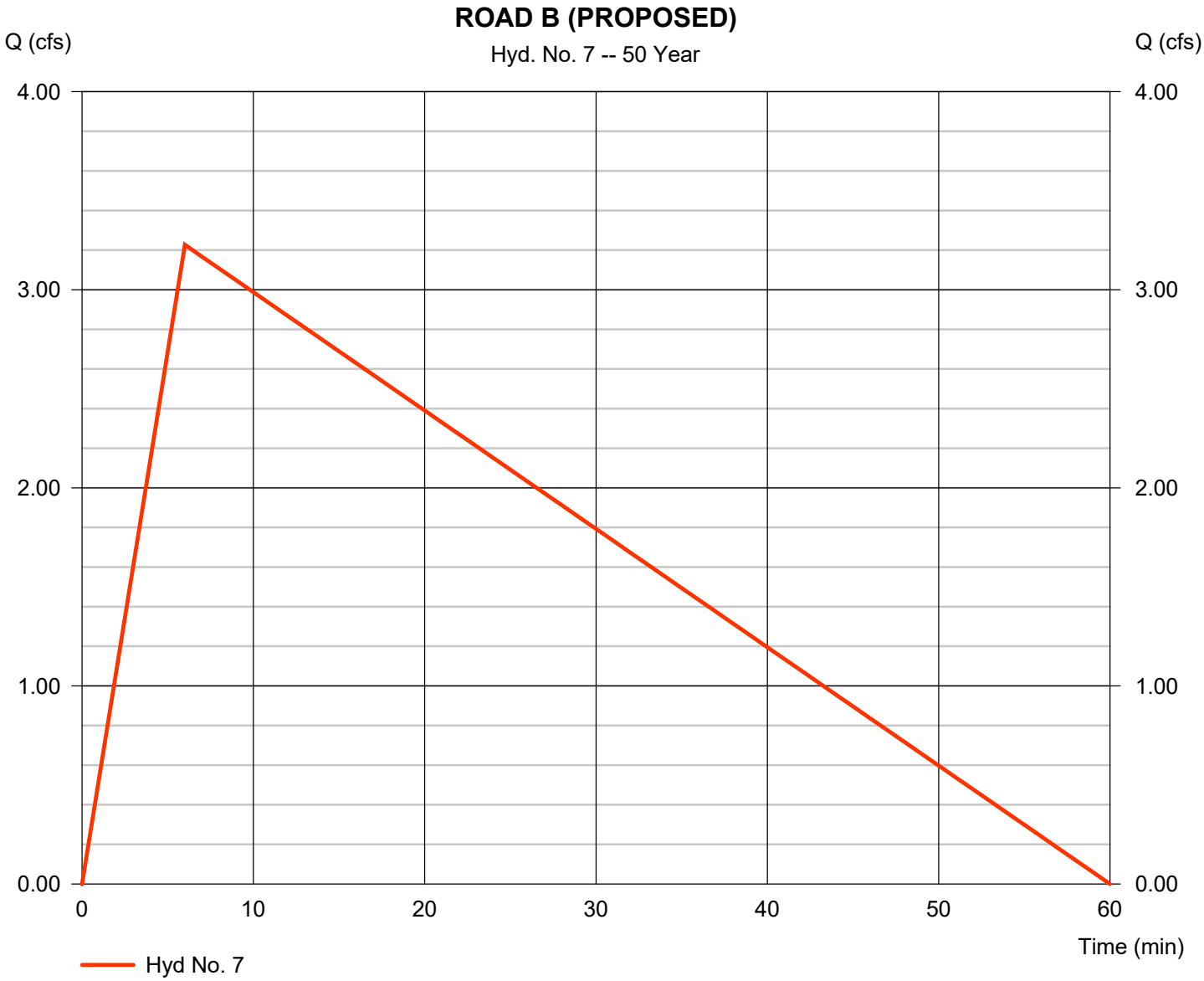
Hydrograph Report

Hyd. No. 7

ROAD B (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	3.227 cfs
Storm frequency	=	50 yrs	Time to peak	=	6 min
Time interval	=	1 min	Hyd. volume	=	0.133 acft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.8*
Intensity	=	10.902 in/hr	Tc by User	=	6.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/9

* Composite (Area/C) = [(0.230 x 0.95) + (0.140 x 0.55)] / 0.370



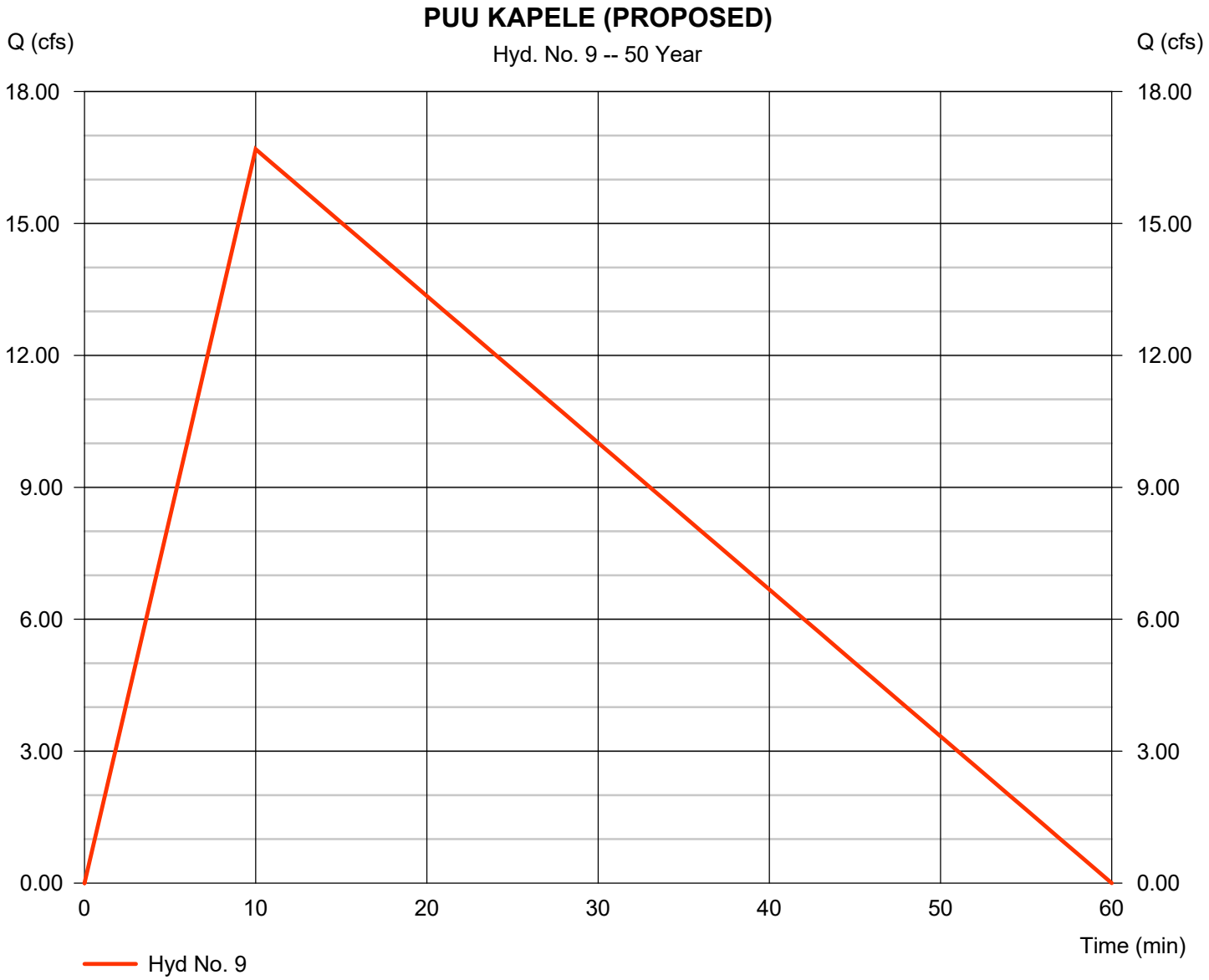
Hydrograph Report

Hyd. No. 9

PUU KAPELE (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	16.69 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	0.690 acft
Drainage area	=	2.500 ac	Runoff coeff.	=	0.75*
Intensity	=	8.901 in/hr	Tc by User	=	10.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/5

* Composite (Area/C) = [(1.250 x 0.95) + (1.250 x 0.55)] / 2.500



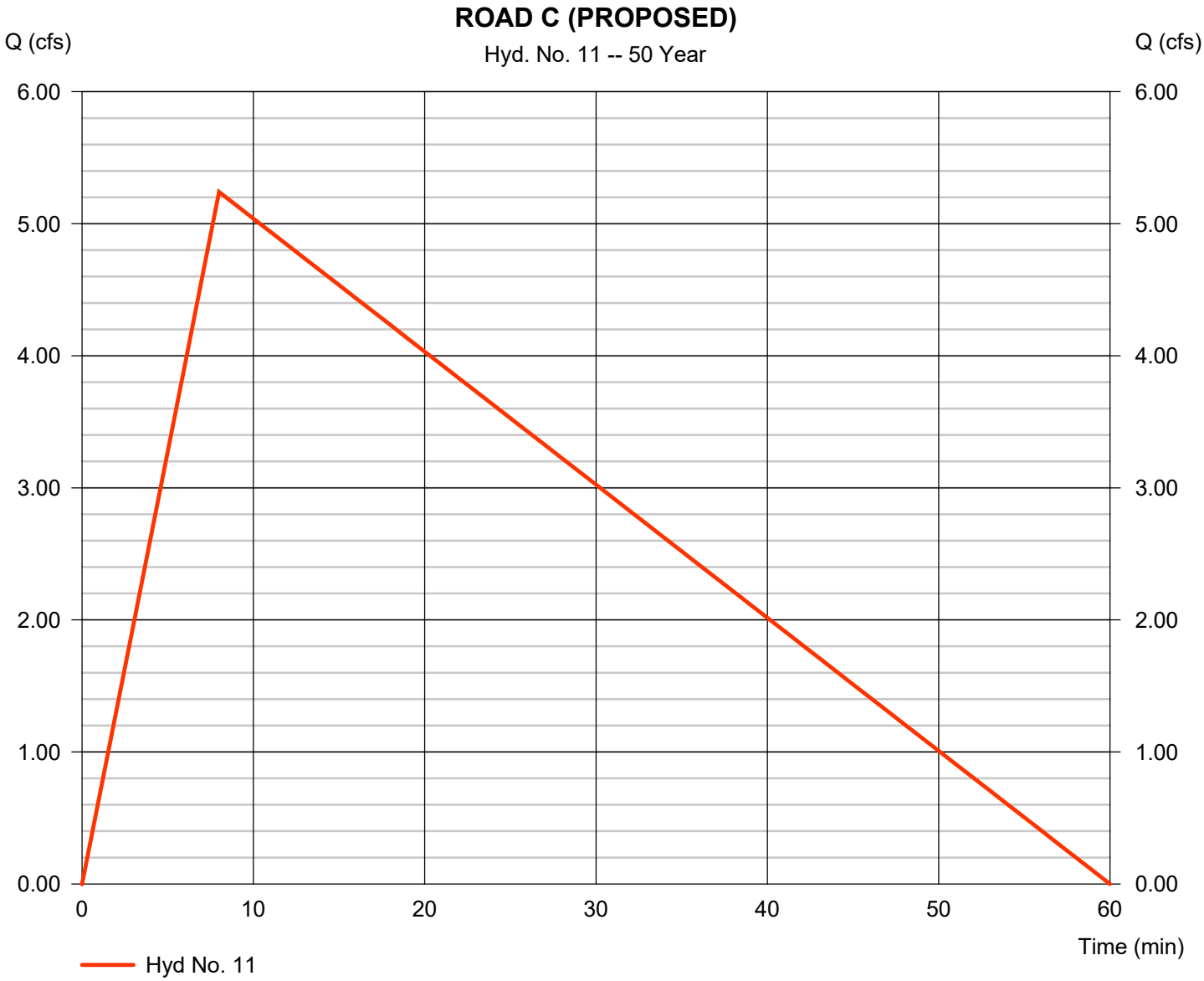
Hydrograph Report

Hyd. No. 11

ROAD C (PROPOSED)

Hydrograph type	=	Rational	Peak discharge	=	5.241 cfs
Storm frequency	=	50 yrs	Time to peak	=	8 min
Time interval	=	1 min	Hyd. volume	=	0.217 acft
Drainage area	=	0.670 ac	Runoff coeff.	=	0.8*
Intensity	=	9.777 in/hr	Tc by User	=	8.00 min
IDF Curve	=	NAIWA.IDF	Asc/Rec limb fact	=	1/6.5

* Composite (Area/C) = [(0.420 x 0.95) + (0.250 x 0.55)] / 0.670



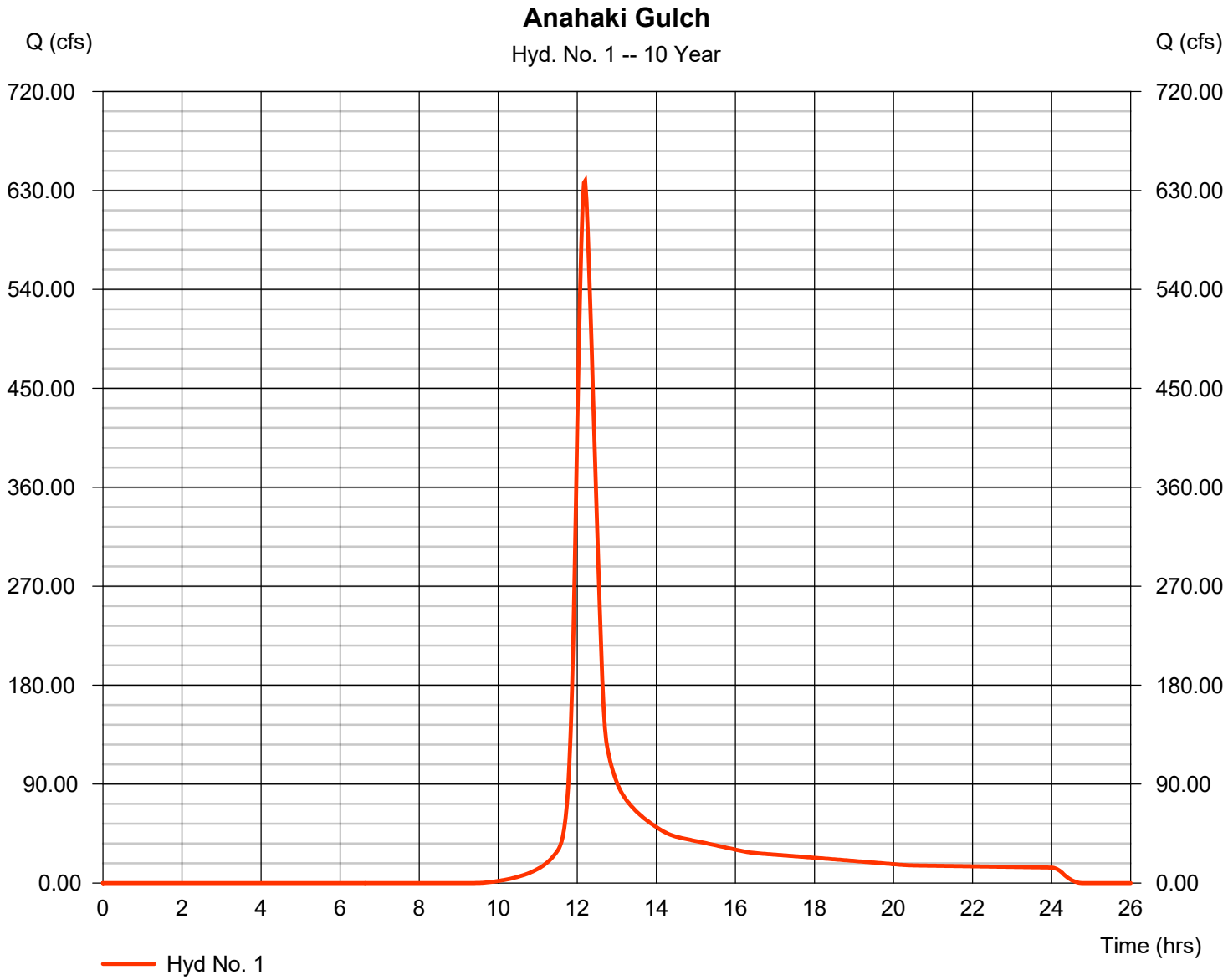
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2019.2 Friday, 12 / 10 / 2021

Hyd. No. 1

Anahaki Gulch

Hydrograph type	=	SCS Runoff	Peak discharge	=	638.69 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	59.631 acft
Drainage area	=	256.540 ac	Curve number	=	67
Basin Slope	=	0.8 %	Hydraulic length	=	4004 ft
Tc method	=	TR55	Time of conc. (Tc)	=	27.20 min
Total precip.	=	6.34 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 1

Anahaki Gulch

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 0.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 0.00		0.00		0.00		
Land slope (%)	= 0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Shallow Concentrated Flow							
Flow length (ft)	= 3040.00		0.00		0.00		
Watercourse slope (%)	= 4.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.23		0.00		0.00		
Travel Time (min)	**= 15.70**	**+**	**0.00**	**+**	**0.00**	**=**	**15.70**
Channel Flow							
X sectional flow area (sqft)	= 350.63		0.00		0.00		
Wetted perimeter (ft)	= 297.16		0.00		0.00		
Channel slope (%)	= 0.82		0.00		0.00		
Manning's n-value	= 0.026		0.015		0.015		
Velocity (ft/s)	=5.80						
			0.00				
					0.00		
Flow length (ft)	({0})4004.0		0.0		0.0		
Travel Time (min)	**= 11.51**	**+**	**0.00**	**+**	**0.00**	**=**	**11.51**

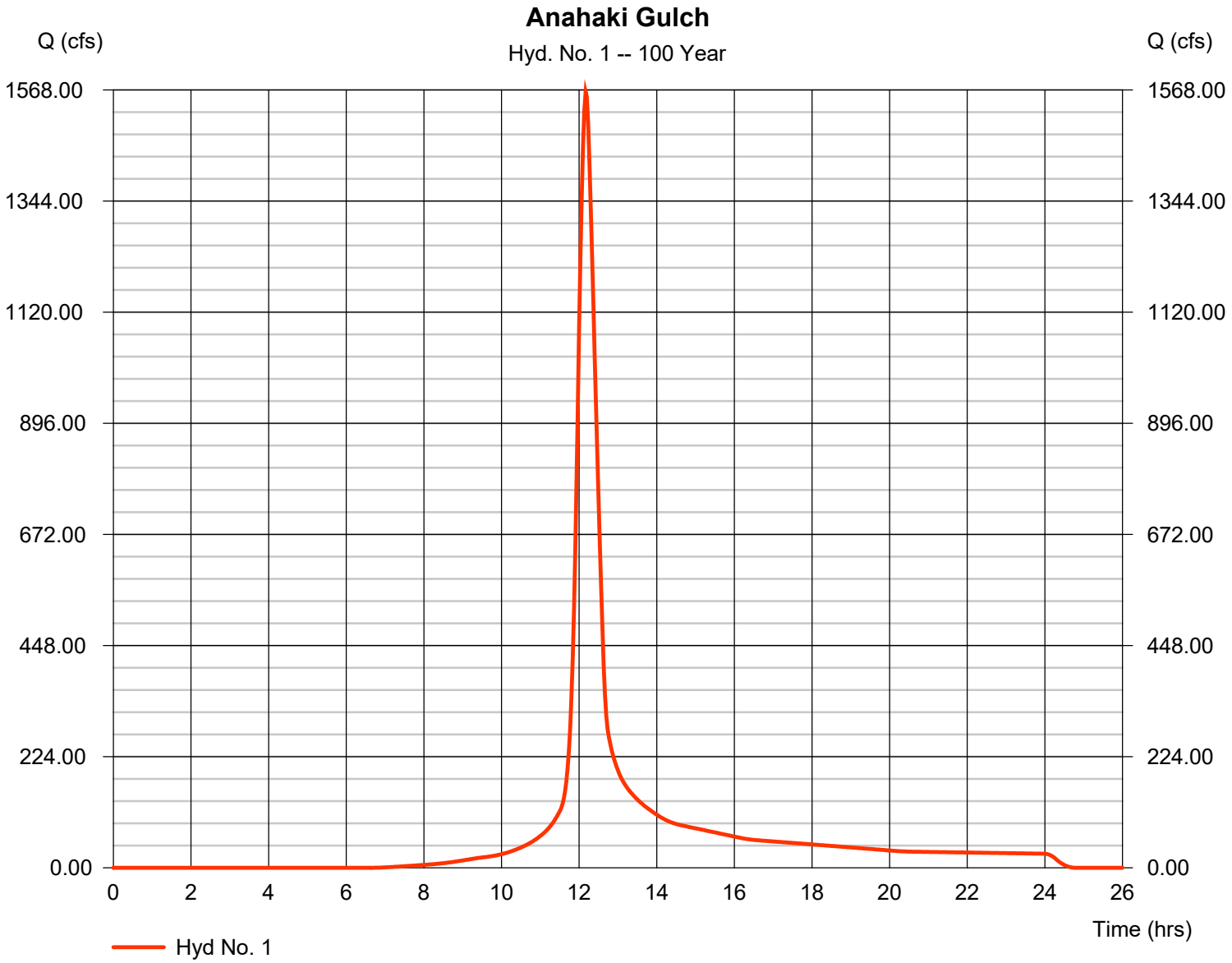
Total Travel Time, Tc ..... 27.20 min

Hydrograph Report

Hyd. No. 1

Anahaki Gulch

Hydrograph type	=	SCS Runoff	Peak discharge	=	1564.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.17 hrs
Time interval	=	2 min	Hyd. volume	=	143.519 acft
Drainage area	=	256.540 ac	Curve number	=	67
Basin Slope	=	0.8 %	Hydraulic length	=	4004 ft
Tc method	=	TR55	Time of conc. (Tc)	=	27.20 min
Total precip.	=	11.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	17.6163	5.7000	0.6872	--------
2	23.8068	5.8000	0.6909	--------
3	0.0000	0.0000	0.0000	--------
5	33.4334	6.0000	0.6961	--------
10	40.0017	5.8000	0.6906	--------
25	50.5276	5.8000	0.6893	--------
50	58.3628	5.6000	0.6845	--------
100	69.5569	5.8000	0.6900	--------

File name: NAIWA.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	3.46	2.66	2.20	1.89	1.67	1.51	1.38	1.27	1.19	1.11	1.05	0.99
2	4.60	3.54	2.92	2.52	2.23	2.01	1.84	1.70	1.58	1.48	1.39	1.32
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.30	4.85	4.02	3.46	3.06	2.76	2.52	2.33	2.17	2.03	1.91	1.81
10	7.73	5.95	4.92	4.24	3.75	3.38	3.09	2.85	2.65	2.49	2.34	2.22
25	9.80	7.54	6.24	5.38	4.76	4.29	3.92	3.62	3.37	3.16	2.98	2.82
50	11.60	8.90	7.36	6.34	5.61	5.06	4.62	4.27	3.98	3.73	3.52	3.33
100	13.47	10.36	8.57	7.38	6.53	5.89	5.38	4.97	4.63	4.34	4.09	3.87

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	0.00	0.00	0.00	6.34	0.00	0.00	11.00
SCS 6-Hr	0.00	0.00	0.00	0.00	4.18	0.00	0.00	7.02
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Culvert Report

8x6 BC (2-BARREL) (Farrington Culvert 10 YR)

Invert Elev Dn (ft)	=	327.00
Pipe Length (ft)	=	70.00
Slope (%)	=	1.00
Invert Elev Up (ft)	=	327.70
Rise (in)	=	72.0
Shape	=	Box
Span (in)	=	96.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Flared Wingwalls
Culvert Entrance	=	30D to 75D wingwall flares
Coeff. K,M,c,Y,k	=	0.026, 1, 0.0347, 0.81, 0.4

Embankment

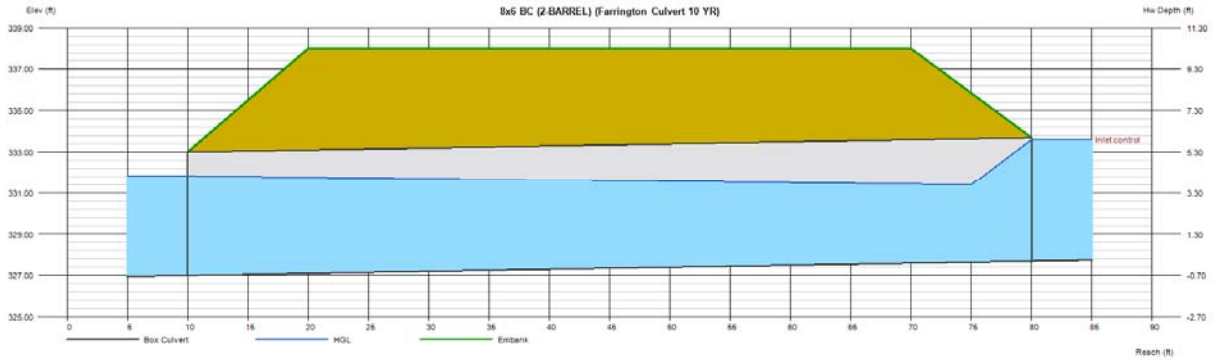
Top Elevation (ft)	=	338.00
Top Width (ft)	=	50.00
Crest Width (ft)	=	10.00

Calculations

Qmin (cfs)	=	638.69
Qmax (cfs)	=	638.69
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	638.69
Qpipe (cfs)	=	638.69
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	8.26
Veloc Up (ft/s)	=	10.88
HGL Dn (ft)	=	331.83
HGL Up (ft)	=	331.37
Hw Elev (ft)	=	333.60
Hw/D (ft)	=	0.98
Flow Regime	=	Inlet Control



Culvert Report

13x8 BC (2-BARREL) (Farrington Culvert 100 YR)

Invert Elev Dn (ft)	=	327.00
Pipe Length (ft)	=	70.00
Slope (%)	=	1.00
Invert Elev Up (ft)	=	327.70
Rise (in)	=	96.0
Shape	=	Box
Span (in)	=	156.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Flared Wingwalls
Culvert Entrance	=	30D to 75D wingwall flares
Coeff. K,M,c,Y,k	=	0.026, 1, 0.0347, 0.81, 0.4

Embankment

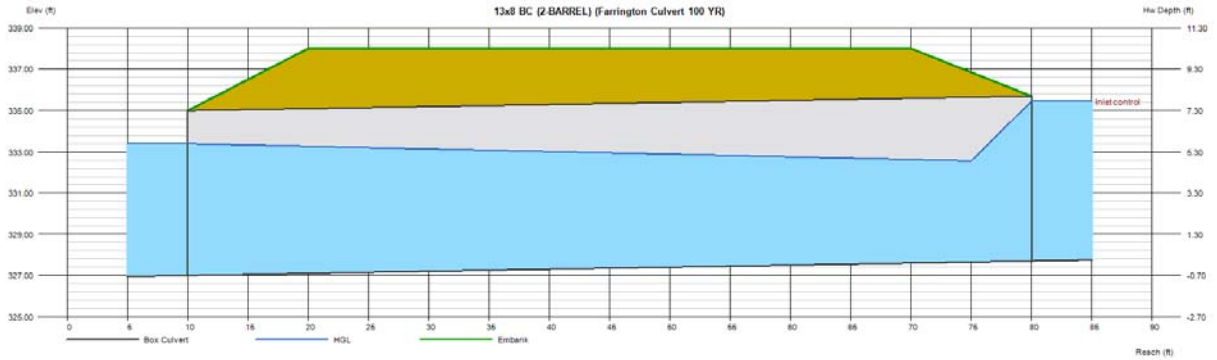
Top Elevation (ft)	=	338.00
Top Width (ft)	=	50.00
Crest Width (ft)	=	10.00

Calculations

Qmin (cfs)	=	1564.39
Qmax (cfs)	=	1564.39
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	1564.39
Qpipe (cfs)	=	1564.39
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	9.39
Veloc Up (ft/s)	=	12.48
HGL Dn (ft)	=	333.41
HGL Up (ft)	=	332.52
Hw Elev (ft)	=	335.46
Hw/D (ft)	=	0.97
Flow Regime	=	Inlet Control



STA. 11+22.17

STA. 23+43.95

SCALE: 1 in. = 40 FT

TRUE NORTH

WL-A ℄ STA. 14+20, 15' O/S RT.
INSTALL FH CONN.:
1- 6"x6" TEE MJxFE
1 - 6" 1/4 BEND
1- 6" GV (CL 200) MJxFE
1- VALVE BOX
1- FH
3- CONC. BLOCKS
18 L.F. 6" D.I. PIPE (CL 52)
1- CONC. SLAB
2-REFLECTORS

6" D.I. WATER (CL 52)

WL-A ℄ STA. 19+05, 15' O/S RT.
INSTALL:
1- 6" GV (CL 200)
1- VALVE BOX
1- VALVE MARKER

WL-A ℄ STA. 19+20, 15' O/S RT.
INSTALL FH CONN.:
1- 6"x6" TEE MJxFE
1- 6" 1/4 BEND
1- 6" GV (CL 200) MJxFE
1- VALVE BOX
1- FH
3- CONC. BLOCKS
18 L.F. 6" D.I. PIPE (CL 52)
1- CONC. SLAB
2- REFLECTORS

12400 E 10800 N

283° 03' 00" 51.39 S.3'

12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

W 6" D.I.

2.5'

340 350 360

FARRINGTON AVE.

FUTURE GRAVEL ROAD

WL-A ℄ STA. 17+50, 15' O/S RT.
INSTALL:
1- 3/4" ARV
1- ARV VALVE BOX

GRADING LIMITS

PROPOSED FARRINGTON AVE. CULVERT CROSSING

APPROXIMATE CONSTRUCTION LIMITS

125200 W 10800 N

LOT 18

LOT 17

(PLAT 12.9 H.H.)
(TMK 5-2-05:31, 32, 33, & 34)

(PLAT 12.9 H.H.)
(TMK 5-2-05:40, 31, & 30)

MATCHLINE SEE SHEET 5

MATCHLINE SEE SHEET 7

PLAN - WATERLINE "A"
SCALE: 1" = 40'

STA. 11+22.17

STA. 23+43.95

EXIST GROUND @ ℄ OF ROAD

FUTURE FINISH GRADE @ ℄ OF ROAD

NEW FINISH GRADE @ ℄ OF PIPE

EXIST. GROUND @ ℄ OF PIPE

INV. OF 6" WATERLINE

TOP OF PIPE

3' MIN COVER

6" DI @ S=(+)0.0806

6" DI @ S=(+)0.0556

6" DI @ S=(+)0.0413

6" DI @ S=(+)0.0310

6" DI @ S=(+)0.0160

6" DI @ S=(-)0.0045

6" DI @ S=(-)0.0230

6" DI @ S=(-)0.0100

8.14 %

4.63 %

-1.92 %

ELEV = 330.45
PVC 11+95.00

ELEV = 339.00 (338.08)
PVI 13+00.00

ELEV = 343.87
PVT 14+05.00

ELEV = 358.00 (353.01)
PVI 17+10.00

ELEV = 352.14
PVT 20+15.00

STA 13+30 — 336.00
STA 14+20 1-FH CONN. — 341.00
STA 15+00 — 344.30
STA 16+00 — 347.40
STA 17+50 1-3/4" ARV — 349.80
STA 19+05 1-6" GV — 349.10
STA 19+20 1-FH CONN. — 348.75
STA 23+00 — 340.00

LVC = 210ft

LVC = 610ft

PROPOSED FARRINGTON AVE. CULVERT CROSSING

PROFILE - WATERLINE "A"
SCALE: HORIZ 1" = 40'
VERT 1" = 4'

NO	DATE	DESCRIPTION	ENGR
		REVISIONS	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

EDWARD H. LIDA
REGISTERED PROFESSIONAL ENGINEER
NO. 4076-C
HAWAII, USA

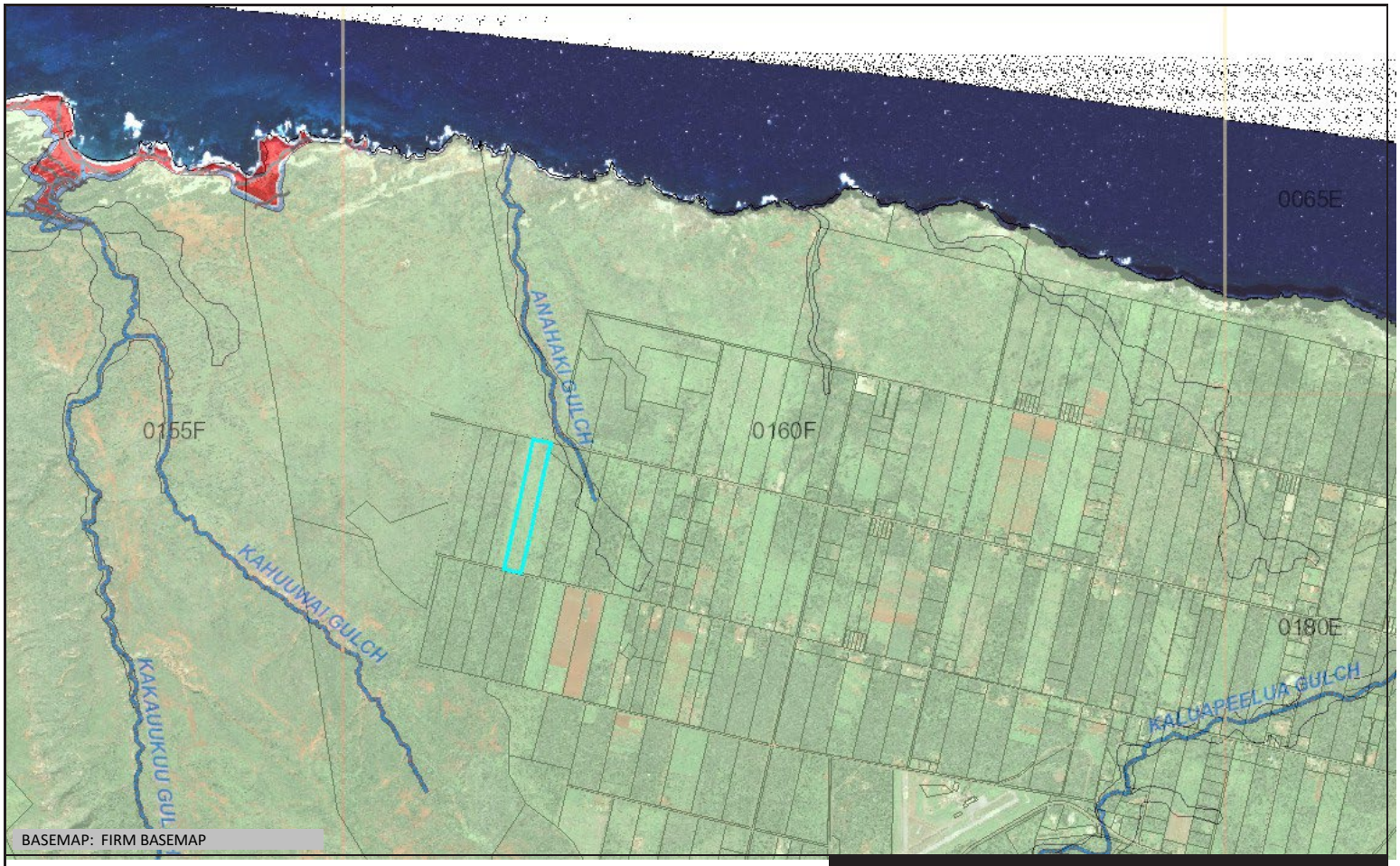
This work was prepared by me or under my supervision.

MOLOKAI WATER SYSTEM PHASE 3C

PLAN & PROFILE
WATERLINE "A" STA. 11+22.17 TO STA. 23+43.95

SSFM ENGINEERS, INC.
501 Sumner Street • Suite 502
Honolulu, Hawaii 96817

N:90122005 05/14/93 07:29



Flood Hazard Assessment Report

www.hawaiinfip.org

Property Information

COUNTY: MAUI

TMK NO: (2) 5-2-005:031

WATERSHED: MANEOPAPA; MOOMOMI

PARCEL ADDRESS: ADDRESS NOT DETERMINED
HOOLEHUA, HI 96729

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 04, 2015
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	1500030160F
PANEL EFFECTIVE DATE:	NOVEMBER 04, 2015

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: NO
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 0.60 1.20 mi

Disclaimer: The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR, its officers, and employees from any liability which may arise from its use of its data or information.

If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.

FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL)*

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

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

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

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

OTHER FLOOD AREAS

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

APPENDIX B

Water Calculations

EXISTING HOOLEHUA
DESIGN CRITERIA for Water System

1. Design Average Flow = 600 Gals/lot

2. C Values:

    4", 6" dia pipe (ductile iron) = 100
    8", 12" dia pipe (ductile iron) = 110
    16", 20" dia pipe (ductile iron)=120

3. Fire Flow = 500 GPM

4. Demand Factors

    Maximum Daily Demand = 1.5 x Average Day
    Peak Hour Demand = 3.0 x Average Day

5. Starting HGL of 764' was used based on data from an existing Pressure Breaker Tank near the intersection of Kulea Street and Moomomi Avenue.

6. The Capacity of the distribution system shall deliver the maximum daily demand simultaneously with the required fire flow.

7. The distribution system shall deliver the peak hour flow (without fire flow).

8. Peak Hour flow shall have a minimum residual pressure of 40 psi. The WaterCAD model computes system pressures at all lot connections at the same time during Peak Flow (Peak Hour Demand).

9. Maximum daily flow + fire flow will have a minimum residual pressure of 20 psi at critical fire hydrant. The WaterCAD model computes system pressures at each hydrant location individually at the required 500 GPM Fire Flow while applying the Max Daily Flow demand at the lots within the project site.

10. Water System data was based on DHHL ArcGIS Webmap (Revised 02_01_15) and as-built plans provided by DHHL.

11. PRV pressure assumed to be 80 psi.

		Alternative		
Scenario #	Scenario Name	Demand	Fire Flow	Steady State / EPS Solver Calculation Options
1	Existing Peak Hour Demand_600Gal per Lot	Peak Hour_600Gal per Lot	No Fire Flow	Base Calculation Options
2	Existing Fire Flow Max Daily_600Gal per Lot	Max Daily_600Gal per Lot	Fire Flow	Base Fire Flow

Scenario #1 (Existing Peak Hour Demand_600Gal per Lot)

This WaterCAD model scenario using the alternative parameters listed in the table above, calculates system pressures at relevant nodes/junctions (in this case, the existing nodes/junctions at Naiwa Subdivision and Hoolehua Lots). Using the Design Criteria for Design Average Flow of 600 Gal / lot, Peak Hour Demands were calculated and assigned for each lot (please refer to the column "DESIGN PEAK HOUR FLOW" under the "EXISTING DEMANDS" tab of this spreadsheet). In accordance with section 111.04 (System Capacity) of the Water System Standards 2002, only Peak Hour Demands (without Fire Flows) were used to calculate pressures at each lot node/junction. This model scenario resulted in residual pressures higher than the required minimum 40 psi residual pressures (as per section 111.06 item #2 of the Water System Standards), with the lowest pressure being 71 psi located at node/junction designated as "*J-8* " (please refer to "EXISTING PEAK HOUR JUNCTIONS" tab of this spreadsheet).

Scenario #2 (Existing Fire Flow Max Daily_600Gal per Lot)

This WaterCAD model scenario using the alternative parameters listed in the table above, calculates system pressures at designated existing Fire Hydrant nodes/junctions. Using the design criteria of 500gpm for fire flow, each existing hydrant pressure is calculated individually (one hydrant at a time) by the model to ensure that the Fire Flow system constraints are met (Fire Flow = 500 gpm, Min Residual Pressure = 20 psi). Along with the discussed Fire Flow system constraints, Max Daily Demands to the relevant lot nodes/junctions (please refer to column "DESIGN MAX DAILY FLOW" under the "EXISTING DEMANDS" tab of this spreadsheet) are applied at the same time. This model scenario resulted in residual pressures higher than the required minimum 20 psi residual pressures (as per section 111.06 item #1 of the Water System Standards), with the lowest pressure being 49 psi located at node/junction designated as "*H-1* " (please refer to "EXISTING FIRE FLOW - JUNCTIONS" tab of this spreadsheet).

EXISTING HOOLEHUA SUBDIVISION DEMANDS

NODE	LOT	AREA (ac)	DESIGN AVG. FLOW (GPM)	MAX DAILY FLOW FACTOR	DESIGN MAX DAILY FLOW (GPM)	PEAK FLOW FACTOR	DESIGN PEAK HOUR FLOW (GPM)	ELEV (FT)	STATIC PRESSURE (PSI)
lot1	lot1	5	0.42	1.5	0.62	3	1.25	366.02	172.29
lot2	lot2	5	0.42	1.5	0.62	3	1.25	361.58	174.21
lot3	lot3	5.4	0.42	1.5	0.62	3	1.25	352.13	178.30
lot4	lot4	5.7	0.42	1.5	0.62	3	1.25	352.90	177.97
lot5	lot5	5.4	0.42	1.5	0.62	3	1.25	354.77	177.16
lot6	lot6	5.4	0.42	1.5	0.62	3	1.25	404.40	155.67
lot7	lot7	5.5	0.42	1.5	0.62	3	1.25	420.02	148.91
lot8	lot8	5.5	0.42	1.5	0.62	3	1.25	421.33	148.34
lot9_10_11_12	lot9_10_11_12	4	0.42	1.5	0.62	3	1.25	439.35	140.54
		6.7	0.42	1.5	0.62	3	1.25	439.35	140.54
		8.5	0.42	1.5	0.62	3	1.25	439.35	140.54
		5	0.42	1.5	0.62	3	1.25	439.35	140.54
lot13	lot13	5	0.42	1.5	0.62	3	1.25	426.96	145.90
lot14	lot14	5	0.42	1.5	0.62	3	1.25	431.34	144.01
lot15	lot15	4	0.42	1.5	0.62	3	1.25	457.02	132.89
lot16	lot16	4	0.42	1.5	0.62	3	1.25	459.63	131.76
lot17	lot17	4	0.42	1.5	0.62	3	1.25	488.52	119.26
lot18	lot18	4	0.42	1.5	0.62	3	1.25	490.27	118.50
lot19	lot19	4	0.42	1.5	0.62	3	1.25	496.41	115.84
lot20	lot20	4.2	0.42	1.5	0.62	3	1.25	501.64	113.58
lot21	lot21	7.3	0.42	1.5	0.62	3	1.25	480.71	122.64
lot22	lot22	5	0.42	1.5	0.62	3	1.25	502.20	113.33
lot23	lot23	4	0.42	1.5	0.62	3	1.25	465.13	129.38
lot24	lot24	4	0.42	1.5	0.62	3	1.25	451.86	135.13
lot25_26	lot25_26	6.9	0.42	1.5	0.62	3	1.25	425.79	146.41
		6.8	0.42	1.5	0.62	3	1.25	425.79	146.41
lot27	lot27	4	0.42	1.5	0.62	3	1.25	419.08	149.32
lot28	lot28	5.3	0.42	1.5	0.62	3	1.25	373.10	169.22
lot29	lot29	5.3	0.42	1.5	0.62	3	1.25	369.05	170.97
lot30	lot30	5.3	0.42	1.5	0.62	3	1.25	351.53	178.56
lot31	lot31	5.3	0.42	1.5	0.62	3	1.25	351.26	178.68
lot32	lot32	5	0.42	1.5	0.62	3	1.25	409.95	153.27
lot33_34_35_36	lot33_34_35_36	5	0.42	1.5	0.62	3	1.25	400.35	157.42
		6	0.42	1.5	0.62	3	1.25	400.35	157.42
		5.8	0.42	1.5	0.62	3	1.25	400.35	157.42
		5.1	0.42	1.5	0.62	3	1.25	400.35	157.42
lot37	lot37	5.1	0.42	1.5	0.62	3	1.25	404.87	155.47
lot38	lot38	6.3	0.42	1.5	0.62	3	1.25	428.79	145.11
lot39	lot39	5	0.42	1.5	0.62	3	1.25	439.48	140.48
lot40	lot40	5.1	0.42	1.5	0.62	3	1.25	435.12	142.37
lot41	lot41	5.9	0.42	1.5	0.62	3	1.25	429.59	144.77
lot42	lot42	4.7	0.42	1.5	0.62	3	1.25	427.28	145.77
lot43	lot43	5.1	0.42	1.5	0.62	3	1.25	436.88	141.61
lot44	lot44	5.1	0.42	1.5	0.62	3	1.25	440.07	140.23
lot45	lot45	4.5	0.42	1.5	0.62	3	1.25	395.05	159.72
lot46	lot46	8	0.42	1.5	0.62	3	1.25	394.31	160.04
lot47	lot47	5.2	0.42	1.5	0.62	3	1.25	392.70	160.74
lot48	lot48	5.2	0.42	1.5	0.62	3	1.25	395.94	159.33
lot49	lot49	5.2	0.42	1.5	0.62	3	1.25	400.11	157.53
lot50	lot50	5.4	0.42	1.5	0.62	3	1.25	400.09	157.54
lot51	lot51	5.4	0.42	1.5	0.62	3	1.25	400.07	157.55
lot52	lot52	5.2	0.42	1.5	0.62	3	1.25	399.42	157.83
lot53	lot53	5.8	0.42	1.5	0.62	3	1.25	392.34	160.89
lot54	lot54	6	0.42	1.5	0.62	3	1.25	389.74	162.02
lot55	lot55	5.3	0.42	1.5	0.62	3	1.25	389.66	162.05
lot56	lot56	5.3	0.42	1.5	0.62	3	1.25	391.82	161.12
lot57	lot57	5.3	0.42	1.5	0.62	3	1.25	394.01	160.17
lot58	lot58	4.3	0.42	1.5	0.62	3	1.25	394.62	159.90
LOT 17A	LOT 17A	1.95	0.42	1.5	0.62	3	1.25	362.99	173.60
LOT 17B	LOT 17B	1.95	0.42	1.5	0.62	3	1.25	364.26	173.05
LOT 17C	LOT 17C	6	0.42	1.5	0.62	3	1.25	400.00	157.58
LOT 17D	LOT 17D	6	0.42	1.5	0.62	3	1.25	400.00	157.58
LOT 17E	LOT 17E	1.95	0.42	1.5	0.62	3	1.25	378.59	166.84
LOT 17F	LOT 17F	1.95	0.42	1.5	0.62	3	1.25	378.00	167.10
LOT 17G	LOT 17G	6	0.42	1.5	0.62	3	1.25	366.53	172.06
LOT 17H	LOT 17H	6	0.42	1.5	0.62	3	1.25	365.09	172.69
LOT 104D-1A	LOT 104D-1A	1	0.42	1.5	0.62	3	1.25	435.49	142.21
LOT 104D-1B	LOT 104D-1B	3	0.42	1.5	0.62	3	1.25	418.36	149.63
LOT 104D-1C	LOT 104D-1C	3.2	0.42	1.5	0.62	3	1.25	418.36	149.63
LOT 104D-1D	LOT 104D-1D	12.8	0.42	1.5	0.62	3	1.25	410.00	153.25

EXISTING HOOLEHUA SUBDIVISION
EXISTING PEAK HOUR TEST - EXISTING DEMANDS (SORTED BY PRESSURE)

FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-1	649.53	<Collection: 0 items>	0	763.99	50
J-8	600.05	<Collection: 0 items>	0	763.99	71
J-188	600.04	<Collection: 0 items>	0	763.99	71
FH 39+20 FARRINGTON	400.88	<Collection: 0 items>	0	585.97	80
FH 25+10 MOOMOMI	403.52	<Collection: 0 items>	0	588.72	80
J-195	566.49	<Collection: 0 items>	0	763.98	85
FH 34+20 FARRINGTON	388.1	<Collection: 0 items>	0	585.97	86
J-206	518.17	<Collection: 0 items>	0	724.97	89
FH 20+10 MOOMOMI	381.5	<Collection: 0 items>	0	588.72	90
J-190	380.74	<Collection: 0 items>	0	588.72	90
LOT 17F	379.04	<Collection: 1 item>	1.25	588.72	91
LOT 17E	379.04	<Collection: 1 item>	1.25	588.72	91
J-189	545.83	<Collection: 0 items>	0	763.99	94
LOT 17G	366.66	<Collection: 1 item>	1.25	588.72	96
LOT 17B	363.67	<Collection: 1 item>	1.25	585.96	96
H-240	365.58	<Collection: 0 items>	0	588.72	97
LOT 17H	364.2	<Collection: 1 item>	1.25	588.72	97
LOT 17A	361.32	<Collection: 1 item>	1.25	585.96	97
J-7	538.69	<Collection: 0 items>	0	763.9	97
LOT 17D	360	<Collection: 1 item>	1.25	585.96	98
H-241	360	<Collection: 0 items>	0	585.96	98
LOT 17C	360	<Collection: 1 item>	1.25	585.96	98
J-200	359.05	<Collection: 0 items>	0	585.96	98
FH 29+18 FARRINGTON	354.14	<Collection: 0 items>	0	585.97	100
J-196	531.95	<Collection: 0 items>	0	763.98	100
FH 19+20 FARRINGTON	348.75	<Collection: 0 items>	0	585.96	103
J-208	520.12	<Collection: 0 items>	0	763.98	106
H-247	518.27	<Collection: 0 items>	0	763.98	106
FH 24+20 FARRINGTON	338.8	<Collection: 0 items>	0	585.96	107
FH 64+20 FARRINGTON	478.11	<Collection: 0 items>	0	726.96	108
FH 59+22 FARRINGTON	466.26	<Collection: 0 items>	0	726.96	113
H-246	496.95	<Collection: 0 items>	0	763.98	116
FH 69+10 FARRINGTON	459.53	<Collection: 0 items>	0	726.96	116
H-245	474.85	<Collection: 0 items>	0	763.98	125
FH 74+10 FARRINGTON	436.52	<Collection: 0 items>	0	726.96	126
FH 84+10 FARRINGTON	434.2	<Collection: 0 items>	0	726.97	127
FH 88+90 FARRINGTON	430.62	<Collection: 0 items>	0	726.97	128
FH 79+10 FARRINGTON	430.2	<Collection: 0 items>	0	726.96	128
FH 54+20 FARRINGTON	430.07	<Collection: 0 items>	0	726.96	128
FH 85+10 MOOMOMI	420.98	<Collection: 0 items>	0	724.97	132
H-244	456.05	<Collection: 0 items>	0	763.98	133
FH 49+18 FARRINGTON	411.69	<Collection: 0 items>	0	726.96	136
FH 44+20 FARRINGTON	411.35	<Collection: 0 items>	0	726.96	137
FH 80+08 MOOMOMI	408.7	<Collection: 0 items>	0	724.97	137
FH 30+10 MOOMOMI	400.9	<Collection: 0 items>	0	724.96	140
FH 75+10 MOOMOMI	400.12	<Collection: 0 items>	0	724.97	141
FH 70+08 MOOMOMI	399.8	<Collection: 0 items>	0	724.97	141
H-243	438.65	<Collection: 0 items>	0	763.98	141
J-197	436.82	<Collection: 0 items>	0	763.98	142
LOT 104D-1A	435.69	<Collection: 1 item>	1.25	763.98	142
FH 65+10 MOOMOMI	396.5	<Collection: 0 items>	0	724.96	142
FH 60+10 MOOMOMI	382.4	<Collection: 0 items>	0	724.96	148

FH 40+08 MOOMOMI	381.9	<Collection: 0 items>	0	724.96	148
FH 45+10 MOOMOMI	381.63	<Collection: 0 items>	0	724.96	149
H-242	419.46	<Collection: 0 items>	0	763.98	149
FH 35+10 MOOMOMI	379.5	<Collection: 0 items>	0	724.96	149
LOT 104D-1B	417.97	<Collection: 1 item>	1.25	763.98	150
FH 55+10 MOOMOMI	371.55	<Collection: 0 items>	0	724.96	153
FH 50+08 MOOMOMI	369.7	<Collection: 0 items>	0	724.96	154

EXISTING NAIWA SUBDIVISION
EXISTING PEAK HOUR TEST - EXISTING DEMANDS (SORTED BY VELOCITY)

FlexTable: Pipe Table

Label	ID	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Headloss (ft)
P-260	467	84	J-1	H-45	6	Ductile Iron	100	0	0	0	0	FALSE	0
P-261	468	262	H-45	lot28	6	Ductile Iron	100	0	0	0	0	FALSE	0
P-127	249	61	lot44	J-4	6	Ductile Iron	100	0	0	0	0	FALSE	0
P-220	399	97	lot4	lot3	8	Ductile Iron	110	0	0.27	0	0	FALSE	0
P-229	413	409	lot3	H-38	8	Ductile Iron	110	0	-0.98	0.01	0	FALSE	0
P-230	414	381	H-38	lot2	8	Ductile Iron	110	0	-0.98	0.01	0	FALSE	0
P-368	703	3240	J-195	J-196	12	Ductile Iron	110	0	2.5	0.01	0	FALSE	0
P-354	632	70	lot50	lot49	8	Ductile Iron	110	0	1.25	0.01	0	FALSE	0
P-386	737	2192	J-189	PRV-PR B2	16	Ductile Iron	120	0	5	0.01	0	FALSE	0
P-387	738	1125	PRV-PR B2	J-206	16	Ductile Iron	120	0	5	0.01	0	FALSE	0
P-233	422	97	H-39	lot4	8	Ductile Iron	110	0	1.52	0.01	0	FALSE	0
P-236	428	392	lot5	H-40	8	Ductile Iron	110	0	1.52	0.01	0	FALSE	0
P-237	429	356	H-40	H-39	8	Ductile Iron	110	0	1.52	0.01	0	FALSE	0
P-130	255	55	lot43	H-22	6	Ductile Iron	100	0	1.25	0.01	0	FALSE	0
P-131	256	53	H-22	lot44	6	Ductile Iron	100	0	1.25	0.01	0	FALSE	0
P-450	833	34	LOT 17G	H-240	6	Ductile Iron	100	0	1.25	0.01	0	FALSE	0
P-451	834	44	H-240	LOT 17H	6	Ductile Iron	100	0	1.25	0.01	0	FALSE	0
P-452	836	31	LOT 17C	H-241	6	Ductile Iron	100	0	1.25	0.01	0	FALSE	0
P-453	837	34	H-241	LOT 17D	6	Ductile Iron	100	0	1.25	0.01	0	FALSE	0
P-454	839	358	LOT 104D-1A	H-242	6	Ductile Iron	100	0	1.25	0.01	0	FALSE	0
P-455	840	33	H-242	LOT 104D-1B	6	Ductile Iron	100	0	1.25	0.01	0	FALSE	0
P-244	441	107	lot28	lot29	6	Ductile Iron	100	0	-1.25	0.01	0	FALSE	0
P-224	405	103	lot2	J-50	8	Ductile Iron	110	0	-2.23	0.01	0	FALSE	0
P-226	408	75	J-50	lot1	8	Ductile Iron	110	0	-2.23	0.01	0	FALSE	0
P-356	635	44	lot51	lot50	8	Ductile Iron	110	0	2.5	0.02	0	FALSE	0
P-382	729	3317	J-196	J-208	8	Ductile Iron	110	0	2.5	0.02	0	FALSE	0
P-457	843	55	H-243	J-197	8	Ductile Iron	110	0	2.5	0.02	0	FALSE	0
P-459	846	519	H-244	H-243	8	Ductile Iron	110	0	2.5	0.02	0	FALSE	0
P-461	849	561	H-245	H-244	8	Ductile Iron	110	0	2.5	0.02	0	FALSE	0
P-463	852	659	H-246	H-245	8	Ductile Iron	110	0	2.5	0.02	0	FALSE	0
P-464	854	55	J-208	H-247	8	Ductile Iron	110	0	2.5	0.02	0	FALSE	0
P-465	855	636	H-247	H-246	8	Ductile Iron	110	0	2.5	0.02	0	FALSE	0
P-239	433	320	J-9	H-41	8	Ductile Iron	110	0	2.77	0.02	0	FALSE	0
P-312	553	185	lot5	H-41	8	Ductile Iron	110	0	-2.77	0.02	0	FALSE	0
P-361	689	5593	J-188	J-189	16	Ductile Iron	120	0	12.5	0.02	0	FALSE	0
P-367	701	3255	J-189	J-195	12	Ductile Iron	110	0	7.5	0.02	0	FALSE	0
P-208	380	247	J-41	H-35	8	Ductile Iron	110	0	-3.48	0.02	0	FALSE	0
P-209	381	94	H-35	lot27	8	Ductile Iron	110	0	-3.48	0.02	0	FALSE	0
P-211	385	324	J-2	H-36	8	Ductile Iron	110	0	-3.48	0.02	0	FALSE	0
P-212	386	105	H-36	J-41	8	Ductile Iron	110	0	-3.48	0.02	0	FALSE	0
P-227	409	255	lot1	J-2	8	Ductile Iron	110	0	-3.48	0.02	0	FALSE	0
P-350	626	65	lot52	H-68	8	Ductile Iron	110	0	3.75	0.02	0	FALSE	0
P-355	634	53	H-68	lot51	8	Ductile Iron	110	0	3.75	0.02	0	FALSE	0
P-135	263	301	lot42	lot43	6	Ductile Iron	100	0	2.5	0.03	0	FALSE	0
P-365	697	340	LOT 17F	LOT 17G	6	Ductile Iron	100	0	2.5	0.03	0	FALSE	0
P-370	707	32	J-197	LOT 104D-1A	6	Ductile Iron	100	0	2.5	0.03	0	FALSE	0
P-376	719	350	LOT 17B	LOT 17C	6	Ductile Iron	100	0	2.5	0.03	0	FALSE	0
P-254	456	79	H-43	lot30	6	Ductile Iron	100	0	-2.5	0.03	0	FALSE	0
P-257	462	203	lot29	H-44	6	Ductile Iron	100	0	-2.5	0.03	0	FALSE	0
P-258	463	536	H-44	H-43	6	Ductile Iron	100	0	-2.5	0.03	0	FALSE	0
P-190	351	96	lot27	lot25_26	8	Ductile Iron	110	0	-4.73	0.03	0	FALSE	0
P-352	629	85	lot48	lot52	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-388	740	1898	J-195	PRV-PR B3	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-395	750	293	FH 30+10 MOOMOMI	PRV-PR C1	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-397	753	464	FH 35+10 MOOMOMI	FH 30+10 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-399	756	602	FH 40+08 MOOMOMI	FH 35+10 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-403	762	434	FH 45+10 MOOMOMI	FH 40+08 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-405	765	450	FH 50+08 MOOMOMI	FH 45+10 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0

P-407	768	510	FH 55+10 MOOMOMI	FH 50+08 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-409	771	549	FH 60+10 MOOMOMI	FH 55+10 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-411	774	469	FH 65+10 MOOMOMI	FH 60+10 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-413	777	476	FH 70+08 MOOMOMI	FH 65+10 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-415	780	570	FH 75+10 MOOMOMI	FH 70+08 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-417	783	546	FH 80+08 MOOMOMI	FH 75+10 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-418	785	3755	J-206	FH 85+10 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0.01
P-419	786	401	FH 85+10 MOOMOMI	FH 80+08 MOOMOMI	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-431	804	431	FH 44+20 FARRINGTON	PRV-PR C2	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-433	807	496	FH 49+18 FARRINGTON	FH 44+20 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-435	810	478	FH 54+20 FARRINGTON	FH 49+18 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-437	813	543	FH 59+22 FARRINGTON	FH 54+20 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-439	816	452	FH 64+20 FARRINGTON	FH 59+22 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-441	819	461	FH 69+10 FARRINGTON	FH 64+20 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-443	822	554	FH 74+10 FARRINGTON	FH 69+10 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-445	825	539	FH 79+10 FARRINGTON	FH 74+10 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-447	828	503	FH 84+10 FARRINGTON	FH 79+10 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-448	830	4814	PRV-PR B3	FH 88+90 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0.01
P-449	831	401	FH 88+90 FARRINGTON	FH 84+10 FARRINGTON	8	Ductile Iron	110	0	5	0.03	0	FALSE	0
P-351	628	97	lot53	lot48	8	Ductile Iron	110	0	6.25	0.04	0	FALSE	0
P-374	715	21	LOT 17A	LOT 17B	6	Ductile Iron	100	0	3.75	0.04	0	FALSE	0
P-134	262	70	J-5	lot42	6	Ductile Iron	100	0	3.75	0.04	0	FALSE	0
P-364	695	24	LOT 17E	LOT 17F	6	Ductile Iron	100	0	3.75	0.04	0	FALSE	0
P-248	447	104	lot30	lot31	6	Ductile Iron	100	0	-3.75	0.04	0	FALSE	0
P-193	356	382	lot25_26	lot24	8	Ductile Iron	110	0	-7.23	0.05	0	FALSE	0
P-347	622	77	H-67	lot53	8	Ductile Iron	110	0	7.5	0.05	0	FALSE	0
P-358	638	40	lot54	H-67	8	Ductile Iron	110	0	7.5	0.05	0	FALSE	0
P-275	490	429	J-9	H-46	8	Ductile Iron	110	0	-7.77	0.05	0	FALSE	0
P-276	491	41	H-46	lot6	8	Ductile Iron	110	0	-7.77	0.05	0	FALSE	0
P-313	564	284	J-6	H-54	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-314	565	330	H-54	H-55	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-315	566	237	H-55	H-56	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-316	568	556	H-56	H-57	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-319	574	418	H-57	J-63	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-320	575	739	J-63	H-58	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-321	576	346	H-58	H-59	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-322	578	626	H-59	H-60	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-323	580	560	H-60	H-61	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-324	582	426	H-61	H-62	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-325	584	593	H-62	H-63	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-326	586	546	H-63	H-64	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-327	588	63	H-64	J-168	12	Ductile Iron	110	0	17.5	0.05	0	FALSE	0
P-205	375	101	lot24	H-34	8	Ductile Iron	110	0	-8.48	0.05	0	FALSE	0
P-206	376	97	H-34	lot23	8	Ductile Iron	110	0	-8.48	0.05	0	FALSE	0
P-357	637	145	lot55	lot54	8	Ductile Iron	110	0	8.75	0.06	0	FALSE	0
P-284	505	194	J-11	H-49	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-285	506	456	H-49	H-48	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-294	521	118	lot37	H-51	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-363	693	41	J-190	LOT 17E	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-373	713	23	J-200	LOT 17A	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-391	744	141	FH 20+10 MOOMOMI	J-190	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-392	746	196	PRV-PR C1	FH 25+10 MOOMOMI	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-393	747	513	FH 25+10 MOOMOMI	FH 20+10 MOOMOMI	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-421	789	58	FH 19+20 FARRINGTON	J-200	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-423	792	383	FH 24+20 FARRINGTON	FH 19+20 FARRINGTON	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-425	795	599	FH 29+18 FARRINGTON	FH 24+20 FARRINGTON	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-427	798	623	FH 34+20 FARRINGTON	FH 29+18 FARRINGTON	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-428	800	48	PRV-PR C2	FH 39+20 FARRINGTON	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-429	801	407	FH 39+20 FARRINGTON	FH 34+20 FARRINGTON	6	Ductile Iron	100	0	5	0.06	0	FALSE	0
P-250	450	333	lot31	H-42	6	Ductile Iron	100	0	-5	0.06	0	FALSE	0
P-251	451	81	H-42	J-9	6	Ductile Iron	100	0	-5	0.06	0	FALSE	0
P-265	475	376	lot6	lot7	8	Ductile Iron	110	0	-9.02	0.06	0	FALSE	0
P-202	370	233	lot23	H-33	8	Ductile Iron	110	0	-9.73	0.06	0	FALSE	0
P-203	371	77	H-33	lot21	8	Ductile Iron	110	0	-9.73	0.06	0	FALSE	0
P-345	619	184	lot56	lot55	8	Ductile Iron	110	0	10	0.06	0	FALSE	0
P-267	478	80	lot7	lot8	8	Ductile Iron	110	0	-10.27	0.07	0	FALSE	0
P-184	342	173	J-3	H-31	8	Ductile Iron	110	0	-10.98	0.07	0	FALSE	0

P-185	343	125	H-31	lot22	8	Ductile Iron	110	0	-10.98	0.07	0	FALSE	0
P-199	365	426	lot21	H-32	8	Ductile Iron	110	0	-10.98	0.07	0	FALSE	0
P-200	366	123	H-32	J-3	8	Ductile Iron	110	0	-10.98	0.07	0	FALSE	0
P-289	513	182	lot32	lot37	6	Ductile Iron	100	0	6.25	0.07	0	FALSE	0
P-342	613	76	lot47	H-66	8	Ductile Iron	110	0	11.25	0.07	0	FALSE	0
P-343	615	130	H-66	lot56	8	Ductile Iron	110	0	11.25	0.07	0	FALSE	0
P-278	495	67	lot8	H-47	8	Ductile Iron	110	0	-11.52	0.07	0	FALSE	0
P-279	496	54	H-47	J-13	8	Ductile Iron	110	0	-11.52	0.07	0	FALSE	0
P-177	331	263	H-30	lot20	8	Ductile Iron	110	0	-12.23	0.08	0	FALSE	0
P-183	340	344	lot22	H-30	8	Ductile Iron	110	0	-12.23	0.08	0	FALSE	0
P-341	612	304	lot57	lot47	8	Ductile Iron	110	0	12.5	0.08	0	FALSE	0
P-291	516	277	J-13	H-50	6	Ductile Iron	100	0	7.5	0.09	0	FALSE	0
P-292	517	181	H-50	lot32	6	Ductile Iron	100	0	7.5	0.09	0	FALSE	0
P-179	334	78	lot20	J-37	8	Ductile Iron	110	0	-13.48	0.09	0	FALSE	0
P-180	335	183	J-37	lot19	8	Ductile Iron	110	0	-13.48	0.09	0	FALSE	0
P-83	170	170	J-8	H-5	20	Ductile Iron	120	0	-85	0.09	0	FALSE	0
P-86	175	579	H-5	H-4	20	Ductile Iron	120	0	-85	0.09	0	FALSE	0
P-90	182	485	H-4	H-3	20	Ductile Iron	120	0	-85	0.09	0	FALSE	0
P-93	187	484	H-3	H-2	20	Ductile Iron	120	0	-85	0.09	0	FALSE	0
P-96	192	447	H-2	H-1	20	Ductile Iron	120	0	-85	0.09	0	FALSE	0
P-97	193	2832	H-1	R-1	20	Ductile Iron	120	0	-85	0.09	0	FALSE	0.01
P-360	687	21	J-188	J-8	20	Ductile Iron	120	0	-85	0.09	0	FALSE	0
P-339	609	32	lot46	lot57	8	Ductile Iron	110	0	13.75	0.09	0	FALSE	0
P-173	324	524	lot19	lot18	8	Ductile Iron	110	0	-14.73	0.09	0	FALSE	0.01
P-338	607	29	lot58	lot46	8	Ductile Iron	110	0	15	0.1	0	FALSE	0
P-171	321	72	lot18	lot17	8	Ductile Iron	110	0	-15.98	0.1	0	FALSE	0
P-337	606	36	lot45	lot58	8	Ductile Iron	110	0	16.25	0.1	0	FALSE	0
P-162	306	271	H-27	lot16	8	Ductile Iron	110	0	-17.23	0.11	0	FALSE	0
P-166	313	382	H-28	H-27	8	Ductile Iron	110	0	-17.23	0.11	0	FALSE	0.01
P-169	318	64	lot17	H-28	8	Ductile Iron	110	0	-17.23	0.11	0	FALSE	0
P-328	590	560	J-168	H-65	8	Ductile Iron	110	0	17.5	0.11	0	FALSE	0.01
P-333	600	73	H-65	lot45	8	Ductile Iron	110	0	17.5	0.11	0	FALSE	0
P-160	303	64	lot16	lot15	8	Ductile Iron	110	0	-18.48	0.12	0	FALSE	0
P-19	63	206	J-13	J-11	8	Ductile Iron	110	0	-19.02	0.12	0	FALSE	0
P-155	295	288	H-26	J-10	8	Ductile Iron	110	0	-19.73	0.13	0	FALSE	0.01
P-158	300	146	lot15	H-26	8	Ductile Iron	110	0	-19.73	0.13	0	FALSE	0
P-282	501	247	H-48	lot9_10_11_12	4	Ductile Iron	100	0	5	0.13	0	FALSE	0.01
P-295	522	208	H-51	lot33_34_35_36	4	Ductile Iron	100	0	5	0.13	0	FALSE	0.01
P-298	528	63	J-11	lot13	8	Ductile Iron	110	0	-24.02	0.15	0	FALSE	0
P-118	234	243	H-19	J-6	12	Ductile Iron	110	0	-55	0.16	0	FALSE	0
P-120	237	530	H-20	H-19	12	Ductile Iron	110	0	-55	0.16	0	FALSE	0.01
P-121	239	451	J-5	H-21	12	Ductile Iron	110	0	-55	0.16	0	FALSE	0.01
P-122	240	567	H-21	H-20	12	Ductile Iron	110	0	-55	0.16	0	FALSE	0.01
P-302	534	71	lot13	H-52	8	Ductile Iron	110	0	-25.27	0.16	0	FALSE	0
P-303	535	48	H-52	lot38	8	Ductile Iron	110	0	-25.27	0.16	0	FALSE	0
P-305	539	70	lot38	J-62	8	Ductile Iron	110	0	-26.52	0.17	0	FALSE	0
P-307	542	100	J-62	lot14	8	Ductile Iron	110	0	-26.52	0.17	0	FALSE	0
P-309	545	359	lot14	H-53	8	Ductile Iron	110	0	-27.77	0.18	0	FALSE	0.01
P-310	546	320	H-53	J-10	8	Ductile Iron	110	0	-27.77	0.18	0	FALSE	0.01
P-23	71	211	J-7	H-12	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-28	78	408	H-7	H-6	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-30	81	484	H-8	H-7	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-32	84	523	H-9	H-8	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-34	87	366	H-10	H-9	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-35	89	412	H-12	H-11	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-36	90	442	H-11	H-10	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-48	113	75	J-6	J-16	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-49	114	90	J-16	H-18	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-53	120	114	H-17	J-17	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-55	124	52	H-18	J-18	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-56	125	453	J-18	H-17	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-57	127	74	J-17	J-19	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-59	130	68	J-19	J-20	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-63	136	226	J-20	H-16	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-64	137	112	H-16	J-21	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0

P-66	141	551	J-21	H-15	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-74	156	331	H-14	J-22	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-76	159	151	J-22	H-13	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-79	164	126	H-13	J-23	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-80	165	297	J-23	J-7	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-81	167	178	H-15	J-24	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0
P-82	168	298	J-24	H-14	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-359	686	350	H-6	J-188	12	Ductile Iron	110	0	-72.5	0.21	0	FALSE	0.01
P-151	289	249	J-10	H-25	8	Ductile Iron	110	0	-47.5	0.3	0	FALSE	0.02
P-152	290	61	H-25	lot39	8	Ductile Iron	110	0	-47.5	0.3	0	FALSE	0.01
P-150	287	241	lot39	lot40	8	Ductile Iron	110	0	-48.75	0.31	0	FALSE	0.02
P-142	274	80	J-29	lot41	8	Ductile Iron	110	0	-50	0.32	0	FALSE	0.01
P-144	277	168	lot40	J-29	8	Ductile Iron	110	0	-50	0.32	0	FALSE	0.02
P-137	266	173	H-23	J-5	8	Ductile Iron	110	0	-51.25	0.33	0	FALSE	0.02
P-145	279	69	lot41	H-24	8	Ductile Iron	110	0	-51.25	0.33	0	FALSE	0.01
P-146	280	340	H-24	H-23	8	Ductile Iron	110	0	-51.25	0.33	0	FALSE	0.03

EXISTING NAIWA SUBDIVISION
EXISTING FIRE FLOW TEST - MAX DAILY DEMANDS (SORTED BY PRESSURE AT FIRE HYDRANT)

Fire Flow Node FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Pressure (Calculated Residual) (psi)
H-1	649.53	<Collection: 0 items>	0	764	50	49
H-2	635.75	<Collection: 0 items>	0	764	55	55
H-3	623.12	<Collection: 0 items>	0	764	61	61
H-4	611.56	<Collection: 0 items>	0	764	66	66
H-5	600.09	<Collection: 0 items>	0	764	71	71
J-8	600.05	<Collection: 0 items>	0	764	71	(N/A)
J-188	600.04	<Collection: 0 items>	0	764	71	(N/A)
H-6	596.83	<Collection: 0 items>	0	763.99	72	72
H-7	587.01	<Collection: 0 items>	0	763.99	77	76
FH 39+20 FARRINGTON	400.88	<Collection: 0 items>	0	585.97	80	79
FH 25+10 MOOMOMI	403.52	<Collection: 0 items>	0	588.72	80	77
H-8	571.69	<Collection: 0 items>	0	763.99	83	82
J-195	566.49	<Collection: 0 items>	0	764	85	(N/A)
FH 34+20 FARRINGTON	388.1	<Collection: 0 items>	0	585.97	86	79
J-206	518.17	<Collection: 0 items>	0	724.97	89	(N/A)
FH 20+10 MOOMOMI	381.5	<Collection: 0 items>	0	588.72	90	79
J-190	380.74	<Collection: 0 items>	0	588.72	90	(N/A)
LOT 17F	379.04	<Collection: 1 item>	0.62	588.72	91	(N/A)
LOT 17E	379.04	<Collection: 1 item>	0.62	588.72	91	(N/A)
H-9	554.15	<Collection: 0 items>	0	763.98	91	90
J-189	545.83	<Collection: 0 items>	0	764	94	(N/A)
H-10	541.99	<Collection: 0 items>	0	763.98	96	95
LOT 17G	366.66	<Collection: 1 item>	0.62	588.72	96	(N/A)
LOT 17B	363.67	<Collection: 1 item>	0.62	585.97	96	(N/A)
H-240	365.58	<Collection: 0 items>	0	588.72	97	78
LOT 17H	364.2	<Collection: 1 item>	0.62	588.72	97	(N/A)
LOT 17A	361.32	<Collection: 1 item>	0.62	585.97	97	(N/A)
J-7	538.69	<Collection: 0 items>	0	763.97	97	(N/A)
LOT 17D	360	<Collection: 1 item>	0.62	585.97	98	(N/A)
H-241	360	<Collection: 0 items>	0	585.97	98	61
LOT 17C	360	<Collection: 1 item>	0.62	585.97	98	(N/A)
J-200	359.05	<Collection: 0 items>	0	585.97	98	(N/A)
H-12	536.64	<Collection: 0 items>	0	763.97	98	97
H-11	533.01	<Collection: 0 items>	0	763.98	100	99
J-23	532.65	<Collection: 0 items>	0	763.97	100	(N/A)
FH 29+18 FARRINGTON	354.14	<Collection: 0 items>	0	585.97	100	85
J-196	531.95	<Collection: 0 items>	0	764	100	(N/A)
H-13	530.2	<Collection: 0 items>	0	763.97	101	99
FH 19+20 FARRINGTON	348.75	<Collection: 0 items>	0	585.97	103	72
J-22	526.09	<Collection: 0 items>	0	763.97	103	(N/A)
H-14	520.38	<Collection: 0 items>	0	763.97	105	103
J-24	520.31	<Collection: 0 items>	0	763.96	105	(N/A)
H-15	520.09	<Collection: 0 items>	0	763.96	106	103
J-208	520.12	<Collection: 0 items>	0	764	106	(N/A)
H-247	518.27	<Collection: 0 items>	0	764	106	93
FH 24+20 FARRINGTON	338.8	<Collection: 0 items>	0	585.97	107	82
FH 64+20 FARRINGTON	478.11	<Collection: 0 items>	0	726.97	108	86
J-21	505.83	<Collection: 0 items>	0	763.96	112	(N/A)
FH 59+22 FARRINGTON	466.26	<Collection: 0 items>	0	726.97	113	89
H-16	502.84	<Collection: 0 items>	0	763.96	113	110
H-30	502.5	<Collection: 0 items>	0	763.9	113	101
lot22	502.2	<Collection: 1 item>	0.62	763.9	113	(N/A)
H-31	502	<Collection: 0 items>	0	763.9	113	101
J-3	501.66	<Collection: 0 items>	0	763.9	113	(N/A)
lot20	501.64	<Collection: 1 item>	0.62	763.9	113	(N/A)
J-37	499.45	<Collection: 0 items>	0	763.9	114	(N/A)
H-246	496.95	<Collection: 0 items>	0	764	116	100
J-20	496.79	<Collection: 0 items>	0	763.96	116	(N/A)
FH 69+10 FARRINGTON	459.53	<Collection: 0 items>	0	726.97	116	95
lot19	496.41	<Collection: 1 item>	0.62	763.9	116	(N/A)
J-19	495.03	<Collection: 0 items>	0	763.96	116	(N/A)
H-32	494.08	<Collection: 0 items>	0	763.9	117	104
J-17	493.07	<Collection: 0 items>	0	763.96	117	(N/A)
lot18	490.27	<Collection: 1 item>	0.62	763.9	118	(N/A)
H-17	489.97	<Collection: 0 items>	0	763.95	119	116

J-63	488.87	<Collection: 0 items>	0	763.95	119	(N/A)
lot17	488.52	<Collection: 1 item>	0.62	763.9	119	(N/A)
H-57	486.92	<Collection: 0 items>	0	763.95	120	116
H-28	486.76	<Collection: 0 items>	0	763.9	120	109
lot21	480.71	<Collection: 1 item>	0.62	763.9	123	(N/A)
J-18	479.33	<Collection: 0 items>	0	763.95	123	(N/A)
H-18	478.79	<Collection: 0 items>	0	763.95	123	120
J-16	477.77	<Collection: 0 items>	0	763.95	124	(N/A)
H-33	477.71	<Collection: 0 items>	0	763.9	124	111
H-56	477.63	<Collection: 0 items>	0	763.95	124	120
J-6	477.24	<Collection: 0 items>	0	763.95	124	(N/A)
H-55	476.73	<Collection: 0 items>	0	763.95	124	121
H-54	475.72	<Collection: 0 items>	0	763.95	125	121
H-19	475.48	<Collection: 0 items>	0	763.95	125	122
H-245	474.85	<Collection: 0 items>	0	764	125	108
FH 74+10 FARRINGTON	436.52	<Collection: 0 items>	0	726.97	126	107
H-27	472.33	<Collection: 0 items>	0	763.9	126	116
FH 84+10 FARRINGTON	434.2	<Collection: 0 items>	0	726.97	127	111
FH 88+90 FARRINGTON	430.62	<Collection: 0 items>	0	726.97	128	114
FH 79+10 FARRINGTON	430.2	<Collection: 0 items>	0	726.97	128	111
FH 54+20 FARRINGTON	430.07	<Collection: 0 items>	0	726.97	128	103
H-58	465.41	<Collection: 0 items>	0	763.95	129	125
lot23	465.13	<Collection: 1 item>	0.62	763.9	129	(N/A)
H-20	460.96	<Collection: 0 items>	0	763.95	131	128
FH 85+10 MOOMOMI	420.98	<Collection: 0 items>	0	724.97	132	120
lot16	459.63	<Collection: 1 item>	0.62	763.9	132	(N/A)
H-34	458.55	<Collection: 0 items>	0	763.9	132	119
lot15	457.02	<Collection: 1 item>	0.62	763.9	133	(N/A)
H-244	456.05	<Collection: 0 items>	0	764	133	114
H-59	454.63	<Collection: 0 items>	0	763.95	134	129
lot24	451.86	<Collection: 1 item>	0.62	763.9	135	(N/A)
H-26	450.78	<Collection: 0 items>	0	763.9	135	126
FH 49+18 FARRINGTON	411.69	<Collection: 0 items>	0	726.97	136	110
FH 44+20 FARRINGTON	411.35	<Collection: 0 items>	0	726.97	137	109
FH 80+08 MOOMOMI	408.7	<Collection: 0 items>	0	724.97	137	124
J-10	442.25	<Collection: 0 items>	0	763.91	139	(N/A)
H-21	440.93	<Collection: 0 items>	0	763.94	140	136
H-48	440.34	<Collection: 0 items>	0	763.9	140	120
J-4	440.18	<Collection: 0 items>	0	763.94	140	(N/A)
lot44	440.07	<Collection: 1 item>	0.62	763.94	140	(N/A)
H-25	439.99	<Collection: 0 items>	0	763.91	140	132
FH 30+10 MOOMOMI	400.9	<Collection: 0 items>	0	724.97	140	112
lot39	439.48	<Collection: 1 item>	0.62	763.91	140	(N/A)
lot9_10_11_12	439.35	<Collection: 4 items>	2.48	763.89	140	(N/A)
H-22	439.15	<Collection: 0 items>	0	763.94	141	130
FH 75+10 MOOMOMI	400.12	<Collection: 0 items>	0	724.97	141	126
FH 70+08 MOOMOMI	399.8	<Collection: 0 items>	0	724.97	141	125
H-53	438.63	<Collection: 0 items>	0	763.9	141	131
H-243	438.65	<Collection: 0 items>	0	764	141	120
H-60	438.49	<Collection: 0 items>	0	763.95	141	136
lot43	436.88	<Collection: 1 item>	0.62	763.94	142	(N/A)
J-197	436.82	<Collection: 0 items>	0	764	142	(N/A)
LOT 104D-1A	435.69	<Collection: 1 item>	0.62	764	142	(N/A)
FH 65+10 MOOMOMI	396.5	<Collection: 0 items>	0	724.97	142	125
lot40	435.12	<Collection: 1 item>	0.62	763.92	142	(N/A)
H-49	431.58	<Collection: 0 items>	0	763.9	144	130
lot14	431.34	<Collection: 1 item>	0.62	763.9	144	(N/A)
J-29	430.68	<Collection: 0 items>	0	763.92	144	(N/A)
J-62	429.83	<Collection: 0 items>	0	763.9	145	(N/A)
lot41	429.59	<Collection: 1 item>	0.62	763.93	145	(N/A)
lot38	428.79	<Collection: 1 item>	0.62	763.9	145	(N/A)
H-24	428.68	<Collection: 0 items>	0	763.93	145	139
H-52	428.15	<Collection: 0 items>	0	763.9	145	135
H-61	427.66	<Collection: 0 items>	0	763.95	145	141
lot42	427.28	<Collection: 1 item>	0.62	763.94	146	(N/A)
lot13	426.96	<Collection: 1 item>	0.62	763.9	146	(N/A)
J-5	426.47	<Collection: 0 items>	0	763.94	146	(N/A)
J-11	425.82	<Collection: 0 items>	0	763.9	146	(N/A)
lot25_26	425.79	<Collection: 2 items>	1.24	763.9	146	(N/A)
H-23	424.59	<Collection: 0 items>	0	763.94	147	142
J-13	422.83	<Collection: 0 items>	0	763.9	148	(N/A)
H-47	422.12	<Collection: 0 items>	0	763.9	148	137
lot8	421.33	<Collection: 1 item>	0.62	763.9	148	(N/A)
FH 60+10 MOOMOMI	382.4	<Collection: 0 items>	0	724.97	148	129

FH 40+08 MOOMOMI	381.9	<Collection: 0 items>	0	724.97	148	124
FH 45+10 MOOMOMI	381.63	<Collection: 0 items>	0	724.97	149	125
H-62	420.3	<Collection: 0 items>	0	763.95	149	144
lot7	420.02	<Collection: 1 item>	0.62	763.9	149	(N/A)
H-242	419.46	<Collection: 0 items>	0	764	149	123
lot27	419.08	<Collection: 1 item>	0.62	763.9	149	(N/A)
FH 35+10 MOOMOMI	379.5	<Collection: 0 items>	0	724.97	149	123
LOT 104D-1B	417.97	<Collection: 1 item>	0.62	764	150	(N/A)
H-50	414.84	<Collection: 0 items>	0	763.9	151	136
H-35	412.45	<Collection: 0 items>	0	763.9	152	139
H-63	411.9	<Collection: 0 items>	0	763.95	152	147
FH 55+10 MOOMOMI	371.55	<Collection: 0 items>	0	724.97	153	132
lot32	409.95	<Collection: 1 item>	0.62	763.89	153	(N/A)
FH 50+08 MOOMOMI	369.7	<Collection: 0 items>	0	724.97	154	132
H-64	405.85	<Collection: 0 items>	0	763.95	155	149
lot37	404.87	<Collection: 1 item>	0.62	763.89	155	(N/A)
J-168	404.66	<Collection: 0 items>	0	763.95	155	(N/A)
lot6	404.4	<Collection: 1 item>	0.62	763.9	156	(N/A)
H-46	402.29	<Collection: 0 items>	0	763.9	156	145
H-51	401.47	<Collection: 0 items>	0	763.89	157	135
lot33_34_35_36	400.35	<Collection: 4 items>	2.48	763.89	157	(N/A)
lot49	400.11	<Collection: 1 item>	0.62	763.94	157	(N/A)
lot50	400.09	<Collection: 1 item>	0.62	763.94	157	(N/A)
lot51	400.07	<Collection: 1 item>	0.62	763.94	157	(N/A)
H-68	400.03	<Collection: 0 items>	0	763.94	157	146
lot52	399.42	<Collection: 1 item>	0.62	763.94	158	(N/A)
J-41	396.52	<Collection: 0 items>	0	763.9	159	(N/A)
lot48	395.94	<Collection: 1 item>	0.62	763.94	159	(N/A)
H-65	395.89	<Collection: 0 items>	0	763.94	159	152
lot45	395.05	<Collection: 1 item>	0.62	763.94	160	(N/A)
lot58	394.62	<Collection: 1 item>	0.62	763.94	160	(N/A)
lot46	394.31	<Collection: 1 item>	0.62	763.94	160	(N/A)
lot57	394.01	<Collection: 1 item>	0.62	763.94	160	(N/A)
lot47	392.7	<Collection: 1 item>	0.62	763.94	161	(N/A)
lot53	392.34	<Collection: 1 item>	0.62	763.94	161	(N/A)
H-66	392.03	<Collection: 0 items>	0	763.94	161	152
lot56	391.82	<Collection: 1 item>	0.62	763.94	161	(N/A)
H-36	390.24	<Collection: 0 items>	0	763.9	162	149
H-67	390.19	<Collection: 0 items>	0	763.94	162	151
lot54	389.74	<Collection: 1 item>	0.62	763.94	162	(N/A)
lot55	389.66	<Collection: 1 item>	0.62	763.94	162	(N/A)
lot28	373.1	<Collection: 1 item>	0.62	763.89	169	(N/A)
J-2	370.86	<Collection: 0 items>	0	763.89	170	(N/A)
lot29	369.05	<Collection: 1 item>	0.62	763.89	171	(N/A)
H-44	367.79	<Collection: 0 items>	0	763.89	171	143
lot1	366.02	<Collection: 1 item>	0.62	763.89	172	(N/A)
H-45	365.36	<Collection: 0 items>	0	763.89	172	136
J-50	364.18	<Collection: 0 items>	0	763.89	173	(N/A)
lot2	361.58	<Collection: 1 item>	0.62	763.89	174	(N/A)
J-1	360.9	<Collection: 0 items>	0	763.89	174	(N/A)
H-40	356.13	<Collection: 0 items>	0	763.89	176	164
H-38	355.71	<Collection: 0 items>	0	763.89	177	164
lot5	354.77	<Collection: 1 item>	0.62	763.89	177	(N/A)
J-9	353.61	<Collection: 0 items>	0	763.89	178	(N/A)
H-42	353.53	<Collection: 0 items>	0	763.89	178	165
H-39	353.36	<Collection: 0 items>	0	763.89	178	165
H-41	353.31	<Collection: 0 items>	0	763.89	178	166
lot4	352.9	<Collection: 1 item>	0.62	763.89	178	(N/A)
lot3	352.13	<Collection: 1 item>	0.62	763.89	178	(N/A)
H-43	352.04	<Collection: 0 items>	0	763.89	178	158
lot30	351.53	<Collection: 1 item>	0.62	763.89	178	(N/A)
lot31	351.26	<Collection: 1 item>	0.62	763.89	179	(N/A)

		Alternative		
Scenario #	Scenario Name	Demand	Fire Flow	Steady State / EPS Solver Calculation Options
1	Existing Peak Hour Demand_3000Gal per Acre	Peak Hour_3000Gal per Acre	No Fire Flow	Base Calculation Options
2	Existing Fire Flow Max Daily_3000Gal per Acre	Max Daily_3000GAl per Acre	Fire Flow	Base Fire Flow

Scenario #1 (Existing Peak Hour Demand_3000Gal per Acre)

This WaterCAD model scenario using the alternative parameters listed in the table above, calculates system pressures at relevant nodes/junctions (in this case, the existing nodes/junctions at Naiwa Subdivision and Hoolehua Lots). Using the Design Criteria for Design Average Flow of 3000 Gal / Acre, Peak Hour Demands were calculated and assigned for each lot (please refer to the column "DESIGN PEAK HOUR FLOW" under the "EXISTING DEMANDS" tab of this spreadsheet). In accordance with section 111.04 (System Capacity) of the Water System Standards 2002, only Peak Hour Demands (without Fire Flows) were used to calculate pressures at each lot node/junction. This model scenario resulted in residual pressures higher than the required minimum 40 psi residual pressures (as per section 111.06 item #2 of the Water System Standards), with the lowest pressure being 69 psi located at node/junction designated as "*J-188* " (please refer to "EXISTING PEAK HOUR JUNCTIONS" tab of this spreadsheet).

Scenario #2 (Existing Fire Flow Max Daily_3000Gal per Acre)

This WaterCAD model scenario using the alternative parameters listed in the table above, calculates system pressures at designated existing Fire Hydrant nodes/junctions. Using the design criteria of 500gpm for fire flow, each existing hydrant pressure is calculated individually (one hydrant at a time) by the model to ensure that the Fire Flow system constraints are met (Fire Flow = 500 gpm, Min Residual Pressure = 20 psi). Along with the discussed Fire Flow system constraints, Max Daily Demands to the relevant lot nodes/junctions (please refer to column "DESIGN MAX DAILY FLOW" under the "EXISTING DEMANDS" tab of this spreadsheet) are applied at the same time. This model scenario resulted in residual pressures higher than the required minimum 20 psi residual pressures (as per section 111.06 item #1 of the Water System Standards), with the lowest pressure being 49 psi located at node/junction designated as "*H-1* " (please refer to "EXISTING FIRE FLOW - JUNCTIONS" tab of this spreadsheet).

EXISTING HOOLEHUA DEMANDS

NODE	LOT	AREA (ac)	DESIGN AVG. FLOW (GPM)	MAX DAILY FLOW FACTOR	DESIGN MAX DAILY FLOW (GPM)	PEAK FLOW FACTOR	DESIGN PEAK HOUR FLOW (GPM)	ELEV (FT)	STATIC PRESSURE (PSI)
lot1	lot1	5	10.41	1.5	15.62	3	31.23	366.02	172.29
lot2	lot2	5	10.41	1.5	15.62	3	31.23	361.58	174.21
lot3	lot3	5.4	11.24	1.5	16.86	3	33.73	352.13	178.30
lot4	lot4	5.7	11.87	1.5	17.80	3	35.60	352.90	177.97
lot5	lot5	5.4	11.24	1.5	16.86	3	33.73	354.77	177.16
lot6	lot6	5.4	11.24	1.5	16.86	3	33.73	404.40	155.67
lot7	lot7	5.5	11.45	1.5	17.18	3	34.35	420.02	148.91
lot8	lot8	5.5	11.45	1.5	17.18	3	34.35	421.33	148.34
lot9_10_11_12	lot9_10_11_12	4	8.33	1.5	12.49	3	24.98	439.35	140.54
		6.7	13.95	1.5	20.92	3	41.85	439.35	140.54
		8.5	17.70	1.5	26.55	3	53.09	439.35	140.54
		5	10.41	1.5	15.62	3	31.23	439.35	140.54
lot13	lot13	5	10.41	1.5	15.62	3	31.23	426.96	145.90
lot14	lot14	5	10.41	1.5	15.62	3	31.23	431.34	144.01
lot15	lot15	4	8.33	1.5	12.49	3	24.98	457.02	132.89
lot16	lot16	4	8.33	1.5	12.49	3	24.98	459.63	131.76
lot17	lot17	4	8.33	1.5	12.49	3	24.98	488.52	119.26
lot18	lot18	4	8.33	1.5	12.49	3	24.98	490.27	118.50
lot19	lot19	4	8.33	1.5	12.49	3	24.98	496.41	115.84
lot20	lot20	4.2	8.74	1.5	13.12	3	26.23	501.64	113.58
lot21	lot21	7.3	15.20	1.5	22.80	3	45.60	480.71	122.64
lot22	lot22	5	10.41	1.5	15.62	3	31.23	502.20	113.33
lot23	lot23	4	8.33	1.5	12.49	3	24.98	465.13	129.38
lot24	lot24	4	8.33	1.5	12.49	3	24.98	451.86	135.13
lot25_26	lot25_26	6.9	14.37	1.5	21.55	3	43.10	425.79	146.41
		6.8	14.16	1.5	21.24	3	42.47	425.79	146.41
lot27	lot27	4	8.33	1.5	12.49	3	24.98	419.08	149.32
lot28	lot28	5.3	11.03	1.5	16.55	3	33.10	373.10	169.22
lot29	lot29	5.3	11.03	1.5	16.55	3	33.10	369.05	170.97
lot30	lot30	5.3	11.03	1.5	16.55	3	33.10	351.53	178.56
lot31	lot31	5.3	11.03	1.5	16.55	3	33.10	351.26	178.68
lot32	lot32	5	10.41	1.5	15.62	3	31.23	409.95	153.27
lot33_34_35_36	lot33_34_35_36	5	10.41	1.5	15.62	3	31.23	400.35	157.42
		6	12.49	1.5	18.74	3	37.48	400.35	157.42
		5.8	12.08	1.5	18.11	3	36.23	400.35	157.42
		5.1	10.62	1.5	15.93	3	31.85	400.35	157.42
lot37	lot37	5.1	10.62	1.5	15.93	3	31.85	404.87	155.47
lot38	lot38	6.3	13.12	1.5	19.67	3	39.35	428.79	145.11
lot39	lot39	5	10.41	1.5	15.62	3	31.23	439.48	140.48
lot40	lot40	5.1	10.62	1.5	15.93	3	31.85	435.12	142.37
lot41	lot41	5.9	12.28	1.5	18.43	3	36.85	429.59	144.77
lot42	lot42	4.7	9.79	1.5	14.68	3	29.36	427.28	145.77
lot43	lot43	5.1	10.62	1.5	15.93	3	31.85	436.88	141.61
lot44	lot44	5.1	10.62	1.5	15.93	3	31.85	440.07	140.23
lot45	lot45	4.5	9.37	1.5	14.05	3	28.11	395.05	159.72
lot46	lot46	8	16.66	1.5	24.98	3	49.97	394.31	160.04
lot47	lot47	5.2	10.83	1.5	16.24	3	32.48	392.70	160.74
lot48	lot48	5.2	10.83	1.5	16.24	3	32.48	395.94	159.33
lot49	lot49	5.2	10.83	1.5	16.24	3	32.48	400.11	157.53
lot50	lot50	5.4	11.24	1.5	16.86	3	33.73	400.09	157.54
lot51	lot51	5.4	11.24	1.5	16.86	3	33.73	400.07	157.55
lot52	lot52	5.2	10.83	1.5	16.24	3	32.48	399.42	157.83
lot53	lot53	5.8	12.08	1.5	18.11	3	36.23	392.34	160.89
lot54	lot54	6	12.49	1.5	18.74	3	37.48	389.74	162.02
lot55	lot55	5.3	11.03	1.5	16.55	3	33.10	389.66	162.05
lot56	lot56	5.3	11.03	1.5	16.55	3	33.10	391.82	161.12
lot57	lot57	5.3	11.03	1.5	16.55	3	33.10	394.01	160.17
lot58	lot58	4.3	8.95	1.5	13.43	3	26.86	394.62	159.90
LOT 17A	LOT 17A	1.95	4.06	1.5	6.09	3	12.18	362.99	173.60
LOT 17B	LOT 17B	1.95	4.06	1.5	6.09	3	12.18	364.26	173.05
LOT 17C	LOT 17C	6	12.49	1.5	18.74	3	37.48	400.00	157.58
LOT 17D	LOT 17D	6	12.49	1.5	18.74	3	37.48	400.00	157.58
LOT 17E	LOT 17E	1.95	4.06	1.5	6.09	3	12.18	378.59	166.84
LOT 17F	LOT 17F	1.95	4.06	1.5	6.09	3	12.18	378.00	167.10
LOT 17G	LOT 17G	6	12.49	1.5	18.74	3	37.48	366.53	172.06
LOT 17H	LOT 17H	6	12.49	1.5	18.74	3	37.48	365.09	172.69
LOT 104D-1A	LOT 104D-1A	1	2.08	1.5	3.12	3	6.25	435.49	142.21
LOT 104D-1B	LOT 104D-1B	3	6.25	1.5	9.37	3	18.74	418.36	149.63
LOT 104D-1C	LOT 104D-1C	3.2	6.66	1.5	9.99	3	19.99	418.36	149.63
LOT 104D-1D	LOT 104D-1D	12.8	26.65	1.5	39.97	3	79.95	410.00	153.25

EXISTING HOOLEHUA
EXISTING PEAK HOUR TEST - EXISTING DEMANDS (SORTED BY PRESSURE)

FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
H-1	649.53	<Collection: 0 items>	0	761.19	48
J-188	600.04	<Collection: 0 items>	0	759.02	69
J-8	600.05	<Collection: 0 items>	0	759.04	69
J-7	538.69	<Collection: 0 items>	0	722.56	80
FH 25+10 MOOMOMI	403.52	<Collection: 0 items>	0	588.41	80
FH 39+20 FARRINGTON	400.88	<Collection: 0 items>	0	585.9	80
J-195	566.49	<Collection: 0 items>	0	758.51	83
FH 34+20 FARRINGTON	388.1	<Collection: 0 items>	0	585.24	85
FH 20+10 MOOMOMI	381.5	<Collection: 0 items>	0	587.58	89
J-190	380.74	<Collection: 0 items>	0	587.35	89
J-206	518.17	<Collection: 0 items>	0	724.96	89
LOT 17F	379.04	<Collection: 1 item>	12.49	587.25	90
LOT 17E	379.04	<Collection: 1 item>	12.49	587.28	90
J-189	545.83	<Collection: 0 items>	0	758.76	92
LOT 17B	363.67	<Collection: 1 item>	12.49	582.49	95
LOT 17G	366.66	<Collection: 1 item>	36.23	586.93	95
LOT 17A	361.32	<Collection: 1 item>	12.49	582.51	96
H-240	365.58	<Collection: 0 items>	0	586.93	96
LOT 17D	360	<Collection: 1 item>	36.23	582.14	96
H-241	360	<Collection: 0 items>	0	582.15	96
LOT 17C	360	<Collection: 1 item>	36.23	582.16	96
LOT 17H	364.2	<Collection: 1 item>	36.23	586.91	96
J-200	359.05	<Collection: 0 items>	0	582.55	97
J-196	531.95	<Collection: 0 items>	0	758.49	98
FH 29+18 FARRINGTON	354.14	<Collection: 0 items>	0	584.23	100
FH 19+20 FARRINGTON	348.75	<Collection: 0 items>	0	582.64	101
J-208	520.12	<Collection: 0 items>	0	758.36	103
H-247	518.27	<Collection: 0 items>	0	758.35	104
FH 24+20 FARRINGTON	338.8	<Collection: 0 items>	0	583.26	106
FH 64+20 FARRINGTON	478.11	<Collection: 0 items>	0	724.55	107
FH 59+22 FARRINGTON	466.26	<Collection: 0 items>	0	724.4	112
H-246	496.95	<Collection: 0 items>	0	758.33	113
FH 69+10 FARRINGTON	459.53	<Collection: 0 items>	0	724.7	115
H-245	474.85	<Collection: 0 items>	0	758.3	123
FH 74+10 FARRINGTON	436.52	<Collection: 0 items>	0	724.89	125
FH 84+10 FARRINGTON	434.2	<Collection: 0 items>	0	725.23	126
FH 54+20 FARRINGTON	430.07	<Collection: 0 items>	0	724.22	127
FH 88+90 FARRINGTON	430.62	<Collection: 0 items>	0	725.37	128
FH 79+10 FARRINGTON	430.2	<Collection: 0 items>	0	725.07	128
H-244	456.05	<Collection: 0 items>	0	758.28	131
FH 85+10 MOOMOMI	420.98	<Collection: 0 items>	0	723.71	131
FH 49+18 FARRINGTON	411.69	<Collection: 0 items>	0	724.06	135
FH 44+20 FARRINGTON	411.35	<Collection: 0 items>	0	723.89	135
FH 80+08 MOOMOMI	408.7	<Collection: 0 items>	0	723.58	136
H-243	438.65	<Collection: 0 items>	0	758.26	138
FH 30+10 MOOMOMI	400.9	<Collection: 0 items>	0	721.88	139
J-197	436.82	<Collection: 0 items>	0	758.26	139
LOT 104D-1A	435.69	<Collection: 1 item>	15.62	758.25	140
FH 75+10 MOOMOMI	400.12	<Collection: 0 items>	0	723.39	140
FH 70+08 MOOMOMI	399.8	<Collection: 0 items>	0	723.2	140
FH 65+10 MOOMOMI	396.5	<Collection: 0 items>	0	723.04	141
H-242	419.46	<Collection: 0 items>	0	758.23	147

LOT 104D-1B	417.97	<Collection: 1 item>	15.62	758.23	147
FH 40+08 MOOMOMI	381.9	<Collection: 0 items>	0	722.24	147
FH 60+10 MOOMOMI	382.4	<Collection: 0 items>	0	722.89	147
FH 45+10 MOOMOMI	381.63	<Collection: 0 items>	0	722.38	147
FH 35+10 MOOMOMI	379.5	<Collection: 0 items>	0	722.04	148
FH 55+10 MOOMOMI	371.55	<Collection: 0 items>	0	722.7	152
FH 50+08 MOOMOMI	369.7	<Collection: 0 items>	0	722.53	153

EXISTING HOOLEHUA
EXISTING PEAK HOUR TEST - EXISTING DEMANDS (SORTED BY VELOCITY)

FlexTable: Pipe Table

Label	ID	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Headloss (ft)
P-260	467	84	J-1	H-45	6	Ductile Iron	100	0	0	0	0	FALSE	0
P-261	468	262	H-45	lot28	6	Ductile Iron	100	0	0	0	0	FALSE	0
P-127	249	61	lot44	J-4	6	Ductile Iron	100	0	0	0	0	FALSE	0
P-220	399	97	lot4	lot3	8	Ductile Iron	110	0	-7.79	0.05	0	FALSE	0
P-368	703	3240	J-195	J-196	12	Ductile Iron	110	0	31.24	0.09	0	FALSE	0.02
P-386	737	2192	J-189	PRV-PR B2	16	Ductile Iron	120	0	97.44	0.16	0	FALSE	0.02
P-387	738	1125	PRV-PR B2	J-206	16	Ductile Iron	120	0	97.44	0.16	0	FALSE	0.01
P-454	839	358	LOT 104D-1A	H-242	6	Ductile Iron	100	0	15.62	0.18	0	FALSE	0.02
P-455	840	33	H-242	LOT 104D-1B	6	Ductile Iron	100	0	15.62	0.18	0	FALSE	0
P-233	422	97	H-39	lot4	8	Ductile Iron	110	0	27.81	0.18	0	FALSE	0
P-236	428	392	lot5	H-40	8	Ductile Iron	110	0	27.81	0.18	0	FALSE	0.01
P-237	429	356	H-40	H-39	8	Ductile Iron	110	0	27.81	0.18	0	FALSE	0.01
P-382	729	3317	J-196	J-208	8	Ductile Iron	110	0	31.24	0.2	0	FALSE	0.13
P-457	843	55	H-243	J-197	8	Ductile Iron	110	0	31.24	0.2	0	FALSE	0
P-459	846	519	H-244	H-243	8	Ductile Iron	110	0	31.24	0.2	0	FALSE	0.02
P-461	849	561	H-245	H-244	8	Ductile Iron	110	0	31.24	0.2	0	FALSE	0.02
P-463	852	659	H-246	H-245	8	Ductile Iron	110	0	31.24	0.2	0	FALSE	0.03
P-464	854	55	J-208	H-247	8	Ductile Iron	110	0	31.24	0.2	0	FALSE	0
P-465	855	636	H-247	H-246	8	Ductile Iron	110	0	31.24	0.2	0	FALSE	0.03
P-354	632	70	lot50	lot49	8	Ductile Iron	110	0	32.48	0.21	0	FALSE	0
P-229	413	409	lot3	H-38	8	Ductile Iron	110	0	-41.52	0.27	0	FALSE	0.03
P-230	414	381	H-38	lot2	8	Ductile Iron	110	0	-41.52	0.27	0	FALSE	0.03
P-370	707	32	J-197	LOT 104D-1A	6	Ductile Iron	100	0	31.24	0.35	0	FALSE	0.01
P-361	689	5593	J-188	J-189	16	Ductile Iron	120	0	226.12	0.36	0	FALSE	0.26
P-130	255	55	lot43	H-22	6	Ductile Iron	100	0	31.85	0.36	0	FALSE	0.01
P-131	256	53	H-22	lot44	6	Ductile Iron	100	0	31.85	0.36	0	FALSE	0.01
P-367	701	3255	J-189	J-195	12	Ductile Iron	110	0	128.68	0.37	0	FALSE	0.25
P-244	441	107	lot28	lot29	6	Ductile Iron	100	0	-33.1	0.38	0	FALSE	0.02
P-239	433	320	J-9	H-41	8	Ductile Iron	110	0	61.54	0.39	0	FALSE	0.05
P-312	553	185	lot5	H-41	8	Ductile Iron	110	0	-61.54	0.39	0	FALSE	0.03
P-450	833	34	LOT 17G	H-240	6	Ductile Iron	100	0	36.23	0.41	0	FALSE	0.01
P-451	834	44	H-240	LOT 17H	6	Ductile Iron	100	0	36.23	0.41	0	FALSE	0.01
P-452	836	31	LOT 17C	H-241	6	Ductile Iron	100	0	36.23	0.41	0	FALSE	0.01
P-453	837	34	H-241	LOT 17D	6	Ductile Iron	100	0	36.23	0.41	0	FALSE	0.01
P-356	635	44	lot51	lot50	8	Ductile Iron	110	0	66.21	0.42	0	FALSE	0.01
P-224	405	103	lot2	J-50	8	Ductile Iron	110	0	-72.75	0.46	0	FALSE	0.02
P-226	408	75	J-50	lot1	8	Ductile Iron	110	0	-72.75	0.46	0	FALSE	0.01
P-388	740	1898	J-195	PRV-PR B3	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.63
P-395	750	293	FH 30+10 MOOMOMI	PRV-PR C1	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.1
P-397	753	464	FH 35+10 MOOMOMI	FH 30+10 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.15
P-399	756	602	FH 40+08 MOOMOMI	FH 35+10 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.2
P-403	762	434	FH 45+10 MOOMOMI	FH 40+08 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.14
P-405	765	450	FH 50+08 MOOMOMI	FH 45+10 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.15
P-407	768	510	FH 55+10 MOOMOMI	FH 50+08 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.17
P-409	771	549	FH 60+10 MOOMOMI	FH 55+10 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.18
P-411	774	469	FH 65+10 MOOMOMI	FH 60+10 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.16
P-413	777	476	FH 70+08 MOOMOMI	FH 65+10 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.16
P-415	780	570	FH 75+10 MOOMOMI	FH 70+08 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.19
P-417	783	546	FH 80+08 MOOMOMI	FH 75+10 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.18
P-418	785	3755	J-206	FH 85+10 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	1.25
P-419	786	401	FH 85+10 MOOMOMI	FH 80+08 MOOMOMI	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.13
P-431	804	431	FH 44+20 FARRINGTON	PRV-PR C2	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.14
P-433	807	496	FH 49+18 FARRINGTON	FH 44+20 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.17
P-435	810	478	FH 54+20 FARRINGTON	FH 49+18 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.16
P-437	813	543	FH 59+22 FARRINGTON	FH 54+20 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.18
P-439	816	452	FH 64+20 FARRINGTON	FH 59+22 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.15
P-441	819	461	FH 69+10 FARRINGTON	FH 64+20 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.15
P-443	822	554	FH 74+10 FARRINGTON	FH 69+10 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.18

P-445	825	539	FH 79+10 FARRINGTON	FH 74+10 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.18
P-447	828	503	FH 84+10 FARRINGTON	FH 79+10 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.17
P-448	830	4814	PRV-PR B3	FH 88+90 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	1.61
P-449	831	401	FH 88+90 FARRINGTON	FH 84+10 FARRINGTON	8	Ductile Iron	110	0	97.44	0.62	0	FALSE	0.13
P-350	626	65	lot52	H-68	8	Ductile Iron	110	0	99.94	0.64	0	FALSE	0.02
P-355	634	53	H-68	lot51	8	Ductile Iron	110	0	99.94	0.64	0	FALSE	0.02
P-208	380	247	J-41	H-35	8	Ductile Iron	110	0	-103.98	0.66	0	FALSE	0.09
P-209	381	94	H-35	lot27	8	Ductile Iron	110	0	-103.98	0.66	0	FALSE	0.04
P-211	385	324	J-2	H-36	8	Ductile Iron	110	0	-103.98	0.66	0	FALSE	0.12
P-212	386	105	H-36	J-41	8	Ductile Iron	110	0	-103.98	0.66	0	FALSE	0.04
P-227	409	255	lot1	J-2	8	Ductile Iron	110	0	-103.98	0.66	0	FALSE	0.1
P-135	263	301	lot42	lot43	6	Ductile Iron	100	0	63.7	0.72	0.001	FALSE	0.22
P-254	456	79	H-43	lot30	6	Ductile Iron	100	0	-66	0.75	0.001	FALSE	0.06
P-257	462	203	lot29	H-44	6	Ductile Iron	100	0	-66	0.75	0.001	FALSE	0.16
P-258	463	536	H-44	H-43	6	Ductile Iron	100	0	-66	0.75	0.001	FALSE	0.42
P-365	697	340	LOT 17F	LOT 17G	6	Ductile Iron	100	0	72	0.82	0.001	FALSE	0.32
P-376	719	350	LOT 17B	LOT 17C	6	Ductile Iron	100	0	72	0.82	0.001	FALSE	0.33
P-190	351	96	lot27	lot25_26	8	Ductile Iron	110	0	-129	0.82	0.001	FALSE	0.05
P-352	629	85	lot48	lot52	8	Ductile Iron	110	0	132.42	0.85	0.001	FALSE	0.05
P-364	695	24	LOT 17E	LOT 17F	6	Ductile Iron	100	0	84.95	0.96	0.001	FALSE	0.03
P-374	715	21	LOT 17A	LOT 17B	6	Ductile Iron	100	0	84.95	0.96	0.001	FALSE	0.03
P-351	628	97	lot53	lot48	8	Ductile Iron	110	0	164.9	1.05	0.001	FALSE	0.09
P-134	262	70	J-5	lot42	6	Ductile Iron	100	0	93.06	1.06	0.001	FALSE	0.1
P-363	693	41	J-190	LOT 17E	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.07
P-373	713	23	J-200	LOT 17A	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.04
P-391	744	141	FH 20+10 MOOMOMI	J-190	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.23
P-392	746	196	PRV-PR C1	FH 25+10 MOOMOMI	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.32
P-393	747	513	FH 25+10 MOOMOMI	FH 20+10 MOOMOMI	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.83
P-421	789	58	FH 19+20 FARRINGTON	J-200	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.09
P-423	792	383	FH 24+20 FARRINGTON	FH 19+20 FARRINGTON	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.62
P-425	795	599	FH 29+18 FARRINGTON	FH 24+20 FARRINGTON	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.97
P-427	798	623	FH 34+20 FARRINGTON	FH 29+18 FARRINGTON	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	1.01
P-428	800	48	PRV-PR C2	FH 39+20 FARRINGTON	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.08
P-429	801	407	FH 39+20 FARRINGTON	FH 34+20 FARRINGTON	6	Ductile Iron	100	0	97.44	1.11	0.002	FALSE	0.66
P-248	447	104	lot30	lot31	6	Ductile Iron	100	0	-99.3	1.13	0.002	FALSE	0.17
P-275	490	429	J-9	H-46	8	Ductile Iron	110	0	-193.94	1.24	0.001	FALSE	0.51
P-276	491	41	H-46	lot6	8	Ductile Iron	110	0	-193.94	1.24	0.001	FALSE	0.05
P-347	622	77	H-67	lot53	8	Ductile Iron	110	0	197.53	1.26	0.001	FALSE	0.1
P-358	638	40	lot54	H-67	8	Ductile Iron	110	0	197.53	1.26	0.001	FALSE	0.05
P-313	564	284	J-6	H-54	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.24
P-314	565	330	H-54	H-55	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.28
P-315	566	237	H-55	H-56	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.2
P-316	568	556	H-56	H-57	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.48
P-319	574	418	H-57	J-63	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.36
P-320	575	739	J-63	H-58	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.63
P-321	576	346	H-58	H-59	12	Ductile Iron	110	0	472	1.34	0.001	FALSE	0.3
P-322	578	626	H-59	H-60	12	Ductile Iron	110	0	472	1.34	0.001	FALSE	0.54
P-323	580	560	H-60	H-61	12	Ductile Iron	110	0	472	1.34	0.001	FALSE	0.48
P-324	582	426	H-61	H-62	12	Ductile Iron	110	0	472	1.34	0.001	FALSE	0.37
P-325	584	593	H-62	H-63	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.51
P-326	586	546	H-63	H-64	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.47
P-327	588	63	H-64	J-168	12	Ductile Iron	110	0	471.73	1.34	0.001	FALSE	0.05
P-193	356	382	lot25_26	lot24	8	Ductile Iron	110	0	-214.53	1.37	0.001	FALSE	0.55
P-265	475	376	lot6	lot7	8	Ductile Iron	110	0	-227.67	1.45	0.002	FALSE	0.6
P-357	637	145	lot55	lot54	8	Ductile Iron	110	0	235.01	1.5	0.002	FALSE	0.25
P-250	450	333	lot31	H-42	6	Ductile Iron	100	0	-132.4	1.5	0.003	FALSE	0.95
P-251	451	81	H-42	J-9	6	Ductile Iron	100	0	-132	1.5	0.003	FALSE	0.23
P-205	375	101	lot24	H-34	8	Ductile Iron	110	0	-240	1.53	0.002	FALSE	0.18
P-206	376	97	H-34	lot23	8	Ductile Iron	110	0	-240	1.53	0.002	FALSE	0.17
P-294	521	118	lot37	H-51	6	Ductile Iron	100	0	137	1.55	0.003	FALSE	0.36
P-267	478	80	lot7	lot8	8	Ductile Iron	110	0	-262	1.67	0.002	FALSE	0.17
P-202	370	233	lot23	H-33	8	Ductile Iron	110	0	-264	1.69	0.002	FALSE	0.49
P-203	371	77	H-33	lot21	8	Ductile Iron	110	0	-264	1.69	0.002	FALSE	0.16
P-345	619	184	lot56	lot55	8	Ductile Iron	110	0	268	1.71	0.002	FALSE	0.4
P-284	505	194	J-11	H-49	6	Ductile Iron	100	0	151	1.72	0.004	FALSE	0.71
P-285	506	456	H-49	H-48	6	Ductile Iron	100	0	151	1.72	0.004	FALSE	1.66
P-278	495	67	lot8	H-47	8	Ductile Iron	110	0	-296	1.89	0.003	FALSE	0.18

P-279	496	54	H-47	J-13	8	Ductile Iron	110	0	-296	1.89	0.003	FALSE	0.14
P-289	513	182	lot32	lot37	6	Ductile Iron	100	0	169	1.91	0.004	FALSE	0.81
P-342	613	76	lot47	H-66	8	Ductile Iron	110	0	301	1.92	0.003	FALSE	0.2
P-343	615	130	H-66	lot56	8	Ductile Iron	110	0	301	1.92	0.003	FALSE	0.35
P-184	342	173	J-3	H-31	8	Ductile Iron	110	0	-310	1.98	0.003	FALSE	0.49
P-185	343	125	H-31	lot22	8	Ductile Iron	110	0	-310	1.98	0.003	FALSE	0.36
P-199	365	426	lot21	H-32	8	Ductile Iron	110	0	-310	1.98	0.003	FALSE	1.21
P-200	366	123	H-32	J-3	8	Ductile Iron	110	0	-310	1.98	0.003	FALSE	0.35
P-341	612	304	lot57	lot47	8	Ductile Iron	110	0	334	2.13	0.003	FALSE	0.99
P-83	170	170	J-8	H-5	20	Ductile Iron	120	0	-2,132	2.18	0.001	FALSE	0.17
P-86	175	579	H-5	H-4	20	Ductile Iron	120	0	-2,132	2.18	0.001	FALSE	0.57
P-90	182	485	H-4	H-3	20	Ductile Iron	120	0	-2,132	2.18	0.001	FALSE	0.48
P-93	187	484	H-3	H-2	20	Ductile Iron	120	0	-2,132	2.18	0.001	FALSE	0.48
P-96	192	447	H-2	H-1	20	Ductile Iron	120	0	-2,132	2.18	0.001	FALSE	0.44
P-97	193	2832	H-1	R-1	20	Ductile Iron	120	0	-2,132	2.18	0.001	FALSE	2.81
P-360	687	21	J-188	J-8	20	Ductile Iron	120	0	-2,132	2.18	0.001	FALSE	0.02
P-177	331	263	H-30	lot20	8	Ductile Iron	110	0	-341	2.18	0.003	FALSE	0.9
P-183	340	344	lot22	H-30	8	Ductile Iron	110	0	-341	2.18	0.003	FALSE	1.17
P-291	516	277	J-13	H-50	6	Ductile Iron	100	0	200	2.27	0.006	FALSE	1.69
P-292	517	181	H-50	lot32	6	Ductile Iron	100	0	200	2.27	0.006	FALSE	1.1
P-339	609	32	lot46	lot57	8	Ductile Iron	110	0	367	2.34	0.004	FALSE	0.12
P-179	334	78	lot20	J-37	8	Ductile Iron	110	0	-368	2.35	0.004	FALSE	0.3
P-180	335	183	J-37	lot19	8	Ductile Iron	110	0	-368	2.35	0.004	FALSE	0.71
P-173	324	524	lot19	lot18	8	Ductile Iron	110	0	-393	2.51	0.004	FALSE	2.31
P-338	607	29	lot58	lot46	8	Ductile Iron	110	0	417	2.66	0.005	FALSE	0.14
P-171	321	72	lot18	lot17	8	Ductile Iron	110	0	-418	2.66	0.005	FALSE	0.35
P-162	306	271	H-27	lot16	8	Ductile Iron	110	0	-442	2.82	0.005	FALSE	1.49
P-166	313	382	H-28	H-27	8	Ductile Iron	110	0	-442	2.82	0.005	FALSE	2.1
P-169	318	64	lot17	H-28	8	Ductile Iron	110	0	-442	2.82	0.005	FALSE	0.35
P-337	606	36	lot45	lot58	8	Ductile Iron	110	0	444	2.83	0.006	FALSE	0.2
P-160	303	64	lot16	lot15	8	Ductile Iron	110	0	-467	2.98	0.006	FALSE	0.39
P-328	590	560	J-168	H-65	8	Ductile Iron	110	0	472	3.01	0.006	FALSE	3.47
P-333	600	73	H-65	lot45	8	Ductile Iron	110	0	472	3.01	0.006	FALSE	0.45
P-155	295	288	H-26	J-10	8	Ductile Iron	110	0	-492	3.14	0.007	FALSE	1.93
P-158	300	146	lot15	H-26	8	Ductile Iron	110	0	-492	3.14	0.007	FALSE	0.98
P-19	63	206	J-13	J-11	8	Ductile Iron	110	0	-496	3.17	0.007	FALSE	1.4
P-295	522	208	H-51	lot33_34_35_36	4	Ductile Iron	100	0	137	3.49	0.022	FALSE	4.54
P-282	501	247	H-48	lot9_10_11_12	4	Ductile Iron	100	0	151	3.86	0.026	FALSE	6.5
P-118	234	243	H-19	J-6	12	Ductile Iron	110	0	-1,435	4.07	0.007	FALSE	1.64
P-120	237	530	H-20	H-19	12	Ductile Iron	110	0	-1,435	4.07	0.007	FALSE	3.57
P-121	239	451	J-5	H-21	12	Ductile Iron	110	0	-1,435	4.07	0.007	FALSE	3.04
P-122	240	567	H-21	H-20	12	Ductile Iron	110	0	-1,435	4.07	0.007	FALSE	3.82
P-298	528	63	J-11	lot13	8	Ductile Iron	110	0	-647	4.13	0.011	FALSE	0.71
P-302	534	71	lot13	H-52	8	Ductile Iron	110	0	-679	4.33	0.012	FALSE	0.86
P-303	535	48	H-52	lot38	8	Ductile Iron	110	0	-678.62	4.33	0.012	FALSE	0.58
P-305	539	70	lot38	J-62	8	Ductile Iron	110	0	-717.97	4.58	0.013	FALSE	0.94
P-307	542	100	J-62	lot14	8	Ductile Iron	110	0	-717.97	4.58	0.013	FALSE	1.35
P-309	545	359	lot14	H-53	8	Ductile Iron	110	0	-749.2	4.78	0.015	FALSE	5.24
P-310	546	320	H-53	J-10	8	Ductile Iron	110	0	-749.2	4.78	0.015	FALSE	4.66
P-23	71	211	J-7	H-12	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	2.4
P-28	78	408	H-7	H-6	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	4.66
P-30	81	484	H-8	H-7	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	5.52
P-32	84	523	H-9	H-8	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	5.97
P-34	87	366	H-10	H-9	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	4.17
P-35	89	412	H-12	H-11	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	4.7
P-36	90	442	H-11	H-10	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	5.05
P-48	113	75	J-6	J-16	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	0.86
P-49	114	90	J-16	H-18	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	1.03
P-53	120	114	H-17	J-17	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	1.3
P-55	124	52	H-18	J-18	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	0.6
P-56	125	453	J-18	H-17	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	5.17
P-57	127	74	J-17	J-19	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	0.84
P-59	130	68	J-19	J-20	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	0.77
P-63	136	226	J-20	H-16	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	2.58
P-64	137	112	H-16	J-21	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	1.27
P-66	141	551	J-21	H-15	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	6.28
P-74	156	331	H-14	J-22	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	3.77

P-76	159	151	J-22	H-13	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	1.72
P-79	164	126	H-13	J-23	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	1.44
P-80	165	297	J-23	J-7	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	3.39
P-81	167	178	H-15	J-24	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	2.03
P-82	168	298	J-24	H-14	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	3.4
P-359	686	350	H-6	J-188	12	Ductile Iron	110	0	-1906.37	5.41	0.011	FALSE	4
P-151	289	249	J-10	H-25	8	Ductile Iron	110	0	-1241.65	7.93	0.037	FALSE	9.26
P-152	290	61	H-25	lot39	8	Ductile Iron	110	0	-1241.65	7.93	0.037	FALSE	2.27
P-150	287	241	lot39	lot40	8	Ductile Iron	110	0	-1272.88	8.12	0.039	FALSE	9.36
P-142	274	80	J-29	lot41	8	Ductile Iron	110	0	-1304.73	8.33	0.041	FALSE	3.25
P-144	277	168	lot40	J-29	8	Ductile Iron	110	0	-1304.73	8.33	0.041	FALSE	6.86
P-137	266	173	H-23	J-5	8	Ductile Iron	110	0	-1341.58	8.56	0.043	FALSE	7.43
P-145	279	69	lot41	H-24	8	Ductile Iron	110	0	-1341.58	8.56	0.043	FALSE	2.94
P-146	280	340	H-24	H-23	8	Ductile Iron	110	0	-1341.58	8.56	0.043	FALSE	14.57

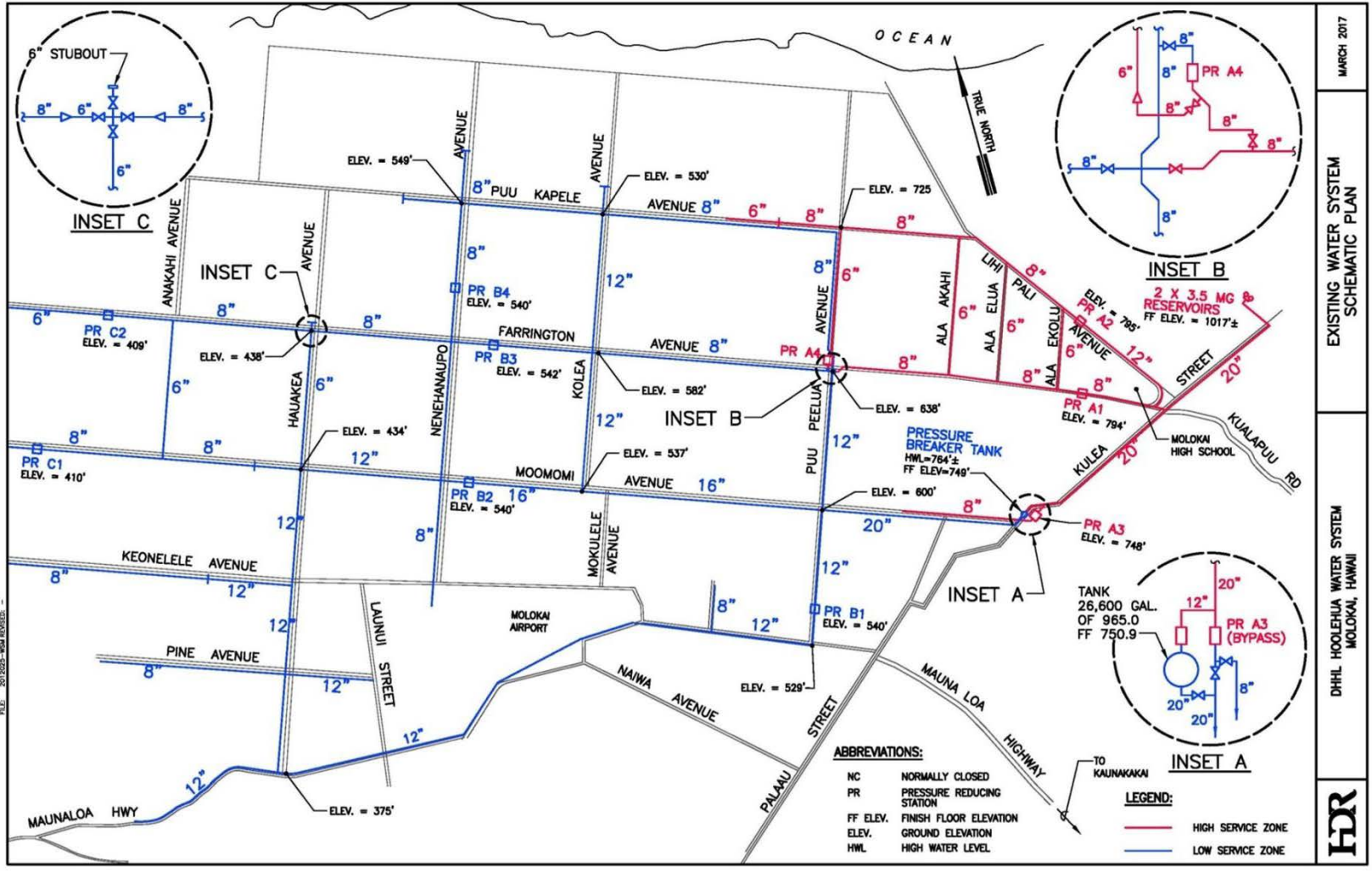
EXISTING HOOLEHUA
EXISTING FIRE FLOW TEST - MAX DAILY DEMANDS (SORTED BY PRESSURE AT FIRE HYDRANT)

Fire Flow Node FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Pressure (Calculated Residual) (psi)
H-1	649.53	<Collection: 0 items>	0	763.21	49	49
H-2	635.75	<Collection: 0 items>	0	763.08	55	55
H-3	623.12	<Collection: 0 items>	0	762.95	60	60
H-4	611.56	<Collection: 0 items>	0	762.81	65	65
J-8	600.05	<Collection: 0 items>	0	762.6	70	(N/A)
J-188	600.04	<Collection: 0 items>	0	762.6	70	(N/A)
H-5	600.09	<Collection: 0 items>	0	762.65	70	70
H-6	596.83	<Collection: 0 items>	0	761.47	71	70
H-7	587.01	<Collection: 0 items>	0	760.15	75	73
FH 39+20 FARRINGTON	400.88	<Collection: 0 items>	0	585.95	80	79
FH 25+10 MOOMOMI	403.52	<Collection: 0 items>	0	588.63	80	77
H-8	571.69	<Collection: 0 items>	0	758.6	81	78
J-195	566.49	<Collection: 0 items>	0	762.46	85	(N/A)
FH 34+20 FARRINGTON	388.1	<Collection: 0 items>	0	585.77	86	78
H-9	554.15	<Collection: 0 items>	0	756.91	88	84
J-206	518.17	<Collection: 0 items>	0	724.97	89	(N/A)
FH 20+10 MOOMOMI	381.5	<Collection: 0 items>	0	588.41	90	77
J-190	380.74	<Collection: 0 items>	0	588.34	90	(N/A)
LOT 17F	379.04	<Collection: 1 item>	6.25	588.32	91	(N/A)
LOT 17E	379.04	<Collection: 1 item>	6.25	588.32	91	(N/A)
J-7	538.69	<Collection: 0 items>	0	752.3	92	(N/A)
H-10	541.99	<Collection: 0 items>	0	755.73	92	88
H-12	536.64	<Collection: 0 items>	0	752.98	94	88
J-189	545.83	<Collection: 0 items>	0	762.53	94	(N/A)
lot22	502.2	<Collection: 1 item>	15.62	718.95	94	(N/A)
H-30	502.5	<Collection: 0 items>	0	719.29	94	62
H-31	502	<Collection: 0 items>	0	718.85	94	61
J-3	501.66	<Collection: 0 items>	0	718.7	94	(N/A)
lot20	501.64	<Collection: 1 item>	13.12	719.55	94	(N/A)
J-23	532.65	<Collection: 0 items>	0	751.34	95	(N/A)
J-37	499.45	<Collection: 0 items>	0	719.64	95	(N/A)
H-13	530.2	<Collection: 0 items>	0	750.94	96	89
H-11	533.01	<Collection: 0 items>	0	754.31	96	91
LOT 17B	363.67	<Collection: 1 item>	6.25	585.01	96	(N/A)
LOT 17G	366.66	<Collection: 1 item>	18.11	588.23	96	(N/A)
H-240	365.58	<Collection: 0 items>	0	588.22	96	75
lot19	496.41	<Collection: 1 item>	12.49	719.85	97	(N/A)
LOT 17A	361.32	<Collection: 1 item>	6.25	585.01	97	(N/A)
LOT 17H	364.2	<Collection: 1 item>	18.11	588.22	97	(N/A)
J-22	526.09	<Collection: 0 items>	0	750.45	97	(N/A)
H-32	494.08	<Collection: 0 items>	0	718.6	97	64
LOT 17D	360	<Collection: 1 item>	18.11	584.91	97	(N/A)
H-241	360	<Collection: 0 items>	0	584.91	97	54
LOT 17C	360	<Collection: 1 item>	18.11	584.92	97	(N/A)
J-200	359.05	<Collection: 0 items>	0	585.02	98	(N/A)
H-15	520.09	<Collection: 0 items>	0	747.85	99	90
J-24	520.31	<Collection: 0 items>	0	748.43	99	(N/A)
H-14	520.38	<Collection: 0 items>	0	749.39	99	92
lot18	490.27	<Collection: 1 item>	12.49	720.51	100	(N/A)
J-196	531.95	<Collection: 0 items>	0	762.45	100	(N/A)
FH 29+18 FARRINGTON	354.14	<Collection: 0 items>	0	585.49	100	82
lot17	488.52	<Collection: 1 item>	12.49	720.61	100	(N/A)
H-28	486.76	<Collection: 0 items>	0	720.71	101	71
FH 19+20 FARRINGTON	348.75	<Collection: 0 items>	0	585.05	102	67
lot21	480.71	<Collection: 1 item>	22.8	718.25	103	(N/A)
J-21	505.83	<Collection: 0 items>	0	746.08	104	(N/A)
H-33	477.71	<Collection: 0 items>	0	718.2	104	71
J-208	520.12	<Collection: 0 items>	0	762.41	105	(N/A)
H-16	502.84	<Collection: 0 items>	0	745.72	105	96
H-247	518.27	<Collection: 0 items>	0	762.41	106	91
FH 24+20 FARRINGTON	338.8	<Collection: 0 items>	0	585.22	107	78
FH 64+20 FARRINGTON	478.11	<Collection: 0 items>	0	726.3	107	82
J-20	496.79	<Collection: 0 items>	0	744.99	107	(N/A)
H-27	472.33	<Collection: 0 items>	0	721.32	108	78
J-19	495.03	<Collection: 0 items>	0	744.77	108	(N/A)

J-17	493.07	<Collection: 0 items>	0	744.54	109	(N/A)
J-63	488.87	<Collection: 0 items>	0	741.57	109	(N/A)
lot23	465.13	<Collection: 1 item>	12.49	718.06	109	(N/A)
H-17	489.97	<Collection: 0 items>	0	744.17	110	100
H-57	486.92	<Collection: 0 items>	0	741.67	110	98
H-34	458.55	<Collection: 0 items>	0	718.01	112	78
FH 59+22 FARRINGTON	466.26	<Collection: 0 items>	0	726.26	112	85
lot16	459.63	<Collection: 1 item>	12.49	721.75	113	(N/A)
J-18	479.33	<Collection: 0 items>	0	742.71	114	(N/A)
H-18	478.79	<Collection: 0 items>	0	742.54	114	103
H-56	477.63	<Collection: 0 items>	0	741.8	114	103
J-16	477.77	<Collection: 0 items>	0	742.25	114	(N/A)
J-6	477.24	<Collection: 0 items>	0	742.01	115	(N/A)
lot15	457.02	<Collection: 1 item>	12.49	721.86	115	(N/A)
H-55	476.73	<Collection: 0 items>	0	741.86	115	103
H-246	496.95	<Collection: 0 items>	0	762.41	115	98
H-19	475.48	<Collection: 0 items>	0	741.54	115	104
lot24	451.86	<Collection: 1 item>	21.55	717.95	115	(N/A)
H-54	475.72	<Collection: 0 items>	0	741.94	115	104
FH 69+10 FARRINGTON	459.53	<Collection: 0 items>	0	726.34	115	91
H-26	450.78	<Collection: 0 items>	0	722.14	117	90
H-58	465.41	<Collection: 0 items>	0	741.39	119	106
lot9_10_11_12	439.35	<Collection: 4 items>	75.58	716.17	120	(N/A)
H-48	440.34	<Collection: 0 items>	0	717.97	120	77
H-20	460.96	<Collection: 0 items>	0	740.53	121	109
J-10	442.25	<Collection: 0 items>	0	722.69	121	(N/A)
H-53	438.63	<Collection: 0 items>	0	721.37	122	94
H-25	439.99	<Collection: 0 items>	0	725.33	123	99
lot39	439.48	<Collection: 1 item>	15.62	725.97	124	(N/A)
H-59	454.63	<Collection: 0 items>	0	741.3	124	111
H-49	431.58	<Collection: 0 items>	0	718.43	124	90
H-245	474.85	<Collection: 0 items>	0	762.4	124	105
lot14	431.34	<Collection: 1 item>	15.62	719.89	125	(N/A)
J-62	429.83	<Collection: 0 items>	0	719.5	125	(N/A)
FH 74+10 FARRINGTON	436.52	<Collection: 0 items>	0	726.39	125	103
lot38	428.79	<Collection: 1 item>	19.67	719.24	126	(N/A)
H-52	428.15	<Collection: 0 items>	0	719.07	126	95
lot13	426.96	<Collection: 1 item>	15.62	718.83	126	(N/A)
lot25_26	425.79	<Collection: 2 items>	42.79	717.81	126	(N/A)
FH 84+10 FARRINGTON	434.2	<Collection: 0 items>	0	726.49	126	108
J-11	425.82	<Collection: 0 items>	0	718.63	127	(N/A)
lot40	435.12	<Collection: 1 item>	15.93	728.64	127	(N/A)
J-13	422.83	<Collection: 0 items>	0	718.22	128	(N/A)
FH 88+90 FARRINGTON	430.62	<Collection: 0 items>	0	726.53	128	111
H-47	422.12	<Collection: 0 items>	0	718.18	128	97
FH 54+20 FARRINGTON	430.07	<Collection: 0 items>	0	726.21	128	99
FH 79+10 FARRINGTON	430.2	<Collection: 0 items>	0	726.44	128	108
lot8	421.33	<Collection: 1 item>	17.18	718.13	128	(N/A)
lot7	420.02	<Collection: 1 item>	17.18	718.08	129	(N/A)
J-4	440.18	<Collection: 0 items>	0	738.5	129	(N/A)
lot44	440.07	<Collection: 1 item>	14.93	738.5	129	(N/A)
H-21	440.93	<Collection: 0 items>	0	739.45	129	116
lot27	419.08	<Collection: 1 item>	12.49	717.8	129	(N/A)
H-22	439.15	<Collection: 0 items>	0	738.51	130	109
J-29	430.68	<Collection: 0 items>	0	730.58	130	(N/A)
lot43	436.88	<Collection: 1 item>	15.93	738.51	131	(N/A)
lot41	429.59	<Collection: 1 item>	18.43	731.51	131	(N/A)
H-60	438.49	<Collection: 0 items>	0	741.15	131	117
H-50	414.84	<Collection: 0 items>	0	717.76	131	94
FH 85+10 MOOMOMI	420.98	<Collection: 0 items>	0	724.62	131	118
H-24	428.68	<Collection: 0 items>	0	732.34	131	113
H-35	412.45	<Collection: 0 items>	0	717.79	132	98
H-244	456.05	<Collection: 0 items>	0	762.39	133	112
lot32	409.95	<Collection: 1 item>	15.62	717.45	133	(N/A)
lot42	427.28	<Collection: 1 item>	14.68	738.57	135	(N/A)
H-23	424.59	<Collection: 0 items>	0	736.48	135	120
J-5	426.47	<Collection: 0 items>	0	738.59	135	(N/A)
lot37	404.87	<Collection: 1 item>	15.93	717.22	135	(N/A)
H-61	427.66	<Collection: 0 items>	0	741.02	136	121
lot6	404.4	<Collection: 1 item>	16.86	717.9	136	(N/A)
FH 49+18 FARRINGTON	411.69	<Collection: 0 items>	0	726.16	136	105
FH 44+20 FARRINGTON	411.35	<Collection: 0 items>	0	726.12	136	104
lot33_34_35_36	400.35	<Collection: 4 items>	68.4	715.87	137	(N/A)
H-46	402.29	<Collection: 0 items>	0	717.89	137	104

H-51	401.47	<Collection: 0 items>	0	717.13	137	91
FH 80+08 MOOMOMI	408.7	<Collection: 0 items>	0	724.59	137	122
H-62	420.3	<Collection: 0 items>	0	740.92	139	124
J-41	396.52	<Collection: 0 items>	0	717.77	139	(N/A)
FH 30+10 MOOMOMI	400.9	<Collection: 0 items>	0	724.12	140	107
H-243	438.65	<Collection: 0 items>	0	762.39	140	117
FH 75+10 MOOMOMI	400.12	<Collection: 0 items>	0	724.53	140	124
FH 70+08 MOOMOMI	399.8	<Collection: 0 items>	0	724.48	140	122
J-197	436.82	<Collection: 0 items>	0	762.38	141	(N/A)
LOT 104D-1A	435.69	<Collection: 1 item>	7.81	762.38	141	(N/A)
H-36	390.24	<Collection: 0 items>	0	717.76	142	108
FH 65+10 MOOMOMI	396.5	<Collection: 0 items>	0	724.44	142	122
H-63	411.9	<Collection: 0 items>	0	740.77	142	127
H-64	405.85	<Collection: 0 items>	0	740.64	145	130
J-168	404.66	<Collection: 0 items>	0	740.63	145	(N/A)
lot49	400.11	<Collection: 1 item>	16.24	738.68	146	(N/A)
lot50	400.09	<Collection: 1 item>	16.86	738.68	146	(N/A)
lot51	400.07	<Collection: 1 item>	16.86	738.68	147	(N/A)
H-68	400.03	<Collection: 0 items>	0	738.69	147	122
lot52	399.42	<Collection: 1 item>	16.24	738.69	147	(N/A)
FH 60+10 MOOMOMI	382.4	<Collection: 0 items>	0	724.39	148	126
FH 40+08 MOOMOMI	381.9	<Collection: 0 items>	0	724.22	148	119
FH 45+10 MOOMOMI	381.63	<Collection: 0 items>	0	724.26	148	121
lot48	395.94	<Collection: 1 item>	16.24	738.71	148	(N/A)
H-242	419.46	<Collection: 0 items>	0	762.38	148	120
H-65	395.89	<Collection: 0 items>	0	739.65	149	130
lot28	373.1	<Collection: 1 item>	16.55	717.17	149	(N/A)
LOT 104D-1B	417.97	<Collection: 1 item>	7.81	762.38	149	(N/A)
lot45	395.05	<Collection: 1 item>	14.05	739.52	149	(N/A)
FH 35+10 MOOMOMI	379.5	<Collection: 0 items>	0	724.16	149	118
lot58	394.62	<Collection: 1 item>	13.43	739.47	149	(N/A)
lot46	394.31	<Collection: 1 item>	24.98	739.43	149	(N/A)
lot57	394.01	<Collection: 1 item>	16.55	739.39	149	(N/A)
lot53	392.34	<Collection: 1 item>	18.11	738.73	150	(N/A)
lot47	392.7	<Collection: 1 item>	16.24	739.11	150	(N/A)
J-2	370.86	<Collection: 0 items>	0	717.73	150	(N/A)
H-66	392.03	<Collection: 0 items>	0	739.06	150	129
lot56	391.82	<Collection: 1 item>	16.55	738.96	150	(N/A)
lot29	369.05	<Collection: 1 item>	16.55	717.18	151	(N/A)
H-67	390.19	<Collection: 0 items>	0	738.76	151	128
lot54	389.74	<Collection: 1 item>	18.74	738.77	151	(N/A)
lot55	389.66	<Collection: 1 item>	16.55	738.84	151	(N/A)
H-44	367.79	<Collection: 0 items>	0	717.22	151	99
lot1	366.02	<Collection: 1 item>	15.62	717.71	152	(N/A)
H-45	365.36	<Collection: 0 items>	0	717.17	152	91
FH 55+10 MOOMOMI	371.55	<Collection: 0 items>	0	724.34	153	129
J-50	364.18	<Collection: 0 items>	0	717.71	153	(N/A)
FH 50+08 MOOMOMI	369.7	<Collection: 0 items>	0	724.3	153	128
lot2	361.58	<Collection: 1 item>	15.62	717.7	154	(N/A)
J-1	360.9	<Collection: 0 items>	0	717.17	154	(N/A)
H-40	356.13	<Collection: 0 items>	0	717.7	156	123
H-38	355.71	<Collection: 0 items>	0	717.7	157	123
lot5	354.77	<Collection: 1 item>	16.86	717.71	157	(N/A)
J-9	353.61	<Collection: 0 items>	0	717.73	158	(N/A)
H-42	353.53	<Collection: 0 items>	0	717.67	158	123
H-39	353.36	<Collection: 0 items>	0	717.69	158	124
H-41	353.31	<Collection: 0 items>	0	717.72	158	124
lot4	352.9	<Collection: 1 item>	17.8	717.69	158	(N/A)
H-43	352.04	<Collection: 0 items>	0	717.34	158	115
lot3	352.13	<Collection: 1 item>	16.86	717.69	158	(N/A)
lot30	351.53	<Collection: 1 item>	16.55	717.36	158	(N/A)
lot31	351.26	<Collection: 1 item>	16.55	717.41	158	(N/A)



MARCH 2017

EXISTING WATER SYSTEM SCHEMATIC PLAN

DHHL HOOLEHUA WATER SYSTEM MOLOKAI, HAWAII

HDR

APPENDIX C

Irrigation Calculations

EXISTING HOOLEHUA
DESIGN CRITERIA for Irrigation

1. Design Average Flow = (**5000** Gals/Acre/8 hour Day)

2. C Values:

8", 10", 12" dia pipe (ductile iron) = 110
16" dia pipe (ductile iron) = 120
16", 18" dia pipe (asbestos cement) = 140
24" dia pipe (concrete) = 130

3. Starting HGL of the reservoir was determined by taking the average between the minimum and maximum historical water levels from 2015 to 2020 and adding that value to the existing ground elevation indicated on reference USGS map. Water levels earlier than 2015 were not considered due to the fact that there were improvements made on the reservoir structure which took effect 2015 onwards (based on Google Earth historical images).

Minimum Reservoir Water Level from 2015 to 2020 =	28.50
Maximum Reservoir Water Level from 2015 to 2020 =	48.00
Average Water Level =	**3 .25**
Approximate Reservoir Elevation based on USGS Map =	804.75
Starting HGL =	**43.00**

4. Minimum Residual Pressure = 30 Psi

EXISTING HOOLEHUA DEMANDS for IRRIGATION

NODE	LOT	AREA (ac)	ESTIMATED FLOW RATE (GPM)	ELEV (FT)	STATIC PRESSURE (PSI)	Gallons Served per day	
LOT 17A	LOT 17A	1.95	20.31	362.99	207.80	9,750.00	20.31
LOT 17B	LOT 17B	1.95	20.31	364.26	207.25	9,750.00	20.31
LOT 17C	LOT 17C	6	62.50	400.00	191.77	30,000.00	62.50
LOT 17D	LOT 17D	6	62.50	400.00	191.77	30,000.00	62.50
LOT 17E	LOT 17E	1.95	20.31	378.59	201.04	9,750.00	20.31
LOT 17F	LOT 17F	1.95	20.31	378.00	201.30	9,750.00	20.31
LOT 17G	LOT 17G	6	62.50	366.53	206.26	30,000.00	62.50
LOT 17H	LOT 17H	6	62.50	365.09	206.89	30,000.00	62.50
LOT 104D-1A	LOT 104D-1A	1	10.42	435.49	176.41	5,000.00	10.42
LOT 104D-1B	LOT 104D-1B	3	31.25	418.36	183.83	15,000.00	31.25
LOT 104D-1C	LOT 104D-1C	3.2	33.33	418.36	183.83	16,000.00	33.33
LOT 104D-1D	LOT 104D-1D	12.8	133.33	410.00	187.45	64,000.00	133.33

Total Acreage **51.8**

Total Gallons served per day **259,000.00**

Total Gallons served in a Month (31 days) **8,029,000.00**

EXISTING HOOLEHUA
EXISTING DEMANDS for IRRIGATION (SORTED BY PRESSURE)
(Based on Average Kualapuu Reservoir Water Level from 2015 - 2020)

FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-168	720.13	<Collection: 0 items>	0	838.59	51
J-283	640.68	<Collection: 0 items>	0	836.40	85
J-240	600.05	<Collection: 0 items>	0	836.42	102
J-284	566.99	<Collection: 0 items>	0	835.82	116
J-297	531.20	<Collection: 0 items>	0	835.51	132
J-268	438.63	<Collection: 0 items>	0	835.41	172
J-298	437.90	<Collection: 0 items>	0	834.97	172
LOT 104D-1A	435.49	<Collection: 1 item>	23	834.97	173
J-301	425.75	<Collection: 0 items>	0	835.11	177
LOT 104D-1B	418.36	<Collection: 1 item>	26	834.95	180
J-285	414.57	<Collection: 0 items>	0	835.41	182
LOT 17D	400.00	<Collection: 1 item>	60	832.80	187
LOT 17C	400.00	<Collection: 1 item>	60	832.80	187
J-292	380.29	<Collection: 0 items>	0	834.87	197
LOT 17E	378.59	<Collection: 1 item>	21	834.83	197
LOT 17F	378.00	<Collection: 1 item>	21	834.81	198
J-272	370.71	<Collection: 0 items>	0	835.02	201
LOT 17G	366.53	<Collection: 1 item>	60	834.63	203
LOT 17B	364.26	<Collection: 1 item>	21	832.98	203
LOT 17H	365.09	<Collection: 1 item>	60	834.63	203
LOT 17A	362.99	<Collection: 1 item>	21	832.99	203
J-286	363.60	<Collection: 0 items>	0	833.93	203
J-287	356.29	<Collection: 0 items>	0	833.05	206

EXISTING HOOLEHUA
EXISTING DEMANDS for IRRIGATION (SORTED BY VELOCITY)
(Based on Average Kualapuu Reservoir Water Level from 2015 - 2020)

FlexTable: Pipe Table

Label	ID	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Headloss (ft)
P-320	567	193	J-152	J-161	16	Asbestos Cement	140	0	0	0	0	FALSE	0
P-505	878	158	J-276	J-275	16	Ductile Iron	130	0	0	0	0	FALSE	0
P-531	930	3251	J-268	J-285	18	Asbestos Cement	140	0	18	0.02	0	FALSE	0
P-517	903	3255	J-240	J-283	24	Asbestos Cement	140	0	193	0.14	0	FALSE	0.01
P-535	938	390	LOT 104D-1A	LOT 104D-1B	8	Ductile Iron	110	0	26	0.17	0	FALSE	0.01
P-532	932	3240	J-284	J-297	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.3
P-533	934	5,810	J-297	J-298	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.54
P-534	936	69	J-298	LOT 104D-1A	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.01
P-437	742	510	LOT43	LOT44	8	Ductile Iron	110	0	53	0.34	0	FALSE	0.06
P-366	635	561	LOT29	LOT28	8	Ductile Iron	110	0	55	0.35	0	FALSE	0.07
P-516	894	48	lot49	lot50	8	Ductile Iron	110	0	56	0.36	0	FALSE	0.01
P-356	620	47	LOT34	LOT35	8	Ductile Iron	110	0	60	0.39	0	FALSE	0.01
P-525	919	21	LOT 17C	LOT 17D	8	Ductile Iron	110	0	60	0.39	0	FALSE	0
P-530	929	26	LOT 17G	LOT 17H	8	Ductile Iron	110	0	60	0.39	0	FALSE	0
P-519	907	6634	J-284	J-285	12	Asbestos Cement	140	0	144	0.41	0	FALSE	0.41
P-526	921	7066	J-268	J-292	12	Asbestos Cement	140	0	162	0.46	0	FALSE	0.54
P-536	940	3895	J-285	J-301	12	Asbestos Cement	140	0	162	0.46	0	FALSE	0.3
P-518	905	5579	J-283	J-284	12	Asbestos Cement	140	0	193	0.55	0	FALSE	0.59
P-497	863	2671	J-268	J-269	24	Concrete	130	0	793	0.56	0	FALSE	0.15
P-498	865	2036	J-269	J-270	24	Concrete	130	0	793	0.56	0	FALSE	0.11
P-499	867	1576	J-270	J-271	24	Concrete	130	0	793	0.56	0	FALSE	0.09
P-500	869	667	J-271	J-272	24	Concrete	130	0	793	0.56	0	FALSE	0.04
P-501	871	2604	J-272	J-273	24	Concrete	130	0	793	0.56	0	FALSE	0.15
P-401	688	29	LOT10	LOT11	8	Ductile Iron	110	0	89	0.57	0	FALSE	0.01
P-389	670	209	J-176	J-195	8	Ductile Iron	110	0	-101	0.65	0	FALSE	0.08
P-436	741	323	LOT42	LOT43	8	Ductile Iron	110	0	106	0.68	0	FALSE	0.13
P-469	807	437	J-240	J-241	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-470	809	124	J-241	J-242	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-471	811	89	J-242	J-243	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-472	813	467	J-243	J-244	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-473	815	181	J-244	J-245	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-474	817	1080	J-245	J-246	24	Concrete	130	0	973	0.69	0	FALSE	0.09
P-475	819	770	J-246	J-247	24	Concrete	130	0	973	0.69	0	FALSE	0.06
P-476	821	177	J-247	J-248	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-477	823	195	J-248	J-249	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-478	825	134	J-249	J-250	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-479	827	567	J-250	J-251	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-480	829	801	J-251	J-252	24	Concrete	130	0	973	0.69	0	FALSE	0.07
P-481	831	412	J-252	J-253	24	Concrete	130	0	973	0.69	0	FALSE	0.03
P-482	833	193	J-253	J-254	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-483	835	278	J-254	J-255	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-484	837	765	J-255	J-256	24	Concrete	130	0	973	0.69	0	FALSE	0.06
P-485	839	579	J-256	J-257	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-486	841	175	J-257	J-258	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-487	843	922	J-258	J-259	24	Concrete	130	0	973	0.69	0	FALSE	0.08
P-488	845	587	J-259	J-260	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-489	847	39	J-260	J-261	24	Concrete	130	0	973	0.69	0	FALSE	0
P-490	849	148	J-261	J-262	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-491	851	486	J-262	J-263	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-492	853	661	J-263	J-264	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-493	855	298	J-264	J-265	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-494	857	542	J-265	J-266	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-495	859	458	J-266	J-267	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-496	861	645	J-267	J-268	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-368	638	476	LOT30	LOT29	8	Ductile Iron	110	0	110	0.7	0	FALSE	0.2

P-515	893	56	lot51	lot49	8	Ductile Iron	110	0	110	0.7	0	FALSE	0.02
P-524	917	358	LOT 17B	LOT 17C	8	Ductile Iron	110	0	121	0.77	0	FALSE	0.18
P-529	927	362	LOT 17F	LOT 17G	8	Ductile Iron	110	0	121	0.77	0	FALSE	0.18
P-358	623	101	LOT36	LOT34	8	Ductile Iron	110	0	123	0.78	0.001	FALSE	0.05
P-467	803	1074	J-154	J-239	24	Concrete	130	0	1167	0.83	0	FALSE	0.12
P-468	805	621	J-239	J-240	24	Concrete	130	0	1167	0.83	0	FALSE	0.07
P-523	915	24	LOT 17A	LOT 17B	8	Ductile Iron	110	0	142	0.9	0.001	FALSE	0.02
P-528	925	27	LOT 17E	LOT 17F	8	Ductile Iron	110	0	142	0.9	0.001	FALSE	0.02
P-434	738	328	LOT41	LOT42	8	Ductile Iron	110	0	155	0.99	0.001	FALSE	0.26
P-400	687	54	LOT9	LOT10	8	Ductile Iron	110	0	158	1.01	0.001	FALSE	0.04
P-521	911	1026	J-286	J-287	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.88
P-522	913	66	J-287	LOT 17A	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.06
P-527	923	45	J-292	LOT 17E	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.04
P-537	941	2140	J-301	J-286	8	Asbestos Cement	140	0	162	1.04	0.001	FALSE	1.18
P-370	641	488	LOT31	LOT30	8	Ductile Iron	110	0	166	1.06	0.001	FALSE	0.43
P-513	890	194	lot52	lot51	8	Ductile Iron	110	0	167	1.06	0.001	FALSE	0.17
P-360	626	172	LOT33	LOT36	8	Ductile Iron	110	0	176	1.12	0.001	FALSE	0.17
P-506	879	1102	J-276	J-221	16	Ductile Iron	120	0	793	1.26	0	FALSE	0.52
P-504	877	1669	J-273	J-276	16	Ductile Iron	120	0	793	1.26	0	FALSE	0.79
P-398	684	27	LOT12	LOT9	8	Ductile Iron	110	0	200	1.28	0.001	FALSE	0.03
P-383	661	579	J-161	LOT27	16	Ductile Iron	120	0	-842	1.34	0.001	FALSE	0.31
P-432	735	505	LOT40	LOT41	8	Ductile Iron	110	0	217	1.38	0.001	FALSE	0.74
P-369	640	229	J-174	LOT31	8	Ductile Iron	110	0	221	1.41	0.002	FALSE	0.35
P-512	888	67	lot48	lot52	8	Ductile Iron	110	0	221	1.41	0.002	FALSE	0.1
P-385	664	234	LOT27	LOT26	16	Ductile Iron	120	0	-884	1.41	0.001	FALSE	0.13
P-362	629	263	LOT37	LOT33	8	Ductile Iron	110	0	228	1.46	0.002	FALSE	0.42
P-388	668	291	LOT7	J-176	8	Ductile Iron	110	0	232	1.48	0.002	FALSE	0.48
P-422	720	61	LOT26	LOT25	16	Ductile Iron	120	0	-955	1.52	0.001	FALSE	0.04
P-396	681	494	LOT13	LOT12	8	Ductile Iron	110	0	252	1.61	0.002	FALSE	0.96
P-424	723	257	LOT25	LOT24	16	Ductile Iron	120	0	-1027	1.64	0.001	FALSE	0.2
P-426	726	387	LOT24	LOT23	16	Ductile Iron	120	0	-1068	1.7	0.001	FALSE	0.32
P-430	732	450	J-175	LOT40	8	Ductile Iron	110	0	270	1.72	0.002	FALSE	0.99
P-511	887	101	lot53	lot48	8	Ductile Iron	110	0	275	1.76	0.002	FALSE	0.23
P-428	729	241	LOT23	LOT21	16	Ductile Iron	120	0	-1110	1.77	0.001	FALSE	0.21
P-364	632	208	LOT32	LOT37	8	Ductile Iron	110	0	281	1.8	0.002	FALSE	0.49
P-387	667	742	J-174	LOT7	8	Ductile Iron	110	0	289	1.85	0.003	FALSE	1.85
P-429	730	523	LOT21	J-162	16	Ductile Iron	120	0	-1186	1.89	0.001	FALSE	0.52
P-394	678	210	LOT8	LOT13	8	Ductile Iron	110	0	304	1.94	0.003	FALSE	0.58
P-363	631	177	J-176	LOT32	8	Ductile Iron	110	0	333	2.13	0.003	FALSE	0.58
P-464	788	102	lot54	lot53	8	Ductile Iron	110	0	335	2.14	0.003	FALSE	0.34
P-392	675	110	J-195	LOT8	8	Ductile Iron	110	0	361	2.31	0.004	FALSE	0.41
P-334	587	1150	J-154	J-167	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.05
P-336	590	1026	J-167	J-168	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.93
P-338	593	1464	J-168	J-169	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.33
P-339	594	1352	J-169	J-157	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.23
P-340	596	252	J-157	J-170	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.23
P-342	599	1097	J-170	J-171	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1
P-343	600	685	J-171	R-1	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.62
P-463	787	97	lot55	lot54	8	Ductile Iron	110	0	398	2.54	0.005	FALSE	0.44
P-458	779	90	lot47	lot55	8	Ductile Iron	110	0	453	2.89	0.006	FALSE	0.52
P-402	690	276	J-195	LOT38	8	Ductile Iron	110	0	-463	2.95	0.006	FALSE	1.65
P-457	778	206	lot56	lot47	8	Ductile Iron	110	0	507	3.24	0.007	FALSE	1.46
P-372	644	200	LOT6	J-174	8	Ductile Iron	110	0	510	3.26	0.007	FALSE	1.43
P-404	693	90	LOT38	LOT14	8	Ductile Iron	110	0	-529	3.37	0.008	FALSE	0.69
P-510	885	222	lot46	lot56	8	Ductile Iron	110	0	563	3.59	0.009	FALSE	1.9
P-374	647	524	LOT5	LOT6	8	Ductile Iron	110	0	566	3.61	0.009	FALSE	4.55
P-406	696	230	LOT14	LOT39	8	Ductile Iron	110	0	-581	3.71	0.009	FALSE	2.09
P-331	582	3337	J-165	J-154	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	9.14
P-332	584	872	J-162	J-166	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	2.39
P-333	585	2386	J-166	J-165	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	6.53
P-411	703	664	LOT16	J-175	10	Ductile Iron	110	0	944	3.86	0.008	FALSE	5.01
P-376	650	499	LOT4	LOT5	8	Ductile Iron	110	0	623	3.97	0.01	FALSE	5.16
P-413	706	365	LOT17	LOT16	10	Ductile Iron	110	0	986	4.03	0.008	FALSE	2.98
P-408	699	236	LOT39	LOT15	8	Ductile Iron	110	0	-633	4.04	0.011	FALSE	2.52

P-509	884	133	lot57	lot46	8	Ductile Iron	110	0	646	4.12	0.011	FALSE	1.47
P-415	709	443	LOT18	LOT17	10	Ductile Iron	110	0	1028	4.2	0.009	FALSE	3.91
P-409	700	178	LOT15	J-175	8	Ductile Iron	110	0	-674	4.3	0.012	FALSE	2.13
P-378	653	349	LOT3	LOT4	8	Ductile Iron	110	0	682	4.35	0.012	FALSE	4.28
P-417	712	453	LOT19	LOT18	10	Ductile Iron	110	0	1069	4.37	0.01	FALSE	4.3
P-508	882	319	lot45	lot57	8	Ductile Iron	110	0	701	4.47	0.013	FALSE	4.11
P-419	715	312	LOT20	LOT19	10	Ductile Iron	110	0	1111	4.54	0.01	FALSE	3.18
P-380	656	446	LOT2	LOT3	8	Ductile Iron	110	0	738	4.71	0.014	FALSE	6.33
P-421	718	336	LOT22	LOT20	10	Ductile Iron	110	0	1155	4.72	0.011	FALSE	3.68
P-507	881	207	lot58	lot45	8	Ductile Iron	110	0	748	4.77	0.015	FALSE	3.01
P-420	717	449	J-162	LOT22	10	Ductile Iron	110	0	1207	4.93	0.012	FALSE	5.34
P-382	659	481	LOT1	LOT2	8	Ductile Iron	110	0	790	5.04	0.016	FALSE	7.74
P-449	766	252	J-221	lot58	8	Ductile Iron	110	0	793	5.06	0.016	FALSE	4.09
P-381	658	221	J-161	LOT1	8	Ductile Iron	110	0	842	5.38	0.018	FALSE	4.01

EXISTING HOOLEHUA SUBDIVISION
DESIGN CRITERIA for Irrigation

1. Design Average Flow = (**5000** Gals/Acre/8 hour Day)

2. C Values:

8", 10", 12" dia pipe (ductile iron) = 110
16" dia pipe (ductile iron) = 120
16", 18" dia pipe (asbestos cement) = 140
24" dia pipe (concrete) = 130

3. Starting HGL of the reservoir was assumed using 10' depth for the reservoir water level and adding that value to the existing ground elevation indicated on reference USGS map.

Assumed Water Level =	**10.00**
Approximate Reservoir Elevation based on USGS Map =	804.75
Starting HGL =	**14.75**

4. Minimum Residual Pressure = 30 Psi

EXISTING HOOLEHUA DEMANDS for IRRIGATION

NODE	LOT	AREA (ac)	ESTIMATED FLOW RATE (GPM)	ELEV (FT)	STATIC PRESSURE (PSI)	Gallons Served per day	
LOT 17A	LOT 17A	1.95	20.31	362.99	207.80	9,750.00	20.31
LOT 17B	LOT 17B	1.95	20.31	364.26	207.25	9,750.00	20.31
LOT 17C	LOT 17C	6	62.50	400.00	191.77	30,000.00	62.50
LOT 17D	LOT 17D	6	62.50	400.00	191.77	30,000.00	62.50
LOT 17E	LOT 17E	1.95	20.31	378.59	201.04	9,750.00	20.31
LOT 17F	LOT 17F	1.95	20.31	378.00	201.30	9,750.00	20.31
LOT 17G	LOT 17G	6	62.50	366.53	206.26	30,000.00	62.50
LOT 17H	LOT 17H	6	62.50	365.09	206.89	30,000.00	62.50
LOT 104D-1A	LOT 104D-1A	1	10.42	435.49	176.41	5,000.00	10.42
LOT 104D-1B	LOT 104D-1B	3	31.25	418.36	183.83	15,000.00	31.25
LOT 104D-1C	LOT 104D-1C	3.2	33.33	418.36	183.83	16,000.00	33.33
LOT 104D-1D	LOT 104D-1D	12.8	133.33	410.00	187.45	64,000.00	133.33

Total Acreage **51.8**

Total Gallons served per day **259,000.00**

Total Gallons served in a Month (31 days) **8,029,000.00**

EXISTING HOOLEHUA
EXISTING DEMANDS for IRRIGATION (SORTED BY PRESSURE)
(Based on Kualapuu Reservoir water Level depth of 10')

FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-168	720.13	<Collection: 0 items>	0	810.34	39
J-283	640.68	<Collection: 0 items>	0	808.15	72
J-240	600.05	<Collection: 0 items>	0	808.17	90
J-284	566.99	<Collection: 0 items>	0	807.57	104
J-297	531.20	<Collection: 0 items>	0	807.26	119
J-268	438.63	<Collection: 0 items>	0	807.16	159
J-298	437.90	<Collection: 0 items>	0	806.72	160
LOT 104D-1A	435.49	<Collection: 1 item>	23	806.72	161
J-301	425.75	<Collection: 0 items>	0	806.86	165
LOT 104D-1B	418.36	<Collection: 1 item>	26	806.70	168
J-285	414.57	<Collection: 0 items>	0	807.16	170
LOT 17D	400.00	<Collection: 1 item>	60	804.55	175
LOT 17C	400.00	<Collection: 1 item>	60	804.55	175
J-292	380.29	<Collection: 0 items>	0	806.62	184
LOT 17E	378.59	<Collection: 1 item>	21	806.58	185
LOT 17F	378.00	<Collection: 1 item>	21	806.56	185
J-272	370.71	<Collection: 0 items>	0	806.77	189
LOT 17G	366.53	<Collection: 1 item>	60	806.38	190
LOT 17B	364.26	<Collection: 1 item>	21	804.73	191
LOT 17H	365.09	<Collection: 1 item>	60	806.38	191
LOT 17A	362.99	<Collection: 1 item>	21	804.74	191
J-286	363.60	<Collection: 0 items>	0	805.68	191
J-287	356.29	<Collection: 0 items>	0	804.80	194

EXISTING HOOLEHUA
EXISTING DEMANDS for IRRIGATION (SORTED BY VELOCITY)
(Based on Kualapuu Reservoir water Level depth of 10')

FlexTable: Pipe Table

Label	ID	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Headloss (ft)
P-505	878	158	J-276	J-275	16	Ductile Iron	130	0	0	0	0	FALSE	0
P-320	567	193	J-152	J-161	16	Asbestos Cement	140	0	0	0	0	FALSE	0
P-531	930	3251	J-268	J-285	18	Asbestos Cement	140	0	18	0.02	0	FALSE	0
P-517	903	3255	J-240	J-283	24	Asbestos Cement	140	0	193	0.14	0	FALSE	0.01
P-535	938	390	LOT 104D-1A	LOT 104D-1B	8	Ductile Iron	110	0	26	0.17	0	FALSE	0.01
P-532	932	3240	J-284	J-297	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.3
P-533	934	5,810	J-297	J-298	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.54
P-534	936	69	J-298	LOT 104D-1A	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.01
P-437	742	510	LOT43	LOT44	8	Ductile Iron	110	0	53	0.34	0	FALSE	0.06
P-366	635	561	LOT29	LOT28	8	Ductile Iron	110	0	55	0.35	0	FALSE	0.07
P-516	894	48	lot49	lot50	8	Ductile Iron	110	0	56	0.36	0	FALSE	0.01
P-356	620	47	LOT34	LOT35	8	Ductile Iron	110	0	60	0.39	0	FALSE	0.01
P-525	919	21	LOT 17C	LOT 17D	8	Ductile Iron	110	0	60	0.39	0	FALSE	0
P-530	929	26	LOT 17G	LOT 17H	8	Ductile Iron	110	0	60	0.39	0	FALSE	0
P-519	907	6634	J-284	J-285	12	Asbestos Cement	140	0	144	0.41	0	FALSE	0.41
P-526	921	7066	J-268	J-292	12	Asbestos Cement	140	0	162	0.46	0	FALSE	0.54
P-536	940	3895	J-285	J-301	12	Asbestos Cement	140	0	162	0.46	0	FALSE	0.3
P-518	905	5579	J-283	J-284	12	Asbestos Cement	140	0	193	0.55	0	FALSE	0.59
P-497	863	2671	J-268	J-269	24	Concrete	130	0	793	0.56	0	FALSE	0.15
P-498	865	2036	J-269	J-270	24	Concrete	130	0	793	0.56	0	FALSE	0.11
P-499	867	1576	J-270	J-271	24	Concrete	130	0	793	0.56	0	FALSE	0.09
P-500	869	667	J-271	J-272	24	Concrete	130	0	793	0.56	0	FALSE	0.04
P-501	871	2604	J-272	J-273	24	Concrete	130	0	793	0.56	0	FALSE	0.15
P-401	688	29	LOT10	LOT11	8	Ductile Iron	110	0	89	0.57	0	FALSE	0.01
P-389	670	209	J-176	J-195	8	Ductile Iron	110	0	-101	0.65	0	FALSE	0.08
P-436	741	323	LOT42	LOT43	8	Ductile Iron	110	0	106	0.68	0	FALSE	0.13
P-469	807	437	J-240	J-241	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-470	809	124	J-241	J-242	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-471	811	89	J-242	J-243	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-472	813	467	J-243	J-244	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-473	815	181	J-244	J-245	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-474	817	1080	J-245	J-246	24	Concrete	130	0	973	0.69	0	FALSE	0.09
P-475	819	770	J-246	J-247	24	Concrete	130	0	973	0.69	0	FALSE	0.06
P-476	821	177	J-247	J-248	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-477	823	195	J-248	J-249	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-478	825	134	J-249	J-250	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-479	827	567	J-250	J-251	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-480	829	801	J-251	J-252	24	Concrete	130	0	973	0.69	0	FALSE	0.07
P-481	831	412	J-252	J-253	24	Concrete	130	0	973	0.69	0	FALSE	0.03
P-482	833	193	J-253	J-254	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-483	835	278	J-254	J-255	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-484	837	765	J-255	J-256	24	Concrete	130	0	973	0.69	0	FALSE	0.06
P-485	839	579	J-256	J-257	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-486	841	175	J-257	J-258	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-487	843	922	J-258	J-259	24	Concrete	130	0	973	0.69	0	FALSE	0.08
P-488	845	587	J-259	J-260	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-489	847	39	J-260	J-261	24	Concrete	130	0	973	0.69	0	FALSE	0
P-490	849	148	J-261	J-262	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-491	851	486	J-262	J-263	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-492	853	661	J-263	J-264	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-493	855	298	J-264	J-265	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-494	857	542	J-265	J-266	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-495	859	458	J-266	J-267	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-496	861	645	J-267	J-268	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-368	638	476	LOT30	LOT29	8	Ductile Iron	110	0	110	0.7	0	FALSE	0.2

P-515	893	56	lot51	lot49	8	Ductile Iron	110	0	110	0.7	0	FALSE	0.02
P-524	917	358	LOT 17B	LOT 17C	8	Ductile Iron	110	0	121	0.77	0	FALSE	0.18
P-529	927	362	LOT 17F	LOT 17G	8	Ductile Iron	110	0	121	0.77	0	FALSE	0.18
P-358	623	101	LOT36	LOT34	8	Ductile Iron	110	0	123	0.78	0.001	FALSE	0.05
P-467	803	1074	J-154	J-239	24	Concrete	130	0	1167	0.83	0	FALSE	0.12
P-468	805	621	J-239	J-240	24	Concrete	130	0	1167	0.83	0	FALSE	0.07
P-523	915	24	LOT 17A	LOT 17B	8	Ductile Iron	110	0	142	0.9	0.001	FALSE	0.02
P-528	925	27	LOT 17E	LOT 17F	8	Ductile Iron	110	0	142	0.9	0.001	FALSE	0.02
P-434	738	328	LOT41	LOT42	8	Ductile Iron	110	0	155	0.99	0.001	FALSE	0.26
P-400	687	54	LOT9	LOT10	8	Ductile Iron	110	0	158	1.01	0.001	FALSE	0.04
P-521	911	1026	J-286	J-287	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.88
P-522	913	66	J-287	LOT 17A	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.06
P-527	923	45	J-292	LOT 17E	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.04
P-537	941	2140	J-301	J-286	8	Asbestos Cement	140	0	162	1.04	0.001	FALSE	1.18
P-370	641	488	LOT31	LOT30	8	Ductile Iron	110	0	166	1.06	0.001	FALSE	0.43
P-513	890	194	lot52	lot51	8	Ductile Iron	110	0	167	1.06	0.001	FALSE	0.17
P-360	626	172	LOT33	LOT36	8	Ductile Iron	110	0	176	1.12	0.001	FALSE	0.17
P-506	879	1102	J-276	J-221	16	Ductile Iron	120	0	793	1.26	0	FALSE	0.52
P-504	877	1669	J-273	J-276	16	Ductile Iron	120	0	793	1.26	0	FALSE	0.79
P-398	684	27	LOT12	LOT9	8	Ductile Iron	110	0	200	1.28	0.001	FALSE	0.03
P-383	661	579	J-161	LOT27	16	Ductile Iron	120	0	-842	1.34	0.001	FALSE	0.31
P-432	735	505	LOT40	LOT41	8	Ductile Iron	110	0	217	1.38	0.001	FALSE	0.74
P-369	640	229	J-174	LOT31	8	Ductile Iron	110	0	221	1.41	0.002	FALSE	0.35
P-512	888	67	lot48	lot52	8	Ductile Iron	110	0	221	1.41	0.002	FALSE	0.1
P-385	664	234	LOT27	LOT26	16	Ductile Iron	120	0	-884	1.41	0.001	FALSE	0.13
P-362	629	263	LOT37	LOT33	8	Ductile Iron	110	0	228	1.46	0.002	FALSE	0.42
P-388	668	291	LOT7	J-176	8	Ductile Iron	110	0	232	1.48	0.002	FALSE	0.48
P-422	720	61	LOT26	LOT25	16	Ductile Iron	120	0	-955	1.52	0.001	FALSE	0.04
P-396	681	494	LOT13	LOT12	8	Ductile Iron	110	0	252	1.61	0.002	FALSE	0.96
P-424	723	257	LOT25	LOT24	16	Ductile Iron	120	0	-1027	1.64	0.001	FALSE	0.2
P-426	726	387	LOT24	LOT23	16	Ductile Iron	120	0	-1068	1.7	0.001	FALSE	0.32
P-430	732	450	J-175	LOT40	8	Ductile Iron	110	0	270	1.72	0.002	FALSE	0.99
P-511	887	101	lot53	lot48	8	Ductile Iron	110	0	275	1.76	0.002	FALSE	0.23
P-428	729	241	LOT23	LOT21	16	Ductile Iron	120	0	-1110	1.77	0.001	FALSE	0.21
P-364	632	208	LOT32	LOT37	8	Ductile Iron	110	0	281	1.8	0.002	FALSE	0.49
P-387	667	742	J-174	LOT7	8	Ductile Iron	110	0	289	1.85	0.003	FALSE	1.85
P-429	730	523	LOT21	J-162	16	Ductile Iron	120	0	-1186	1.89	0.001	FALSE	0.52
P-394	678	210	LOT8	LOT13	8	Ductile Iron	110	0	304	1.94	0.003	FALSE	0.58
P-363	631	177	J-176	LOT32	8	Ductile Iron	110	0	333	2.13	0.003	FALSE	0.58
P-464	788	102	lot54	lot53	8	Ductile Iron	110	0	335	2.14	0.003	FALSE	0.34
P-392	675	110	J-195	LOT8	8	Ductile Iron	110	0	361	2.31	0.004	FALSE	0.41
P-334	587	1150	J-154	J-167	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.05
P-336	590	1026	J-167	J-168	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.93
P-338	593	1464	J-168	J-169	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.33
P-339	594	1352	J-169	J-157	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.23
P-340	596	252	J-157	J-170	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.23
P-342	599	1097	J-170	J-171	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1
P-343	600	685	J-171	R-1	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.62
P-463	787	97	lot55	lot54	8	Ductile Iron	110	0	398	2.54	0.005	FALSE	0.44
P-458	779	90	lot47	lot55	8	Ductile Iron	110	0	453	2.89	0.006	FALSE	0.52
P-402	690	276	J-195	LOT38	8	Ductile Iron	110	0	-463	2.95	0.006	FALSE	1.65
P-457	778	206	lot56	lot47	8	Ductile Iron	110	0	507	3.24	0.007	FALSE	1.46
P-372	644	200	LOT6	J-174	8	Ductile Iron	110	0	510	3.26	0.007	FALSE	1.43
P-404	693	90	LOT38	LOT14	8	Ductile Iron	110	0	-529	3.37	0.008	FALSE	0.69
P-510	885	222	lot46	lot56	8	Ductile Iron	110	0	563	3.59	0.009	FALSE	1.9
P-374	647	524	LOT5	LOT6	8	Ductile Iron	110	0	566	3.61	0.009	FALSE	4.55
P-406	696	230	LOT14	LOT39	8	Ductile Iron	110	0	-581	3.71	0.009	FALSE	2.09
P-331	582	3337	J-165	J-154	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	9.14
P-332	584	872	J-162	J-166	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	2.39
P-333	585	2386	J-166	J-165	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	6.53
P-411	703	664	LOT16	J-175	10	Ductile Iron	110	0	944	3.86	0.008	FALSE	5.01
P-376	650	499	LOT4	LOT5	8	Ductile Iron	110	0	623	3.97	0.01	FALSE	5.16
P-413	706	365	LOT17	LOT16	10	Ductile Iron	110	0	986	4.03	0.008	FALSE	2.98
P-408	699	236	LOT39	LOT15	8	Ductile Iron	110	0	-633	4.04	0.011	FALSE	2.52

P-509	884	133	lot57	lot46	8	Ductile Iron	110	0	646	4.12	0.011	FALSE	1.47
P-415	709	443	LOT18	LOT17	10	Ductile Iron	110	0	1028	4.2	0.009	FALSE	3.91
P-409	700	178	LOT15	J-175	8	Ductile Iron	110	0	-674	4.3	0.012	FALSE	2.13
P-378	653	349	LOT3	LOT4	8	Ductile Iron	110	0	682	4.35	0.012	FALSE	4.28
P-417	712	453	LOT19	LOT18	10	Ductile Iron	110	0	1069	4.37	0.01	FALSE	4.3
P-508	882	319	lot45	lot57	8	Ductile Iron	110	0	701	4.47	0.013	FALSE	4.11
P-419	715	312	LOT20	LOT19	10	Ductile Iron	110	0	1111	4.54	0.01	FALSE	3.18
P-380	656	446	LOT2	LOT3	8	Ductile Iron	110	0	738	4.71	0.014	FALSE	6.33
P-421	718	336	LOT22	LOT20	10	Ductile Iron	110	0	1155	4.72	0.011	FALSE	3.68
P-507	881	207	lot58	lot45	8	Ductile Iron	110	0	748	4.77	0.015	FALSE	3.01
P-420	717	449	J-162	LOT22	10	Ductile Iron	110	0	1207	4.93	0.012	FALSE	5.34
P-382	659	481	LOT1	LOT2	8	Ductile Iron	110	0	790	5.04	0.016	FALSE	7.74
P-449	766	252	J-221	lot58	8	Ductile Iron	110	0	793	5.06	0.016	FALSE	4.09
P-381	658	221	J-161	LOT1	8	Ductile Iron	110	0	842	5.38	0.018	FALSE	4.01

EXISTING HOOLEHUA SUBDIVISION
DESIGN CRITERIA for Irrigation

1. Design Average Flow = (**5000** Gals/Acre/8 hour Day)

2. C Values:

8", 10", 12" dia pipe (ductile iron) = 110
16" dia pipe (ductile iron) = 120
16", 18" dia pipe (asbestos cement) = 140
24" dia pipe (concrete) = 130

3. Starting HGL of the reservoir was determined by taking the lowest possible water level of the reservoir (1 ft) and adding that value to the existing ground elevation indicated on reference USGS map.

Lowest Water Level =	**1.00**
Approximate Reservoir Elevation based on USGS Map =	804.75
Starting HGL =	**05.75**

4. Minimum Residual Pressure = 30 Psi

EXISTING HOOLEHUA DEMANDS for IRRIGATION

NODE	LOT	AREA (ac)	ESTIMATED FLOW RATE (GPM)	ELEV (FT)	STATIC PRESSURE (PSI)	Gallons Served per day	
LOT 17A	LOT 17A	1.95	20.31	362.99	207.80	9,750.00	20.31
LOT 17B	LOT 17B	1.95	20.31	364.26	207.25	9,750.00	20.31
LOT 17C	LOT 17C	6	62.50	400.00	191.77	30,000.00	62.50
LOT 17D	LOT 17D	6	62.50	400.00	191.77	30,000.00	62.50
LOT 17E	LOT 17E	1.95	20.31	378.59	201.04	9,750.00	20.31
LOT 17F	LOT 17F	1.95	20.31	378.00	201.30	9,750.00	20.31
LOT 17G	LOT 17G	6	62.50	366.53	206.26	30,000.00	62.50
LOT 17H	LOT 17H	6	62.50	365.09	206.89	30,000.00	62.50
LOT 104D-1A	LOT 104D-1A	1	10.42	435.49	176.41	5,000.00	10.42
LOT 104D-1B	LOT 104D-1B	3	31.25	418.36	183.83	15,000.00	31.25
LOT 104D-1C	LOT 104D-1C	3.2	33.33	418.36	183.83	16,000.00	33.33
LOT 104D-1D	LOT 104D-1D	12.8	133.33	410.00	187.45	64,000.00	133.33

Total Acreage **51.8**

Total Gallons served per day **259,000.00**

Total Gallons served in a Month (31 days) **8,029,000.00**

EXISTING HOOLEHUA
EXISTING DEMANDS for IRRIGATION (SORTED BY PRESSURE)
(Based on Kualapuu Reservoir lowest possible water Level depth of 1')

FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-168	720.13	<Collection: 0 items>	0	801.34	35
J-283	640.68	<Collection: 0 items>	0	799.15	69
J-240	600.05	<Collection: 0 items>	0	799.17	86
J-284	566.99	<Collection: 0 items>	0	798.57	100
J-297	531.20	<Collection: 0 items>	0	798.26	116
J-268	438.63	<Collection: 0 items>	0	798.16	156
J-298	437.90	<Collection: 0 items>	0	797.72	156
LOT 104D-1A	435.49	<Collection: 1 item>	23	797.72	157
J-301	425.75	<Collection: 0 items>	0	797.86	161
LOT 104D-1B	418.36	<Collection: 1 item>	26	797.70	164
J-285	414.57	<Collection: 0 items>	0	798.16	166
LOT 17D	400.00	<Collection: 1 item>	60	795.55	171
LOT 17C	400.00	<Collection: 1 item>	60	795.55	171
J-292	380.29	<Collection: 0 items>	0	797.62	181
LOT 17E	378.59	<Collection: 1 item>	21	797.58	181
LOT 17F	378.00	<Collection: 1 item>	21	797.56	182
J-272	370.71	<Collection: 0 items>	0	797.77	185
LOT 17G	366.53	<Collection: 1 item>	60	797.38	186
LOT 17B	364.26	<Collection: 1 item>	21	795.73	187
LOT 17H	365.09	<Collection: 1 item>	60	797.38	187
LOT 17A	362.99	<Collection: 1 item>	21	795.74	187
J-286	363.60	<Collection: 0 items>	0	796.68	187
J-287	356.29	<Collection: 0 items>	0	795.80	190

EXISTING HOOLEHUA
EXISTING DEMANDS for IRRIGATION (SORTED BY VELOCITY)
(Based on Kualapuu Reservoir lowest possible water Level depth of 1')

FlexTable: Pipe Table

Label	ID	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Headloss (ft)
P-320	567	193	J-152	J-161	16	Asbestos Cement	140	0	0	0	0	FALSE	0
P-505	878	158	J-276	J-275	16	Ductile Iron	130	0	0	0	0	FALSE	0
P-531	930	3251	J-268	J-285	18	Asbestos Cement	140	0	18	0.02	0	FALSE	0
P-517	903	3255	J-240	J-283	24	Asbestos Cement	140	0	193	0.14	0	FALSE	0.01
P-535	938	390	LOT 104D-1A	LOT 104D-1B	8	Ductile Iron	110	0	26	0.17	0	FALSE	0.01
P-532	932	3240	J-284	J-297	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.3
P-533	934	5,810	J-297	J-298	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.54
P-534	936	69	J-298	LOT 104D-1A	8	Ductile Iron	110	0	49	0.31	0	FALSE	0.01
P-437	742	510	LOT43	LOT44	8	Ductile Iron	110	0	53	0.34	0	FALSE	0.06
P-366	635	561	LOT29	LOT28	8	Ductile Iron	110	0	55	0.35	0	FALSE	0.07
P-516	894	48	lot49	lot50	8	Ductile Iron	110	0	56	0.36	0	FALSE	0.01
P-356	620	47	LOT34	LOT35	8	Ductile Iron	110	0	60	0.39	0	FALSE	0.01
P-525	919	21	LOT 17C	LOT 17D	8	Ductile Iron	110	0	60	0.39	0	FALSE	0
P-530	929	26	LOT 17G	LOT 17H	8	Ductile Iron	110	0	60	0.39	0	FALSE	0
P-519	907	6634	J-284	J-285	12	Asbestos Cement	140	0	144	0.41	0	FALSE	0.41
P-526	921	7066	J-268	J-292	12	Asbestos Cement	140	0	162	0.46	0	FALSE	0.54
P-536	940	3895	J-285	J-301	12	Asbestos Cement	140	0	162	0.46	0	FALSE	0.3
P-518	905	5579	J-283	J-284	12	Asbestos Cement	140	0	193	0.55	0	FALSE	0.59
P-497	863	2671	J-268	J-269	24	Concrete	130	0	793	0.56	0	FALSE	0.15
P-498	865	2036	J-269	J-270	24	Concrete	130	0	793	0.56	0	FALSE	0.11
P-499	867	1576	J-270	J-271	24	Concrete	130	0	793	0.56	0	FALSE	0.09
P-500	869	667	J-271	J-272	24	Concrete	130	0	793	0.56	0	FALSE	0.04
P-501	871	2604	J-272	J-273	24	Concrete	130	0	793	0.56	0	FALSE	0.15
P-401	688	29	LOT10	LOT11	8	Ductile Iron	110	0	89	0.57	0	FALSE	0.01
P-389	670	209	J-176	J-195	8	Ductile Iron	110	0	-101	0.65	0	FALSE	0.08
P-436	741	323	LOT42	LOT43	8	Ductile Iron	110	0	106	0.68	0	FALSE	0.13
P-469	807	437	J-240	J-241	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-470	809	124	J-241	J-242	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-471	811	89	J-242	J-243	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-472	813	467	J-243	J-244	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-473	815	181	J-244	J-245	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-474	817	1080	J-245	J-246	24	Concrete	130	0	973	0.69	0	FALSE	0.09
P-475	819	770	J-246	J-247	24	Concrete	130	0	973	0.69	0	FALSE	0.06
P-476	821	177	J-247	J-248	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-477	823	195	J-248	J-249	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-478	825	134	J-249	J-250	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-479	827	567	J-250	J-251	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-480	829	801	J-251	J-252	24	Concrete	130	0	973	0.69	0	FALSE	0.07
P-481	831	412	J-252	J-253	24	Concrete	130	0	973	0.69	0	FALSE	0.03
P-482	833	193	J-253	J-254	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-483	835	278	J-254	J-255	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-484	837	765	J-255	J-256	24	Concrete	130	0	973	0.69	0	FALSE	0.06
P-485	839	579	J-256	J-257	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-486	841	175	J-257	J-258	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-487	843	922	J-258	J-259	24	Concrete	130	0	973	0.69	0	FALSE	0.08
P-488	845	587	J-259	J-260	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-489	847	39	J-260	J-261	24	Concrete	130	0	973	0.69	0	FALSE	0
P-490	849	148	J-261	J-262	24	Concrete	130	0	973	0.69	0	FALSE	0.01
P-491	851	486	J-262	J-263	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-492	853	661	J-263	J-264	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-493	855	298	J-264	J-265	24	Concrete	130	0	973	0.69	0	FALSE	0.02
P-494	857	542	J-265	J-266	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-495	859	458	J-266	J-267	24	Concrete	130	0	973	0.69	0	FALSE	0.04
P-496	861	645	J-267	J-268	24	Concrete	130	0	973	0.69	0	FALSE	0.05
P-368	638	476	LOT30	LOT29	8	Ductile Iron	110	0	110	0.7	0	FALSE	0.2

P-515	893	56	lot51	lot49	8	Ductile Iron	110	0	110	0.7	0	FALSE	0.02
P-524	917	358	LOT 17B	LOT 17C	8	Ductile Iron	110	0	121	0.77	0	FALSE	0.18
P-529	927	362	LOT 17F	LOT 17G	8	Ductile Iron	110	0	121	0.77	0	FALSE	0.18
P-358	623	101	LOT36	LOT34	8	Ductile Iron	110	0	123	0.78	0.001	FALSE	0.05
P-467	803	1074	J-154	J-239	24	Concrete	130	0	1167	0.83	0	FALSE	0.12
P-468	805	621	J-239	J-240	24	Concrete	130	0	1167	0.83	0	FALSE	0.07
P-523	915	24	LOT 17A	LOT 17B	8	Ductile Iron	110	0	142	0.9	0.001	FALSE	0.02
P-528	925	27	LOT 17E	LOT 17F	8	Ductile Iron	110	0	142	0.9	0.001	FALSE	0.02
P-434	738	328	LOT41	LOT42	8	Ductile Iron	110	0	155	0.99	0.001	FALSE	0.26
P-400	687	54	LOT9	LOT10	8	Ductile Iron	110	0	158	1.01	0.001	FALSE	0.04
P-521	911	1026	J-286	J-287	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.88
P-522	913	66	J-287	LOT 17A	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.06
P-527	923	45	J-292	LOT 17E	8	Ductile Iron	110	0	162	1.04	0.001	FALSE	0.04
P-537	941	2140	J-301	J-286	8	Asbestos Cement	140	0	162	1.04	0.001	FALSE	1.18
P-370	641	488	LOT31	LOT30	8	Ductile Iron	110	0	166	1.06	0.001	FALSE	0.43
P-513	890	194	lot52	lot51	8	Ductile Iron	110	0	167	1.06	0.001	FALSE	0.17
P-360	626	172	LOT33	LOT36	8	Ductile Iron	110	0	176	1.12	0.001	FALSE	0.17
P-506	879	1102	J-276	J-221	16	Ductile Iron	120	0	793	1.26	0	FALSE	0.52
P-504	877	1669	J-273	J-276	16	Ductile Iron	120	0	793	1.26	0	FALSE	0.79
P-398	684	27	LOT12	LOT9	8	Ductile Iron	110	0	200	1.28	0.001	FALSE	0.03
P-383	661	579	J-161	LOT27	16	Ductile Iron	120	0	-842	1.34	0.001	FALSE	0.31
P-432	735	505	LOT40	LOT41	8	Ductile Iron	110	0	217	1.38	0.001	FALSE	0.74
P-369	640	229	J-174	LOT31	8	Ductile Iron	110	0	221	1.41	0.002	FALSE	0.35
P-512	888	67	lot48	lot52	8	Ductile Iron	110	0	221	1.41	0.002	FALSE	0.1
P-385	664	234	LOT27	LOT26	16	Ductile Iron	120	0	-884	1.41	0.001	FALSE	0.13
P-362	629	263	LOT37	LOT33	8	Ductile Iron	110	0	228	1.46	0.002	FALSE	0.42
P-388	668	291	LOT7	J-176	8	Ductile Iron	110	0	232	1.48	0.002	FALSE	0.48
P-422	720	61	LOT26	LOT25	16	Ductile Iron	120	0	-955	1.52	0.001	FALSE	0.04
P-396	681	494	LOT13	LOT12	8	Ductile Iron	110	0	252	1.61	0.002	FALSE	0.96
P-424	723	257	LOT25	LOT24	16	Ductile Iron	120	0	-1027	1.64	0.001	FALSE	0.2
P-426	726	387	LOT24	LOT23	16	Ductile Iron	120	0	-1068	1.7	0.001	FALSE	0.32
P-430	732	450	J-175	LOT40	8	Ductile Iron	110	0	270	1.72	0.002	FALSE	0.99
P-511	887	101	lot53	lot48	8	Ductile Iron	110	0	275	1.76	0.002	FALSE	0.23
P-428	729	241	LOT23	LOT21	16	Ductile Iron	120	0	-1110	1.77	0.001	FALSE	0.21
P-364	632	208	LOT32	LOT37	8	Ductile Iron	110	0	281	1.8	0.002	FALSE	0.49
P-387	667	742	J-174	LOT7	8	Ductile Iron	110	0	289	1.85	0.003	FALSE	1.85
P-429	730	523	LOT21	J-162	16	Ductile Iron	120	0	-1186	1.89	0.001	FALSE	0.52
P-394	678	210	LOT8	LOT13	8	Ductile Iron	110	0	304	1.94	0.003	FALSE	0.58
P-363	631	177	J-176	LOT32	8	Ductile Iron	110	0	333	2.13	0.003	FALSE	0.58
P-464	788	102	lot54	lot53	8	Ductile Iron	110	0	335	2.14	0.003	FALSE	0.34
P-392	675	110	J-195	LOT8	8	Ductile Iron	110	0	361	2.31	0.004	FALSE	0.41
P-334	587	1150	J-154	J-167	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.05
P-336	590	1026	J-167	J-168	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.93
P-338	593	1464	J-168	J-169	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.33
P-339	594	1352	J-169	J-157	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1.23
P-340	596	252	J-157	J-170	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.23
P-342	599	1097	J-170	J-171	24	Concrete	130	0	-3559	2.52	0.001	FALSE	1
P-343	600	685	J-171	R-1	24	Concrete	130	0	-3559	2.52	0.001	FALSE	0.62
P-463	787	97	lot55	lot54	8	Ductile Iron	110	0	398	2.54	0.005	FALSE	0.44
P-458	779	90	lot47	lot55	8	Ductile Iron	110	0	453	2.89	0.006	FALSE	0.52
P-402	690	276	J-195	LOT38	8	Ductile Iron	110	0	-463	2.95	0.006	FALSE	1.65
P-457	778	206	lot56	lot47	8	Ductile Iron	110	0	507	3.24	0.007	FALSE	1.46
P-372	644	200	LOT6	J-174	8	Ductile Iron	110	0	510	3.26	0.007	FALSE	1.43
P-404	693	90	LOT38	LOT14	8	Ductile Iron	110	0	-529	3.37	0.008	FALSE	0.69
P-510	885	222	lot46	lot56	8	Ductile Iron	110	0	563	3.59	0.009	FALSE	1.9
P-374	647	524	LOT5	LOT6	8	Ductile Iron	110	0	566	3.61	0.009	FALSE	4.55
P-406	696	230	LOT14	LOT39	8	Ductile Iron	110	0	-581	3.71	0.009	FALSE	2.09
P-331	582	3337	J-165	J-154	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	9.14
P-332	584	872	J-162	J-166	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	2.39
P-333	585	2386	J-166	J-165	16	Asbestos Cement	140	0	-2393	3.82	0.003	FALSE	6.53
P-411	703	664	LOT16	J-175	10	Ductile Iron	110	0	944	3.86	0.008	FALSE	5.01
P-376	650	499	LOT4	LOT5	8	Ductile Iron	110	0	623	3.97	0.01	FALSE	5.16
P-413	706	365	LOT17	LOT16	10	Ductile Iron	110	0	986	4.03	0.008	FALSE	2.98
P-408	699	236	LOT39	LOT15	8	Ductile Iron	110	0	-633	4.04	0.011	FALSE	2.52

P-509	884	133	lot57	lot46	8	Ductile Iron	110	0	646	4.12	0.011	FALSE	1.47
P-415	709	443	LOT18	LOT17	10	Ductile Iron	110	0	1028	4.2	0.009	FALSE	3.91
P-409	700	178	LOT15	J-175	8	Ductile Iron	110	0	-674	4.3	0.012	FALSE	2.13
P-378	653	349	LOT3	LOT4	8	Ductile Iron	110	0	682	4.35	0.012	FALSE	4.28
P-417	712	453	LOT19	LOT18	10	Ductile Iron	110	0	1069	4.37	0.01	FALSE	4.3
P-508	882	319	lot45	lot57	8	Ductile Iron	110	0	701	4.47	0.013	FALSE	4.11
P-419	715	312	LOT20	LOT19	10	Ductile Iron	110	0	1111	4.54	0.01	FALSE	3.18
P-380	656	446	LOT2	LOT3	8	Ductile Iron	110	0	738	4.71	0.014	FALSE	6.33
P-421	718	336	LOT22	LOT20	10	Ductile Iron	110	0	1155	4.72	0.011	FALSE	3.68
P-507	881	207	lot58	lot45	8	Ductile Iron	110	0	748	4.77	0.015	FALSE	3.01
P-420	717	449	J-162	LOT22	10	Ductile Iron	110	0	1207	4.93	0.012	FALSE	5.34
P-382	659	481	LOT1	LOT2	8	Ductile Iron	110	0	790	5.04	0.016	FALSE	7.74
P-449	766	252	J-221	lot58	8	Ductile Iron	110	0	793	5.06	0.016	FALSE	4.09
P-381	658	221	J-161	LOT1	8	Ductile Iron	110	0	842	5.38	0.018	FALSE	4.01

DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)	DATE	LEVEL (ft)
Began Readings on 8/1/0		1/1/2009		1/1/2010		1/1/2011		1/1/2012		1/1/2013		1/1/2014		1/1/2015		1/1/2016		1/1/2017		1/1/2018		1/1/2019		1/1/2020			
		1/2/2009	19.0	1/2/2010		1/2/2011		1/2/2012		1/2/2013	13.00	1/2/2014	13.25	1/2/2015	31.75	1/2/2016		1/2/2017		1/2/2018	37.750	1/2/2019	44.00	1/2/2020	38.000		
		1/3/2009		1/3/2010		1/3/2011	17.00	1/3/2012	11.75	1/3/2013	14.00	1/3/2014	15.00	1/3/2015		1/3/2016		1/3/2017	45.00	1/3/2018	37.750	1/3/2019	44.25	1/3/2020	38.000		
		1/4/2009		1/4/2010		1/4/2011	17.00	1/4/2012	11.75	1/4/2013	14.50	1/4/2014		1/4/2015		1/4/2016	40.75	1/4/2017	45.00	1/4/2018	37.750	1/4/2019	44.25	1/4/2020			
		1/5/2009	19.0	1/5/2010		1/5/2011	17.00	1/5/2012	11.75	1/5/2013		1/5/2014		1/5/2015	32.00	1/5/2016	40.75	1/5/2017	45.00	1/5/2018	37.750	1/5/2019		1/5/2020			
		1/6/2009	19.0	1/6/2010		1/6/2011	17.00	1/6/2012	11.75	1/6/2013		1/6/2014	15.25	1/6/2015	32.00	1/6/2016	40.50	1/6/2017	45.00	1/6/2018		1/6/2019		1/6/2020	38.000		
		1/7/2009	19.0	1/7/2010		1/7/2011	17.00	1/7/2012		1/7/2013	16.50	1/7/2014	15.25	1/7/2015	32.00	1/7/2016	40.50	1/7/2017		1/7/2018		1/7/2019	44.25	1/7/2020	38.000		
		1/8/2009	19.0	1/8/2010		1/8/2011		1/8/2012		1/8/2013	16.75	1/8/2014	15.25	1/8/2015	32.00	1/8/2016	40.50	1/8/2017		1/8/2018	37.500	1/8/2019	44.00	1/8/2020	38.250		
		1/9/2009	19.0	1/9/2010		1/9/2011		1/9/2012	11.75	1/9/2013	16.75	1/9/2014	15.25	1/9/2015	32.00	1/9/2016		1/9/2017	44.75	1/9/2018	37.500	1/9/2019	44.00	1/9/2020	38.250		
		1/10/2009		1/10/2010		1/10/2011	17.00	1/10/2012	11.50	1/10/2013	16.75	1/10/2014	15.25	1/10/2015		1/10/2016		1/10/2017	44.50	1/10/2018	37.500	1/10/2019	44.00	1/10/2020	38.250		
		1/11/2009		1/11/2010		1/11/2011	17.00	1/11/2012	11.50	1/11/2013	16.75	1/11/2014		1/11/2015		1/11/2016	40.25	1/11/2017	44.50	1/11/2018	37.500	1/11/2019	44.00	1/11/2020			
		1/12/2009	19.5	1/12/2010		1/12/2011	17.00	1/12/2012	11.50	1/12/2013		1/12/2014		1/12/2015	32.00	1/12/2016	40.25	1/12/2017	44.50	1/12/2018	37.250	1/12/2019		1/12/2020			
		1/13/2009	19.5	1/13/2010		1/13/2011	18.50	1/13/2012	11.50	1/13/2013		1/13/2014	15.50	1/13/2015	32.00	1/13/2016	40.00	1/13/2017	44.25	1/13/2018		1/13/2019		1/13/2020	40.500		
		1/14/2009	19.5	1/14/2010		1/14/2011	18.50	1/14/2012		1/14/2013	16.75	1/14/2014	15.75	1/14/2015	32.00	1/14/2016	40.00	1/14/2017		1/14/2018		1/14/2019	44.00	1/14/2020	40.500		
		1/15/2009	19.5	1/15/2010		1/15/2011		1/15/2012		1/15/2013	17.25	1/15/2014	16.00	1/15/2015	32.00	1/15/2016	40.00	1/15/2017		1/15/2018		1/15/2019	44.00	1/15/2020	40.750		
		1/16/2009	19.5	1/16/2010		1/16/2011		1/16/2012		1/16/2013	17.25	1/16/2014	16.00	1/16/2015	32.00	1/16/2016		1/16/2017		1/16/2018	37.250	1/16/2019	43.75	1/16/2020	40.750		
		1/17/2009		1/17/2010		1/17/2011		1/17/2012	11.25	1/17/2013	17.25	1/17/2014	16.00	1/17/2015		1/17/2016		1/17/2017	44.00	1/17/2018	37.000	1/17/2019	43.75	1/17/2020	41.000		
		1/18/2009		1/18/2010		1/18/2011	18.50	1/18/2012	11.25	1/18/2013	17.25	1/18/2014		1/18/2015		1/18/2016		1/18/2017	43.75	1/18/2018	37.000	1/18/2019	43.75	1/18/2020			
		1/19/2009		1/19/2010		1/19/2011	18.50	1/19/2012	11.25	1/19/2013		1/19/2014		1/19/2015		1/19/2016	39.50	1/19/2017	43.75	1/19/2018	36.750	1/19/2019		1/19/2020			
		1/20/2009	20.0	1/20/2010		1/20/2011	18.50	1/20/2012	11.25	1/20/2013		1/20/2014		1/20/2015	32.00	1/20/2016	39.50	1/20/2017	43.75	1/20/2018		1/20/2019		1/20/2020			
		1/21/2009	20.0	1/21/2010		1/21/2011	18.50	1/21/2012		1/21/2013		1/21/2014	16.25	1/21/2015	31.75	1/21/2016	39.50	1/21/2017		1/21/2018		1/21/2019	43.50	1/21/2020	42.000		
		1/22/2009	20.0	1/22/2010		1/22/2011		1/22/2012		1/22/2013	17.25	1/22/2014	16.50	1/22/2015	31.75	1/22/2016	39.25	1/22/2017		1/22/2018	36.750	1/22/2019	43.50	1/22/2020	42.000		
		1/23/2009	20.0	1/23/2010		1/23/2011		1/23/2012	11.25	1/23/2013	17.25	1/23/2014	16.75	1/23/2015	31.75	1/23/2016		1/23/2017	43.75	1/23/2018	36.750	1/23/2019	43.50	1/23/2020	42.000		
		1/24/2009		1/24/2010		1/24/2011	18.50	1/24/2012	11.00	1/24/2013		1/24/2014	16.75	1/24/2015		1/24/2016		1/24/2017	43.75	1/24/2018	37.000	1/24/2019	43.50	1/24/2020	42.000		
		1/25/2009		1/25/2010		1/25/2011	18.50	1/25/2012	11.00	1/25/2013	17.25	1/25/2014		1/25/2015		1/25/2016	39.25	1/25/2017	43.75	1/25/2018	37.000	1/25/2019	43.50	1/25/2020			
		1/26/2009	20.0	1/26/2010		1/26/2011	18.50	1/26/2012	11.00	1/26/2013		1/26/2014		1/26/2015	32.50	1/26/2016	39.25	1/26/2017	43.75	1/26/2018	37.000	1/26/2019		1/26/2020			
		1/27/2009	20.0	1/27/2010		1/27/2011	18.50	1/27/2012	11.00	1/27/2013		1/27/2014	17.50	1/27/2015	32.50	1/27/2016	39.00	1/27/2017	43.50	1/27/2018		1/27/2019		1/27/2020	42.000		
		1/28/2009	20.0	1/28/2010		1/28/2011		1/28/2012		1/28/2013		1/28/2014	18.00	1/28/2015	32.50	1/28/2016	39.00	1/28/2017		1/28/2018		1/28/2019	43.50	1/28/2020	42.000		
		1/29/2009	21.0	1/29/2010		1/29/2011		1/29/2012		1/29/2013		1/29/2014	18.50	1/29/2015	32.50	1/29/2016	38.75	1/29/2017		1/29/2018	37.000	1/29/2019	43.25	1/29/2020	42.000		
		1/30/2009	21.0	1/30/2010		1/30/2011		1/30/2012	10.75	1/30/2013	17.50	1/30/2014	19.00	1/30/2015	32.50	1/30/2016		1/30/2017	43.75	1/30/2018	37.000	1/30/2019	43.25	1/30/2020	42.000		
		1/31/2009		1/31/2010		1/31/2011	18.50	1/31/2012	10.75	1/31/2013	17.50	1/31/2014	19.00	1/31/2015		1/31/2016		1/31/2017	43.75	1/31/2018	37.000	1/31/2019	43.50	1/31/2020	41.750		
		2/1/2009		2/1/2010		2/1/2011	18.50	2/1/2012	10.75	2/1/2013	17.50	2/1/2014		2/1/2015		2/1/2016	38.50	2/1/2017	43.50	2/1/2018	37.000	2/1/2019	43.50	2/1/2020			
		2/2/2009	21.5	2/2/2010		2/2/2011	18.50	2/2/2012	10.75	2/2/2013		2/2/2014		2/2/2015	32.50	2/2/2016	38.50	2/2/2017	43.50	2/2/2018	37.000	2/2/2019		2/2/2020			
		2/3/2009	21.5	2/3/2010		2/3/2011	18.50	2/3/2012	10.75	2/3/2013		2/3/2014	19.25	2/3/2015	32.50	2/3/2016	38.50	2/3/2017	43.50	2/3/2018		2/3/2019		2/3/2020	41.750		
		2/4/2009	21.5	2/4/2010		2/4/2011		2/4/2012		2/4/2013	17.50	2/4/2014	19.50	2/4/2015	32.50	2/4/2016	38.25	2/4/2017		2/4/2018		2/4/2019	44.50	2/4/2020	41.750		
		2/5/2009	21.5	2/5/2010		2/5/2011		2/5/2012		2/5/2013	17.50	2/5/2014	19.50	2/5/2015	32.75	2/5/2016	38.25	2/5/2017		2/5/2018	36.75	2/5/2019	44.75	2/5/2020	41.750		
		2/6/2009	21.5	2/6/2010		2/6/2011		2/6/2012	10.50	2/6/2013	17.50	2/6/2014	19.50	2/6/2015	32.75	2/6/2016		2/6/2017	43.25	2/6/2018	37.25	2/6/2019	44.75	2/6/2020	41.750		
		2/7/2009		2/7/2010		2/7/2011	18.50	2/7/2012	10.50	2/7/2013	17.75	2/7/2014	19.50	2/7/2015		2/7/2016		2/7/2017	43.25	2/7/2018	37.25	2/7/2019	44.75	2/7/2020	42.000		
		2/8/2009		2/8/2010		2/8/2011	18.50	2/8/2012	10.50	2/8/2013		2/8/2014		2/8/2015		2/8/2016	38.25	2/8/2017	43.25	2/8/2018	37.25	2/8/2019	44.75	2/8/2020			
		2/9/2009	21.5	2/9/2010		2/9/2011	18.50	2/9/2012	10.50	2/9/2013		2/9/2014		2/9/2015	32.75	2/9/2016	38.25	2/9/2017	43.25	2/9/2018	37.50	2/9/2019		2/9/2020			
		2/10/2009	21.5	2/10/2010		2/10/2011	18.50	2/10/2012	10.50	2/10/2013		2/10/2014	20.00	2/10/2015	32.50	2/10/2016	38.00	2/10/2017	43.00	2/10/2018		2/10/2019		2/10/2020	42.000		
		2/11/2009	21.5	2/11/2010		2/11/2011	18.50	2/11/2012		2/11/2013	18.00	2/11/2014	20.00	2/11/2015	32.50	2/11/2016	38.00	2/11/2017		2/11/2018		2/11/2019	45.50	2/11/2020	42.500		
		2/12/2009	21.5	2/12/2010		2/12/2011		2/12/2012		2/12/2013	18.00	2/12/2014	20.00	2/12/2015	32.50	2/12/2016	38.00	2/12/2017		2/12/2018	37.50	2/12/2019	45.75	2/12/2020	42.500		
		2/13/2009	21.5	2/13/2010		2/13/2011		2/13/2012	10.50	2/13/2013	18.00	2/13/2014	20.00	2/13/2015	32.50	2/13/2016		2/13/2017	43.000	2/13/2018	37.50	2/13/2019	46.00	2/13/2020	42.500		
		2/14/2009		2/14/2010		2/14/2011	18.75	2/14/2012	10.50	2/14/2013	18.00	2/14/2014	20.00	2/14/2015		2/14/2016		2/14/2017	42.750	2/14/2018	37.50	2/14/2019	46.25	2/14/2020	42.500		
		2/15/2009		2/15/2010		2/15/2011	18.75	2/15/2012	10.50	2/15/2013	18.00	2/15/2014		2/15/2015		2/15/2016		2/15/2017	42.750	2/15/2018	38.00	2/15/2019	46.50	2/15/2020			
		2/16/2009		2/16/2010		2/16/2011	18.75	2/16/2012	10.25	2/16/2013		2/16/2014		2/16/2015		2/16/2016	37.75	2/16/2017	42.750	2/16/2018	38.25	2/16/2019		2/16/2020			
		2/17/2009	21.5	2/17/2010		2/17/2011	18.75	2/17/2012	10.25	2/17/2013		2/17/2014		2/17/2015	32.75	2/17/2016	38.00	2/17/2017	42.500	2/17/2018		2/17/2019		2/17/2020			
		2/18/2009	21.5	2/18/2010		2/18/2011	18.75	2/18/2012		2/18/2013		2/18/2014	20.75	2/18/2015	32.75	2/18/2016	38.25	2/18/2017		2/18/2018		2/18/2019		2/18/2020	42.750		
		2/19/2009	21.5	2/19/2010		2/19/2011		2/19/2012		2/19/2013	18.50	2/19/2014	20.75	2/19/2015	32.75	2/19/2016	38.50	2/19/2017		2/19/2018		2/19/2019	47.75	2/19/2020	42.750		
		2/20/2009	21.5	2/20/2010		2/20/2011		2/20/2012		2/20/2013	18.50	2/20/2014	20.75	2/20/2015	32.75	2/20/2016		2/20/2017		2/20/2018	39.00	2/20/2019	47.75	2/20/2020	43.000		
		2/21/2009		2/21/2010		2/21/2011		2/21/2012	10.75	2/21/2013	18.75	2/21/2014	20.75	2/21/2015		2/21/2016		2/21/2017	42.50	2/21/2018	39.00	2/21/2019	47.75	2/21/2020	43.000		
		2/22/2009		2/22/2010		2/22/2011	18.75	2/22/2012	10.75	2/22/2013	19.25	2/22/2014		2/22/2015		2/22/2016	38.50	2/22/2017	42.50	2/22/2018	39.00	2/22/2019	48.00	2/22/2020			
		2/23/2009	21.5	2/23/2010		2/23/2011	18.75	2/23/2012	10.75	2/23/2013		2/23/2014		2/23/2015	32.75	2/23/2016	38.50	2/23/2017	42.25	2/23/2018	39.00	2/23/2019		2/23/2020			
		2/24/2009	21.5	2/24/2010		2/24/2011	18.75	2/24/2012	10.75	2/24/2013		2/24/2014	20.75	2/24/2015	32.75	2/24/2016	38.50	2/24/2017	42.25	2/24/2018		2/24/2019		2/24/2020	43.000		
		2/25/2009	21.5	2/25/2010		2/25/2011	18.75	2/25/2012		2/25/2013		2/25/2014	21.00	2/25/2015	32.75	2/25/2016	38.50	2/25/2017		2/25/2018		2/25/2019	48.00	2/25/2020	43.250		
		2/26/2009	21.5	2/26/2010		2/26/2011		2/26/2012		2/26/2013	19.75	2/26/2014	21.00	2/26/2015	32.75	2/26/2016	38.25	2/26/2017		2/26/2018	39.50	2/26/2019	48.00	2/26/2020	43.250		
		2/27/2009	21.5	2/27/2010		2/27/2011		2/27/2012	10.75	2/27/2013	19.75	2/27/2014	21.00	2/27/2015	32.50	2/27/2016		2/27/2017	42.00	2/27/2018	39.75	2/27/2019	48.00	2/27/2020	43.250		
		2/28/2009		2/28/2010		2/28/2011	18.75	2/28/2012	10.75	2/28/2013	19.75	2/28/2014	21.00	2/28/2015		2/28/2016		2/28/2017	42.00	2/28/2018	39.75	2/28/2019	48.00	2/28/2020	43.250		
		3/1/2009		3/1/2010		3/1/2011	18.50	2/29/2012	10.75	3/1/2013	19.75	3/1/2014		3/1/2015		2/29/2016	38.25	3/1/2017	42.00	3/1/2018	40.00	3/1/2019	48.00	2/29/2020			
		3/2/2009	21.5	3/2/2010		3/2/2011	18.50	3/1/2012	10.75	3/2/2013		3/2/2014		3/2/2015	33.00	3/1/2016	38.00	3/2/2017	42.25	3/2/2018	40.25	3/2/2019		3/1/2020			
		3/3/2009	21.5	3/3/2010		3/3/2011	18.50	3/2/2012	11.00	3/3/2013		3/3/2014	21.75	3/3/2015	33.25	3/2/2016	38.00	3/3/2017	42.25	3/3/2018		3/3/2019		3/2/2020	43.250		
		3/4/2009	21.5	3/4/2010		3/4/2011	18.50	3/3/2012		3/4/2013		3/4/2014	22.00	3/4/2015	33.75	3/3/2016	37.75	3/4/2017		3/4/2018		3/4/2019	48.00	3/3/2020	43.250		
		3/5/2009	21.5	3/6/2010		3/5/2011		3/4/2012		3/5/2013	19.50	3/5/2014	22.00	3/5/2015	34.25	3/4/2016	37.75	3/5/2017		3/5/2018	40.50	3/5/2019	48.00	3/4/2020	43.250		
		3/6/2009	21.5	3/6/2010		3/6/2011		3/5/2012	11.50	3/6/2013		3/6/2014	22.00	3/6/2015	35.00	3/5/2016		3/6/2017	42.25	3/6/2018	40.50	3/6/2019	48.00	3/5/2020	43.250		
		3/7/2009		3/7/2010		3/7/2011	19.00	3/6/2012	12.50	3/7/2013	19.50	3/7/2014	22.00	3/7/2015		3/6/2016		3/7/2017	42.25	3/7/2018	40.50	3/7/2019	48.00	3/6/2020	43.250		
		3/8/2009		3/8/2010		3/8/2011		3/7/2012	13.00	3/8/2013	19.50	3/8/2014		3/8/2015		3/7/2016	37.50	3/8/2017	42.25	3/8/2018	40.50	3/8/2019	48.00	3/7/2020			
		3/9/2009	21.5	3/9/2010		3/9/2011	19.00	3/8/2012	14.00	3/9/2013		3/9/2014		3/9/2015	35.25	3/8/2016	37.50	3/9/2017	42.25	3/9/2018	40.75	3/9/2019		3/8/2020			
		3/10/2009	21.5	3/10/2010		3/10/2011	19.00	3/9/2012	15.00	3/10/2013		3/10/2014	23.00	3/10/2015	35.25	3/9/2016	38.00	3/10/2017	42.00	3/10/2018		3/10/2019		3/9/2020	43.250		
		3/11/2009	21.5	3/11/2010		3/11/2011	19.00	3/10/2012		3/11/2013	20.00	3/11/2014	23.00	3/11/2015	35.25	3/10/2016	38.25	3/11/2017		3/11/2018		3/11/2019	48.00	3/10/2020	43.250		
		3/12/2009	21.5	3/13/2010		3/12/2011		3/11/2012		3/12/2013	20.00	3/12/2014	23.00	3/12/2015	35.25	3/11/2016	38.25	3/12/2017		3/12/2018	40.75	3/12/2019	47.75	3/11/2020	43.250		
		3/13/2009	21.5	3/13/2010		3/13/2011		3/12/2012	16.25	3/13/2013	20.00	3/13/2014	23.00	3/13/2015	35.25	3/12/2016		3/13/2017	41.75	3/13/2018	40.75	3/13/2019	47.75	3/12/2020	43.250		
		3/14/2009		3/14/2010		3/14/2011	19.00	3/13/2012	16.50	3/14/2013	20.00	3/14/2014	23.00	3/14/2015		3/13/2016		3/14/2017	41.75	3/14/2018	41.00	3/14/2019	47.75	3/13/2020	43.250		
		3/15/2009		3/15/2010		3/15/2011	19.00	3/14/2012	16.50	3/15/2013	20.00	3/15/2014		3/15/2015		3/14/2016	38.00	3/15/2017	41.75	3/15/2018	41.00	3/15/2019	47.75	3/14/2020			
		3/16/2009	21.5	3/16/2010		3/16/2011	19.00	3/15/2012	16.50	3/16/2013		3/16/2014		3/16/2015	35.25	3/15/2016	38.00	3/16/2017	41.75	3/16/2018	41.00	3/16/2019		3/15/2020			
		3/17/2009	22.5	3/17/2010		3/17/2011	19.00	3/16/2012	16.50	3/17/2013		3/17/2014	24.00	3/17/2015	35.00	3/16/2016	37.75	3/17/2017	41.50	3/17/2018		3/17/2019		3/16/2020	43.250		
		3/18/2009	22.5	3/18/2010		3/18/2011	19.00	3/17/2012		3/18/2013	20.00	3/18/2014	24.00	3/18/2015	35.00	3/17/2016	38.00	3/18/2017		3/18/2018		3/18/2019	47.50	3/17/2020	43.500		
		3/19/2009	22.5	3/19/2010		3/19/2011		3/18/2012		3/19/2013	20.00	3/19/2014	24.00	3/19/2015	35.00	3/18/2016	38.00	3/19/2017		3/19/2018	41.00	3/19/2019	47.50	3/18/2020	43.750		
		3/20/2009	22.5	3/20/2010		3/20/2011		3/19/2012	16.75	3/20/2013	20.00	3/20/2014	24.00	3/20/2015	35.00	3/19/2016		3/20/2017	41.50	3/20/2018	41.00	3/20/2019	47.50	3/19/2020	43.750		
		3/21/2009		3/21/2010		3/21/2011	19.00	3/20/2012	16.75	3/21/2013	20.00	3/21/2014	24.00	3/21/2015		3/20/2016		3/21/2017	41.50	3/21/2018	41.00	3/21/2019	47. 5	3/20/2020	44.000		
		3/22/2009		3/22/2010		3/22/2011	19.00	3/21/2012	16.75	3/22/2013	20.00	3/22/2014		3/22/2015		3/21/2016	38.25	3/22/2017	41.25	3/22/2018	40.75	3/22/2019	47. 5	3/21/2020			
		3/23/2009	22.5	3/23/2010		3/23/2011	19.00	3/22/2012	16.75	3/23/2013		3/23/2014		3/23/2015	35.50	3/22/2016	38.25	3/23/2017	41.25	3/23/2018	40.75	3/23/2019		3/22/2020			
		3/24/2009	22.5	3/24/2010		3/24/2011	19.00	3/23/2012	16.75	3/24/2013		3/24/2014	24.50	3/24/2015	35.50	3/23/2016	38.25	3/24/2017	41.25	3/24/2018		3/24/2019		3/23/2020	44.000		
		3/25/2009	22.5	3/25/2010		3/25/2011		3/24/2012		3/25/2013		3/25/2014	24.50	3/25/2015	35.50	3/24/2016	38.25	3/25/2017		3/25/2018		3/25/2019	47. 5	3/24/2020	44.000		
		3/26/2009	22.5	3/26/2010		3/26/2011		3/25/2012		3/26/2013		3/26/2014		3/26/2015		3/25/2016		3/26/2017		3/26/2018		3/26/2019		3/25/2020	44.000		
		3/27/2009	22.5	3/27/2010		3/27/2011		3/26/2012		3/27/2013		3/27/2014	24.50	3/27/2015	35.50	3/26/2016		3/27/2017		3/27/2018	41.00	3/27/2019	47.00	3/26/2020			
		3/28/2009		3/28/2010		3/28/2011	19.00	3/27/2012	16.75	3/28/2013		3/28/2014	24.75	3/28/2015		3/27/2016		3/28/2017	41.00	3/28/2018	41.00	3/28/2019	47.00	3/27/2020	44.000		
		3/29/2009		3/29/2010		3/29/2011	19.00	3/28/2012	16.75	3/29/2013		3/29/2014		3/29/2015		3/28/2016	38.00	3/29/2017	40.75	3/29/2018	41.00	3/29/2019	46.75	3/28/2020			

		3/30/2009	22.5	3/30/2010		3/30/2011	19.00	3/29/2012	16.75	3/30/2013		3/30/2014		3/30/2015	35.50	3/29/2016	38.00	3/30/2017	40.75	3/30/2018	41.00	3/30/2019		3/29/2020			
		3/31/2009	22.5	3/31/2010		3/31/2011	19.00	3/30/2012	16.75	3/31/2013		3/31/2014	25.75	3/31/2015	35.75	3/30/2016	38.00	3/31/2017	40.75	3/31/2018		3/31/2019		3/30/2020	44.250		
		4/1/2009	22.5	4/1/2010		4/1/2011		3/31/2012		4/1/2013	21.00	4/1/2014	25.75	4/1/2015	35.75	3/31/2016	38.00	4/1/2017		4/1/2018		4/1/2019	46.50	3/31/2020	44.250		
		4/2/2009	22.5	4/2/2010		4/2/2011		4/1/2012		4/2/2013	21.00	4/2/2014	26.00	4/2/2015	35.75	4/1/2016	38.00	4/2/2017		4/2/2018	40.75	4/2/2019	46.50	4/1/2020	44.250		
		4/3/2009	22.5	4/3/2010		4/3/2011		4/2/2012	16.50	4/3/2013	21.00	4/3/2014	26.00	4/3/2015		4/2/2016		4/3/2017	40.50	4/3/2018	41.00	4/3/2019	46. 5	4/2/2020	44.250		
		4/4/2009		4/4/2010		4/4/2011	19.00	4/3/2012	16.50	4/4/2013	21.00	4/4/2014	26.25	4/4/2015		4/3/2016		4/4/2017	40.25	4/4/2018	41.25	4/4/2019	46. 5	4/3/2020	44.250		
		4/5/2009		4/5/2010		4/5/2011	19.00	4/4/2012	16.50	4/5/2013	21.00	4/5/2014		4/5/2015		4/4/2016	38.00	4/5/2017	40.25	4/5/2018	41.50	4/5/2019	46.00	4/4/2020			
		4/6/2009	22.5	4/6/2010		4/6/2011	19.00	4/5/2012	16.50	4/6/2013		4/6/2014		4/6/2015	35.75	4/5/2016	37.75	4/6/2017	40.25	4/6/2018	41.75	4/6/2019		4/5/2020			
		4/7/2009	22.5	4/7/2010		4/7/2011	19.00	4/6/2012		4/7/2013		4/7/2014	26.50	4/7/2015	35.75	4/6/2016	38.00	4/7/2017	40.25	4/7/2018		4/7/2019		4/6/2020	44.000		
		4/8/2009	22.5	4/8/2010		4/8/2011	19.00	4/7/2012		4/8/2013	20.75	4/8/2014	27.00	4/8/2015	35.75	4/7/2016	38.50	4/8/2017		4/8/2018		4/8/2019	46.00	4/7/2020	44.000		
		4/9/2009	22.5	4/9/2010		4/9/2011		4/8/2012		4/9/2013	20.75	4/9/2014	27.00	4/9/2015	35.75	4/8/2016	38.75	4/9/2017		4/9/2018	42.25	4/9/2019	46.00	4/8/2020	44.250		
		4/10/2009		4/10/2010		4/10/2011		4/9/2012	16.50	4/10/2013	20.75	4/10/2014	27.25	4/10/2015	35.50	4/9/2016		4/10/2017	40.00	4/10/2018	42.50	4/10/2019	46.00	4/9/2020	44.250		
		4/11/2009		4/11/2010		4/11/2011	18.75	4/10/2012	16.50	4/11/2013	20.75	4/11/2014	27.25	4/11/2015		4/10/2016		4/11/2017	39.75	4/11/2018	42.50	4/11/2019	46.00	4/10/2020			
		4/12/2009		4/12/2010		4/12/2011	18.75	4/11/2012	16.50	4/12/2013	20.75	4/12/2014		4/12/2015		4/11/2016	38.75	4/12/2017	39.50	4/12/2018	42.75	4/12/2019	45.75	4/11/2020			
		4/13/2009	22.5	4/13/2010		4/13/2011	18.75	4/12/2012	16.50	4/13/2013		4/13/2014		4/13/2015	35.50	4/12/2016	38.75	4/13/2017	39.50	4/13/2018	42.75	4/13/2019		4/12/2020			
		4/14/2009	22.5	4/14/2010		4/14/2011	18.75	4/13/2012	16.50	4/14/2013		4/14/2014	27.75	4/14/2015	35.50	4/13/2016	38.75	4/14/2017		4/14/2018		4/14/2019		4/13/2020	44.250		
		4/15/2009	22.5	4/15/2010		4/15/2011	18.75	4/14/2012		4/15/2013	20.75	4/15/2014	27.75	4/15/2015	35.50	4/14/2016	39.00	4/15/2017		4/15/2018		4/15/2019	45.75	4/14/2020	44.250		
		4/16/2009	22.5	4/16/2010		4/16/2011		4/15/2012		4/16/2013	20.75	4/16/2014	28.25	4/16/2015	35.50	4/15/2016	39.00	4/16/2017		4/16/2018	43.00	4/16/2019	45.50	4/15/2020	44.500		
		4/17/2009	22.5	4/17/2010		4/17/2011		4/16/2012	16.50	4/17/2013	20.75	4/17/2014	28.50	4/17/2015	35.50	4/16/2016		4/17/2017	39.75	4/17/2018	43.00	4/17/2019	45.50	4/16/2020	44.500		
		4/18/2009		4/18/2010		4/18/2011	18.75	4/17/2012	16.50	4/18/2013		4/18/2014		4/18/2015		4/17/2016		4/18/2017	39.75	4/18/2018	43.00	4/18/2019	45.50	4/17/2020	44.500		
		4/19/2009		4/19/2010		4/19/2011	18.75	4/18/2012	16.50	4/19/2013		4/19/2014		4/19/2015		4/18/2016	39.25	4/19/2017	39.75	4/19/2018	43.00	4/19/2019		4/18/2020			
		4/20/2009	22.0	4/20/2010		4/20/2011	18.75	4/19/2012	16.25	4/20/2013		4/20/2014		4/20/2015	35.25	4/19/2016	39.25	4/20/2017	39.75	4/20/2018	43.00	4/20/2019		4/19/2020			
		4/21/2009	22.0	4/21/2010		4/21/2011	18.75	4/20/2012	16.25	4/21/2013		4/21/2014	29.25	4/21/2015	35.25	4/20/2016	39.25	4/21/2017	40.00	4/21/2018		4/21/2019		4/20/2020	44.500		
		4/22/2009	22.0	4/22/2010		4/22/2011		4/21/2012		4/22/2013		4/22/2014	29.75	4/22/2015	35.25	4/21/2016	39.25	4/22/2017		4/22/2018		4/22/2019	45.50	4/21/2020	44.250		
		4/23/2009	22.0	4/23/2010		4/23/2011		4/22/2012		4/23/2013		4/23/2014	30.00	4/23/2015	35.25	4/22/2016	39.00	4/23/2017		4/23/2018	42.75	4/23/2019	45. 5	4/22/2020	44.250		
		4/24/2009	22.0	4/24/2010		4/24/2011		4/23/2012	16.25	4/24/2013		4/24/2014	30.00	4/24/2015	35.25	4/23/2016		4/24/2017	40.25	4/24/2018	42.75	4/24/2019	45. 5	4/23/2020	44.250		
		4/25/2009		4/25/2010		4/25/2011	18.75	4/24/2012	16.25	4/25/2013		4/25/2014	30.00	4/25/2015		4/24/2016		4/25/2017	40.25	4/25/2018	43.00	4/25/2019	45. 5	4/24/2020	44.250		
		4/26/2009		4/26/2010		4/26/2011	18.50	4/25/2012	16.25	4/26/2013	20.50	4/26/2014		4/26/2015		4/25/2016	39.00	4/26/2017	40.25	4/26/2018	43.00	4/26/2019	45. 5	4/25/2020			
		4/27/2009	22.0	4/27/2010		4/27/2011	18.50	4/26/2012	16.25	4/27/2013		4/27/2014		4/27/2015	35.50	4/26/2016	39.00	4/27/2017	40.25	4/27/2018	43.00	4/27/2019		4/26/2020			
		4/28/2009	22.0	4/28/2010		4/28/2011	18.50	4/27/2012	16.25	4/28/2013		4/28/2014	30.25	4/28/2015	35.75	4/27/2016	39.00	4/28/2017	40.25	4/28/2018		4/28/2019		4/27/2020	44.250		
		4/29/2009	22.0	4/29/2010		4/29/2011		4/28/2012		4/29/2013	20.50	4/29/2014	30.25	4/29/2015	35.75	4/28/2016	39.00	4/29/2017		4/29/2018		4/29/2019	45.00	4/28/2020	44.250		
		4/30/2009	22.0	4/30/2010		4/30/2011		4/29/2012		4/30/2013	20.50	4/30/2014	30.25	4/30/2015	35.75	4/29/2016	38.75	4/30/2017		4/30/2018	43.50	4/30/2019	45.00	4/29/2020	44.000		
		5/1/2009	21.5	5/1/2010		5/1/2011		4/30/2012	16.25	5/1/2013	20.50	5/1/2014	30.25	5/1/2015	35.75	4/30/2016		5/1/2017	41.00	5/1/2018	43.50	5/1/2019	45.00	4/30/2020	44.000		
		5/2/2009		5/2/2010		5/2/2011	18.50	5/1/2012	16.25	5/2/2013	20.50	5/2/2014	30.25	5/2/2015		5/1/2016		5/2/2017	41.00	5/2/2018	43.50	5/2/2019	45.00	5/1/2020	44.000		
		5/3/2009		5/3/2010		5/3/2011	18.50	5/2/2012	16.25	5/3/2013	20.25	5/3/2014		5/3/2015		5/2/2016	38.75	5/3/2017	41.00	5/3/2018	43.50	5/3/2019	45.00	5/2/2020			
		5/4/2009	21.5	5/4/2010		5/4/2011	18.50	5/3/2012	16.25	5/4/2013		5/4/2014		5/4/2015	36.00	5/3/2016	38.75	5/4/2017	41.00	5/4/2018	43.50	5/4/2019		5/3/2020			
		5/5/2009	21.5	5/5/2010		5/5/2011	18.50	5/4/2012	16.25	5/5/2013		5/5/2014	30.25	5/5/2015	36.00	5/4/2016	38.75	5/5/2017	41.00	5/5/2018		5/5/2019		5/4/2020	43.750		
		5/6/2009	21.5	5/6/2010		5/6/2011		5/5/2012		5/6/2013	20.25	5/6/2014	30.25	5/6/2015	36.00	5/5/2016	38.50	5/6/2017		5/6/2018		5/6/2019	45. 5	5/5/2020	43.750		
		5/7/2009	21.5	5/7/2010		5/7/2011		5/6/2012		5/7/2013		5/7/2014	30.25	5/7/2015	36.00	5/6/2016	38.50	5/7/2017		5/7/2018	43.75	5/7/2019	45. 5	5/6/2020	43.750		
		5/8/2009	21.5	5/8/2010		5/8/2011		5/7/2012	16.50	5/8/2013		5/8/2014	30.00	5/8/2015	36.00	5/7/2016		5/8/2017	41.00	5/8/2018	43.75	5/8/2019	45. 5	5/7/2020	43.750		
		5/9/2009		5/9/2010		5/9/2011	18.50	5/8/2012	16.50	5/9/2013	20.25	5/9/2014		5/9/2015		5/8/2016		5/9/2017	41.00	5/9/2018	43.75	5/9/2019	45. 5	5/8/2020	43.500		
		5/10/2009		5/10/2010		5/10/2011	18.50	5/9/2012	16.50	5/10/2013	20.25	5/10/2014		5/10/2015		5/9/2016	39.00	5/10/2017	41.00	5/10/2018	43.75	5/10/2019	45.00	5/9/2020			
		5/11/2009	21.0	5/11/2010		5/11/2011	18.50	5/10/2012	16.50	5/11/2013		5/11/2014		5/11/2015	36.25	5/10/2016	39.50	5/11/2017	41.00	5/11/2018	43.75	5/11/2019		5/10/2020			
		5/12/2009	21.0	5/12/2010		5/12/2011	18.50	5/11/2012	16.50	5/12/2013		5/12/2014	30.25	5/12/2015	36.25	5/11/2016	40.00	5/12/2017	41.00	5/12/2018		5/12/2019		5/11/2020	43.500		
		5/13/2009	21.0	5/13/2010		5/13/2011	18.50	5/12/2012		5/13/2013	22.50	5/13/2014	30.50	5/13/2015	36.25	5/12/2016	40.25	5/13/2017		5/13/2018		5/13/2019	45.00	5/12/2020	43.250		
		5/14/2009	21.0	5/14/2010		5/14/2011		5/13/2012		5/14/2013	22.50	5/14/2014	30.50	5/14/2015	36.25	5/13/2016	40.25	5/14/2017		5/14/2018	43.75	5/14/2019	45. 5	5/13/2020	43.250		
		5/15/2009	21.0	5/15/2010		5/15/2011		5/14/2012	16.50	5/15/2013	22.50	5/15/2014	30.50	5/15/2015	36.25	5/14/2016		5/15/2017	41.00	5/15/2018	44.00	5/15/2019	4 . 5	5/14/2020	43.250		
		5/16/2009		5/16/2010		5/16/2011	18.25	5/15/2012	16.50	5/16/2013	22.50	5/16/2014	30.75	5/16/2015		5/15/2016		5/16/2017	41.00	5/16/2018	44.00	5/16/2019	45.50	5/15/2020	43.250		
		5/17/2009		5/17/2010		5/17/2011	18.25	5/16/2012	16.50	5/17/2013	22.50	5/17/2014		5/17/2015		5/16/2016	40.25	5/17/2017	41.00	5/17/2018	44.00	5/17/2019	45.50	5/16/2020			
		5/18/2009	21.0	5/18/2010		5/18/2011	18.25	5/17/2012	16.25	5/18/2013		5/18/2014		5/18/2015	36.25	5/17/2016	40.25	5/18/2017	40.75	5/18/2018	44.00	5/18/2019		5/17/2020			
		5/19/2009	21.0	5/19/2010	19.5	5/19/2011	18.25	5/18/2012	16.25	5/19/2013		5/19/2014	30.75	5/19/2015	36.25	5/18/2016	40.25	5/19/2017	40.75	5/19/2018		5/19/2019		5/18/2020	43.000		
		5/20/2009	20.5	5/20/2010	19.5	5/20/2011		5/19/2012		5/20/2013	22.75	5/20/2014	30.75	5/20/2015	36.25	5/19/2016	40.25	5/20/2017		5/20/2018		5/20/2019	45.75	5/19/2020	43.000		
		5/21/2009	20.5	5/21/2010	19.5	5/21/2011		5/20/2012		5/21/2013	22.75	5/21/2014	30.75	5/21/2015	36.00	5/20/2016	40.00	5/21/2017		5/21/2018	43.75	5/21/2019	45.75	5/20/2020	43.000		
		5/22/2009	20.5	5/22/2010		5/22/2011		5/21/2012	16.25	5/22/2013	22.75	5/22/2014	30.50	5/22/2015	36.00	5/21/2016		5/22/2017	40.75	5/22/2018	43.75	5/22/2019	45.75	5/21/2020	43.000		
		5/23/2009		5/23/2010		5/23/2011	18.25	5/22/2012	16.25	5/23/2013	22.75	5/23/2014	30.50	5/23/2015		5/22/2016		5/23/2017	40.75	5/23/2018	43.75	5/23/2019	45.75	5/22/2020	42.750		
		5/24/2009		5/24/2010	19.5	5/24/2011	18.25	5/23/2012	16.25	5/24/2013	22.75	5/24/2014		5/24/2015		5/23/2016	40.00	5/24/2017	40.75	5/24/2018	43.75	5/24/2019	45.75	5/23/2020			
		5/25/2009		5/25/2010	19.5	5/25/2011	18.25	5/24/2012	16.25	5/25/2013		5/25/2014		5/25/2015		5/24/2016	40.00	5/25/2017	40.75	5/25/2018	43.75	5/25/2019		5/24/2020			
		5/26/2009	20.0	5/26/2010	19.5	5/26/2011	18.25	5/25/2012	16.00	5/26/2013		5/26/2014		5/26/2015	36.00	5/25/2016	40.00	5/26/2017	40.75	5/26/2018		5/26/2019		5/25/2020			
		5/27/2009	20.0	5/27/2010	19.5	5/27/2011	18.00	5/26/2012		5/27/2013		5/27/2014	31.00	5/27/2015	36.00	5/26/2016	39.75	5/27/2017		5/27/2018		5/27/2019	45.50	5/26/2020	42.750		
		5/28/2009	20.0	5/28/2010	19.5	5/28/2011		5/27/2012		5/28/2013	22.75	5/28/2014	31.00	5/28/2015	36.00	5/27/2016	39.75	5/28/2017		5/28/2018		5/28/2019	45.50	5/27/2020	42.500		
		5/29/2009	20.0	5/29/2010		5/29/2011		5/28/2012		5/29/2013	22.75	5/29/2014	31.00	5/29/2015	36.00	5/28/2016		5/29/2017		5/29/2018	43.50	5/29/2019	45.50	5/28/2020	42.500		
		5/30/2009		5/30/2010		5/30/2011		5/29/2012	16.00	5/30/2013	22.50	5/30/2014	31.00	5/30/2015		5/29/2016		5/30/2017	40.50	5/30/2018	43.50	5/30/2019	45.50	5/29/2020	42.500		
		5/31/2009		5/31/2010		5/31/2011	18.00	5/30/2012	16.00	5/31/2013	22.50	5/31/2014		5/31/2015		5/30/2016		5/31/2017	40.50	5/31/2018	43.25	5/31/2019	45.50	5/30/2020			
		6/1/2009	19.5	6/1/2010	19.5	6/1/2011	18.00	5/31/2012	16.00	6/1/2013		6/1/2014		6/1/2015	36.25	5/31/2016	40.25	6/1/2017	40.50	6/1/2018	43.25	6/1/2019		5/31/2020			
		6/2/2009	19.5	6/2/2010	19.0	6/2/2011	18.00	6/1/2012	16.00	6/2/2013		6/2/2014	30.75	6/2/2015	36.25	6/1/2016	40.25	6/2/2017	40.50	6/2/2018		6/2/2019		6/1/2020	42.250		
		6/3/2009	19.5	6/3/2010	19.0	6/3/2011		6/2/2012		6/3/2013	22.50	6/3/2014	30.75	6/3/2015	36.25	6/2/2016	40.25	6/3/2017		6/3/2018		6/3/2019	45. 5	6/2/2020	42.250		
		6/4/2009	19.5	6/4/2010	19.0	6/4/2011		6/3/2012		6/4/2013	22.50	6/4/2014	30.75	6/4/2015	36.25	6/3/2016	40.25	6/4/2017		6/4/2018	43.00	6/4/2019	45. 5	6/3/2020	42.250		
		6/5/2009	19.5	6/5/2010		6/5/2011		6/4/2012	15.75	6/5/2013	22.50	6/5/2014	30.75	6/5/2015	36.25	6/4/2016		6/5/2017	40.25	6/5/2018	43.00	6/5/2019	45.00	6/4/2020	42.250		
		6/6/2009		6/6/2010		6/6/2011	18.00	6/5/2012	15.75	6/6/2013	22.50	6/6/2014	30.50	6/6/2015		6/5/2016		6/6/2017	40.25	6/6/2018	43.25	6/6/2019	45.00	6/5/2020	42.000		
		6/7/2009		6/7/2010	19.0	6/7/2011	18.00	6/6/2012	15.75	6/7/2013	22.25	6/7/2014		6/7/2015		6/6/2016	40.25	6/7/2017	40.25	6/7/2018	43. 5	6/7/2019	45.00	6/6/2020			
		6/8/2009	19.5	6/8/2010	19.0	6/8/2011	18.00	6/7/2012	15.75	6/8/2013		6/8/2014		6/8/2015	36.25	6/7/2016	40.25	6/8/2017	40.00	6/8/2018	43. 5	6/8/2019		6/7/2020			
		6/9/2009	19.0	6/9/2010	19.0	6/9/2011	18.00	6/8/2012	15.75	6/9/2013		6/9/2014	30.50	6/9/2015	36.00	6/8/2016	40.25	6/9/2017	39.75	6/9/2018		6/9/2019		6/8/2020	42.000		
		6/10/2009	19.0	6/10/2010	19.0	6/10/2011		6/9/2012		6/10/2013	22.25	6/10/2014	30.50	6/10/2015	36.00	6/9/2016	40.00	6/10/2017		6/10/2018		6/10/2019	44.75	6/9/2020	41.750		
		6/11/2009		6/11/2010		6/11/2011		6/10/2012		6/11/2013		6/11/2014		6/11/2015		6/10/2016		6/11/2017		6/11/2018		6/11/2019		6/10/2020	41.750		
		6/12/2009	19.0	6/12/2010		6/12/2011		6/11/2012		6/12/2013	22.25	6/12/2014	30.25	6/12/2015	36.00	6/11/2016		6/12/2017		6/12/2018	43.00	6/12/2019	44.50	6/11/2020			
		6/13/2009		6/13/2010		6/13/2011	17.75	6/12/2012	15.50	6/13/2013	22.00	6/13/2014	30.25	6/13/2015		6/12/2016		6/13/2017	39.50	6/13/2018	42.75	6/13/2019	44.50	6/12/2020	41.500		
		6/14/2009		6/14/2010	18.5	6/14/2011	17.00	6/13/2012	15.50	6/14/2013	22.00	6/14/2014		6/14/2015		6/13/2016	40.00	6/14/2017	39.50	6/14/2018	42.75	6/14/2019	44. 5	6/13/2020			
		6/15/2009	18.5	6/15/2010	18.5	6/15/2011	17.75	6/14/2012	15.00	6/15/2013		6/15/2014		6/15/2015	35.75	6/14/2016	40.00	6/15/2017	39.50	6/15/2018	42.75	6/15/2019		6/14/2020			
		6/16/2009	18.5	6/16/2010	18.5	6/16/2011	17.75	6/15/2012	15.50	6/16/2013		6/16/2014	30.25	6/16/2015	35.75	6/15/2016	40.00	6/16/2017	39.25	6/16/2018		6/16/2019		6/15/2020	41.250		
		6/17/2009	18.5	6/17/2010	18.5	6/17/2011		6/16/2012		6/17/2013	22.00	6/17/2014	30.25	6/17/2015	35.75	6/16/2016	40.00	6/17/2017		6/17/2018		6/17/2019	44.00	6/16/2020	41.250		
		6/18/2009	18.5	6/18/2010		6/18/2011		6/17/2012		6/18/2013	22.00	6/18/2014	30.25	6/18/2015	35.75	6/17/2016	40.00	6/18/2017		6/18/2018	42.50	6/18/2019	44.00	6/17/2020	41.250		
		6/19/2009	18.5	6/19/2010		6/19/2011		6/18/2012	15.50	6/19/2013	22.00	6/19/2014	30.25	6/19/2015	35.75	6/18/2016		6/19/2017	39.00	6/19/2018	42.50	6/19/2019	44.00	6/18/2020	41.000		
		6/20/2009		6/20/2010		6/20/2011	17.50	6/19/2012	15.50	6/20/2013	22.00	6/20/2014	30.00	6/20/2015		6/19/2016		6/20/2017	39.00	6/20/2018	42.50	6/20/2019	43.75	6/19/2020	41.000		
		6/21/2009		6/21/2010	18.0	6/21/2011	17.50	6/20/2012	15.50	6/21/2013	21.75	6/21/2014		6/21/2015		6/20/2016	40.00	6/21/2017	38.75	6/21/2018	42.25	6/21/2019	43.75	6/20/2020			
		6/22/2009	18.0	6/22/2010	18.0	6/22/2011	17.50	6/21/2012	15.50	6/22/2013		6/22/2014		6/22/2015	35.50	6/21/2016	40.00	6/22/2017	38.75	6/22/2018	42.25	6/22/2019		6/21/2020			
		6/23/2009	18.0	6/23/2010	18.0	6/23/2011	17.50	6/22/2012	15.50	6/23/2013		6/23/2014	30.00	6/23/2015	35.50	6/22/2016	40.00	6/23/2017	38.75	6/23/2018		6/23/2019		6/22/2020	41.000		

		6/24/2009	18.0	6/24/2010	18.0	6/24/2011		6/23/2012		6/24/2013		6/24/2014	30.00	6/24/2015	35.50	6/23/2016	40.00	6/24/2017		6/24/2018		6/24/2019	43.50	6/23/2020	41.000				
		6/25/2009	18.0	6/25/2010		6/25/2011		6/24/2012		6/25/2013	21.75	6/25/2014	29.75	6/25/2015	35.25	6/24/2016	40.00	6/25/2017		6/25/2018	42.00	6/25/2019	43. 5	6/24/2020	40.750				
		6/26/2009	18.0	6/26/2010		6/26/2011		6/25/2012	15.75	6/26/2013	21.75	6/26/2014	29.75	6/26/2015	35.25	6/25/2016		6/26/2017	38.25	6/26/2018	41.75	6/26/2019	43.50	6/25/2020	40.750				
		6/27/2009		6/27/2010		6/27/2011	17.50	6/26/2012	15.75	6/27/2013	21.75	6/27/2014	29.75	6/27/2015		6/26/2016		6/27/2017	38.25	6/27/2018	41.75	6/27/2019	44.00	6/26/2020	40.750				
		6/28/2009		6/28/2010	17.5	6/28/2011	17.50	6/27/2012	15.75	6/28/2013	21.75	6/28/2014		6/28/2015		6/27/2016	39.75	6/28/2017	38.00	6/28/2018	41.50	6/28/2019	44.00	6/27/2020					
		6/29/2009	18.0	6/29/2010	17.5	6/29/2011		6/28/2012	16.00	6/29/2013		6/29/2014		6/29/2015	35.25	6/28/2016	39.75	6/29/2017	37.75	6/29/2018	41.50	6/29/2019		6/28/2020					
		6/30/2009	18.0	6/30/2010	17.5	6/30/2011	17.25	6/29/2012	16.00	6/30/2013		6/30/2014	29.50	6/30/2015	35.00	6/29/2016	39.75	6/30/2017	37.75	6/30/2018		6/30/2019		6/29/2020	40.500				
		7/1/2009	17.5	7/1/2010	17.5	7/1/2011	17.25	6/30/2012		7/1/2013	21.80	7/1/2014	29.50	7/1/2015	35.00	6/30/2016	39.75	7/1/2017		7/1/2018		7/1/2019	44.50	6/30/2020	40.500				
		7/2/2009	17.5	7/2/2010	17.5	7/2/2011		7/1/2012		7/2/2013	21.50	7/2/2014	29.50	7/2/2015	35.00	7/1/2016	39.75	7/2/2017		7/2/2018	41.25	7/2/2019	44.50	7/1/2020	40.500				
		7/3/2009		7/3/2010		7/3/2011		7/2/2012	16.00	7/3/2013	21.50	7/3/2014	29.25	7/3/2015		7/2/2016		7/3/2017	37.50	7/3/2018	41.25	7/3/2019	44. 5	7/2/2020	40.250				
		7/4/2009		7/4/2010		7/4/2011		7/3/2012	16.00	7/4/2013		7/4/2014		7/4/2015		7/3/2016		7/4/2017		7/4/2018		7/4/2019		7/3/2020					
		7/5/2009		7/5/2010		7/5/2011	17.25	7/4/2012		7/5/2013	21.25	7/5/2014		7/5/2015		7/4/2016		7/5/2017	37.25	7/5/2018	41.00	7/5/2019	44.00	7/4/2020					
		7/6/2009	17.0	7/6/2010	16.5	7/6/2011	17.25	7/5/2012	16.00	7/6/2013		7/6/2014		7/6/2015	34.75	7/5/2016	39.50	7/6/2017	37.25	7/6/2018	41.00	7/6/2019		7/5/2020					
		7/7/2009	17.0	7/7/2010	16.5	7/7/2011	17.25	7/6/2012	16.00	7/7/2013		7/7/2014	28.75	7/7/2015	34.75	7/6/2016	39.50	7/7/2017	37.00	7/7/2018		7/7/2019		7/6/2020	40.250				
		7/8/2009	17.0	7/8/2010	16.5	7/8/2011	17.25	7/7/2012		7/8/2013	21.25	7/8/2014	28.75	7/8/2015	34.50	7/7/2016	39.50	7/8/2017		7/8/2018		7/8/2019	43.75	7/7/2020	40.000				
		7/9/2009	17.0	7/9/2010	16.5	7/9/2011		7/8/2012		7/9/2013	21.25	7/9/2014	28.50	7/9/2015	34.50	7/8/2016	39.50	7/9/2017		7/9/2018	41.25	7/9/2019	43.75	7/8/2020	40.000				
		7/10/2009	17.0	7/10/2010		7/10/2011		7/9/2012	16.00	7/10/2013	21.00	7/10/2014	28.50	7/10/2015	34.50	7/9/2016		7/10/2017	36.50	7/10/2018	41.25	7/10/2019	43.75	7/9/2020	40.000				
		7/11/2009		7/11/2010		7/11/2011	17.00	7/10/2012	16.00	7/11/2013	21.00	7/11/2014	28.50	7/11/2015		7/10/2016		7/11/2017	36.50	7/11/2018	41.25	7/11/2019	43.50	7/10/2020	40.000				
		7/12/2009		7/12/2010	16.5	7/12/2011	17.00	7/11/2012	16.25	7/12/2013	21.00	7/12/2014		7/12/2015		7/11/2016	39.25	7/12/2017	36.25	7/12/2018	41.25	7/12/2019	43.50	7/11/2020					
		7/13/2009	17.0	7/13/2010	16.5	7/13/2011	17.00	7/12/2012	16.25	7/13/2013		7/13/2014		7/13/2015	34.50	7/12/2016	39.25	7/13/2017	36.25	7/13/2018	41.00	7/13/2019		7/12/2020					
		7/14/2009	17.0	7/14/2010	16.5	7/14/2011	17.00	7/13/2012	16.25	7/14/2013		7/14/2014	28.25	7/14/2015	34.50	7/13/2016	39.25	7/14/2017	36.00	7/14/2018		7/14/2019		7/13/2020	39.750				
		7/15/2009	17.0	7/15/2010	16.0	7/15/2011	17.00	7/14/2012		7/15/2013	21.00	7/15/2014	28.25	7/15/2015	34.25	7/14/2016	39.25	7/15/2017		7/15/2018		7/15/2019	43.00	7/14/2020	39.750				
		7/16/2009	17.0	7/16/2010		7/16/2011		7/15/2012		7/16/2013	20.75	7/16/2014	28.25	7/16/2015	34.25	7/15/2016	39.25	7/16/2017		7/16/2018	40.75	7/16/2019	4 .75	7/15/2020	39.750				
		7/17/2009	17.0	7/17/2010		7/17/2011		7/16/2012	16.25	7/17/2013	20.75	7/17/2014	28.00	7/17/2015	34.25	7/16/2016		7/17/2017	35.75	7/17/2018	40.75	7/17/2019	4 .75	7/16/2020	39.500				
		7/18/2009		7/18/2010		7/18/2011	17.00	7/17/2012	16.25	7/18/2013	20.75	7/18/2014	28.00	7/18/2015		7/17/2016		7/18/2017	35.50	7/18/2018	40.75	7/18/2019	4 .75	7/17/2020	39.500				
		7/19/2009		7/19/2010	16.0	7/19/2011	17.00	7/18/2012	16.50	7/19/2013	20.75	7/19/2014		7/19/2015		7/18/2016	39.50	7/19/2017	35.50	7/19/2018	40.50	7/19/2019	4 .50	7/18/2020					
		7/20/2009	16.5	7/20/2010	16.0	7/20/2011	17.00	7/19/2012	16.50	7/20/2013		7/20/2014		7/20/2015	34.25	7/19/2016	39.50	7/20/2017	35.50	7/20/2018	40.50	7/20/2019		7/19/2020					
		7/21/2009	16.5	7/21/2010	16.0	7/21/2011	16.75	7/20/2012	16.50	7/21/2013		7/21/2014	28.75	7/21/2015	34.00	7/20/2016	39.50	7/21/2017	35.50	7/21/2018		7/21/2019		7/20/2020	39.250				
		7/22/2009	16.5	7/22/2010	16.0	7/22/2011	16.75	7/21/2012		7/22/2013	20.25	7/22/2014	29.00	7/22/2015	34.00	7/21/2016	39.50	7/22/2017		7/22/2018		7/22/2019	4 . 5	7/21/2020	39.000				
		7/23/2009	16.5	7/23/2010		7/23/2011		7/22/2012		7/23/2013	20.25	7/23/2014	29.00	7/23/2015	34.00	7/22/2016	39.50	7/23/2017		7/23/2018	40.25	7/23/2019	4 . 5	7/22/2020	39.000				
		7/24/2009	16.0	7/24/2010		7/24/2011		7/23/2012	16.5	7/24/2013	20.25	7/24/2014	29.00	7/24/2015	34.00	7/23/2016		7/24/2017	35.25	7/24/2018	40.25	7/24/2019	4 . 5	7/23/2020	38.750				
		7/25/2009		7/25/2010		7/25/2011	16.75	7/24/2012	16.50	7/25/2013	20.25	7/25/2014	29.00	7/25/2015		7/24/2016		7/25/2017	35.50	7/25/2018	40.25	7/25/2019	4 .00	7/24/2020	38.750				
		7/26/2009		7/26/2010	15.5	7/26/2011	16.75	7/25/2012	16.50	7/26/2013	20.00	7/26/2014		7/26/2015		7/25/2016	40.25	7/26/2017	35.50	7/26/2018	40.25	7/26/2019	4 .00	7/25/2020					
		7/27/2009	16.0	7/27/2010	15.5	7/27/2011	16.75	7/26/2012	16.50	7/27/2013		7/27/2014		7/27/2015	33.75	7/26/2016	40.25	7/27/2017	35.50	7/27/2018	40.00	7/27/2019		7/26/2020					
		7/28/2009	16.0	7/28/2010	15.5	7/28/2011	16.75	7/27/2012	16.25	7/28/2013		7/28/2014	29.00	7/28/2015	33.75	7/27/2016	40.25	7/28/2017	35.50	7/28/2018		7/28/2019		7/27/2020	38.750				
		7/29/2009	16.0	7/29/2010	15.5	7/29/2011	16.50	7/28/2012		7/29/2013	19.75	7/29/2014	29.00	7/29/2015	33.75	7/28/2016	40.25	7/29/2017		7/29/2018		7/29/2019	41.75	7/28/2020	38.750				
		7/30/2009	15.5	7/30/2010	15.5	7/30/2011		7/29/2012		7/30/2013	19.75	7/30/2014	29.00	7/30/2015	33.50	7/29/2016	40.25	7/30/2017		7/30/2018	40.00	7/30/2019	41.50	7/29/2020	38.500				
		7/31/2009	15.5	7/31/2010		7/31/2011		7/30/2012	16.25	7/31/2013	20.00	7/31/2014	28.75	7/31/2015	33.50	7/30/2016		7/31/2017	35.25	7/31/2018	40.00	7/31/2019	41.50	7/30/2020	38.500				
		8/1/2009		8/1/2010		8/1/2011	16.50	7/31/2012	16.25	8/1/2013	20.00	8/1/2014	28.75	8/1/2015		7/31/2016		8/1/2017	35.00	8/1/2018	39.75	8/1/2019	41.50	7/31/2020	38.500				
8/1/2008	16.5	8/2/2009		8/2/2010	15.5	8/2/2011	16.50	8/1/2012	16.00	8/2/2013	20.00	8/2/2014		8/2/2015		8/1/2016	40.00	8/2/2017	34.75	8/2/2018	39.75	8/2/2019	41. 5	8/1/2020					
8/2/2008		8/3/2009	15.0	8/3/2010	15.0	8/3/2011	16.50	8/2/2012	16.00	8/3/2013		8/3/2014		8/3/2015	33.50	8/2/2016	40.00	8/3/2017	34.75	8/3/2018	39.75	8/3/2019		8/2/2020					
8/3/2008		8/4/2009	15.0	8/4/2010	15.0	8/4/2011	16.50	8/3/2012	16.00	8/4/2013		8/4/2014	28.75	8/4/2015	33.25	8/3/2016	40.00	8/4/2017	34.75	8/4/2018		8/4/2019		8/3/2020	38.250				
8/4/2008	16.0	8/5/2009	15.0	8/5/2010	15.0	8/5/2011	16.50	8/4/2012		8/5/2013	19.50	8/5/2014	28.50	8/5/2015	33.25	8/4/2016	40.00	8/5/2017		8/5/2018		8/5/2019	41.00	8/4/2020	38.000				
8/5/2008	16.5	8/6/2009	15.0	8/6/2010		8/6/2011		8/5/2012		8/6/2013	19.50	8/6/2014	28.50	8/6/2015	33.25	8/5/2016	40.00	8/6/2017		8/6/2018	39.50	8/6/2019	41.00	8/5/2020	38.000				
8/6/2008	16.5	8/7/2009	15.0	8/7/2010		8/7/2011		8/6/2012	16.00	8/7/2013	19.25	8/7/2014	28.50	8/7/2015	33.50	8/6/2016		8/7/2017	34.25	8/7/2018	39.50	8/7/2019	40.75	8/6/2020	37.750				
8/7/2008	16.5	8/8/2009		8/8/2010		8/8/2011	16.25	8/7/2012	16.00	8/8/2013	19.25	8/8/2014		8/8/2015		8/7/2016		8/8/2017	34.00	8/8/2018	39.50	8/8/2019	40.75	8/7/2020	37.750				
8/8/2008	16.5	8/9/2009		8/9/2010	15.0	8/9/2011	16.25	8/8/2012	16.00	8/9/2013	19.25	8/9/2014		8/9/2015		8/8/2016	40.25	8/9/2017	34.00	8/9/2018	39.50	8/9/2019	40.75	8/8/2020					
8/9/2008		8/10/2009	15.0	8/10/2010	15.0	8/10/2011	16.25	8/9/2012	16.00	8/10/2013		8/10/2014		8/10/2015	33.50	8/9/2016	40.25	8/10/2017	33.75	8/10/2018	39.50	8/10/2019		8/9/2020					
8/10/2008		8/11/2009	15.0	8/11/2010	15.0	8/11/2011	16.25	8/10/2012	15.75	8/11/2013		8/11/2014	29.00	8/11/2015	33.50	8/10/2016	40.25	8/11/2017	33.75	8/11/2018		8/11/2019		8/10/2020	37.500				
8/11/2008	16.5	8/12/2009	15.0	8/12/2010	15.0	8/12/2011	16.25	8/11/2012		8/12/2013	19.25	8/12/2014	29.00	8/12/2015	33.50	8/11/2016	40.25	8/12/2017		8/12/2018		8/12/2019	40.50	8/11/2020	37.500				
8/12/2008	16.5	8/13/2009	15.5	8/13/2010	14.5	8/13/2011		8/12/2012		8/13/2013	19.25	8/13/2014	28.75	8/13/2015	33.50	8/12/2016	40.25	8/13/2017		8/13/2018	39.50	8/13/2019	40.50	8/12/2020	37.250				
8/13/2008	16.5	8/14/2009	15.5	8/14/2010		8/14/2011		8/13/2012	15.75	8/14/2013		8/14/2014	28.75	8/14/2015	33.25	8/13/2016		8/14/2017	33.50	8/14/2018	39. 50	8/14/2019	40.00	8/13/2020	37.250				
8/14/2008	16.5	8/15/2009		8/15/2010		8/15/2011	16.25	8/14/2012	15.75	8/15/2013		8/15/2014		8/15/2015		8/14/2016		8/15/2017	33.25	8/15/2018	39. 50	8/15/2019	40.00	8/14/2020	37.000				
8/15/2008		8/16/2009		8/16/2010	14.5	8/16/2011	16.00	8/15/2012	15.75	8/16/2013		8/16/2014		8/16/2015		8/15/2016	40.25	8/16/2017	33.25	8/16/2018	39. 50	8/16/2019		8/15/2020					
8/16/2008		8/17/2009	15.5	8/17/2010	14.5	8/17/2011		8/16/2012	15.75	8/17/2013		8/17/2014		8/17/2015	33.25	8/16/2016	40.00	8/17/2017	33.00	8/17/2018		8/17/2019		8/16/2020					
8/17/2008		8/18/2009	15.5	8/18/2010	14.5	8/18/2011	16.00	8/17/2012		8/18/2013		8/18/2014	28.75	8/18/2015	33.25	8/17/2016	40.00	8/18/2017		8/18/2018		8/18/2019		8/17/2020	36.750				
8/18/2008	16.5	8/19/2009	15.5	8/19/2010	14.5	8/19/2011		8/18/2012		8/19/2013		8/19/2014	28.75	8/19/2015	33.25	8/18/2016	39.75	8/19/2017		8/19/2018		8/19/2019	39.75	8/18/2020	36.750				
8/19/2008	16.5	8/20/2009	15.5	8/20/2010		8/20/2011		8/19/2012		8/20/2013		8/20/2014	28.50	8/20/2015	33.25	8/19/2016		8/20/2017		8/20/2018	39.25	8/20/2019	39.50	8/19/2020	36.500				
8/20/2008	16.5	8/21/2009		8/21/2010		8/21/2011		8/20/2012	15.50	8/21/2013		8/21/2014	28.50	8/21/2015		8/20/2016		8/21/2017	32.25	8/21/2018	39.00	8/21/2019	39.50	8/20/2020	36.500				
8/21/2008	16.5	8/22/2009		8/22/2010		8/22/2011	16.00	8/21/2012	15.50	8/22/2013		8/22/2014		8/22/2015		8/21/2016		8/22/2017	32.25	8/22/2018		8/22/2019	39.50	8/21/2020					
8/22/2008	16.5	8/23/2009		8/23/2010	14.5	8/23/2011	15.75	8/22/2012	15.00	8/23/2013		8/23/2014		8/23/2015		8/22/2016	39.50	8/23/2017	32.25	8/23/2018		8/23/2019	39. 5	8/22/2020					
8/23/2008		8/24/2009	15.5	8/24/2010	14.5	8/24/2011	15.75	8/23/2012	15.50	8/24/2013		8/24/2014		8/24/2015	33.75	8/23/2016	39.50	8/24/2017	32.25	8/24/2018		8/24/2019		8/23/2020					
8/24/2008		8/25/2009	15.0	8/25/2010	14.5	8/25/2011	15.75	8/24/2012	15.50	8/25/2013		8/25/2014	28.50	8/25/2015	34.00	8/24/2016	39.50	8/25/2017	32.00	8/25/2018		8/25/2019		8/24/2020	36.250				
8/25/2008	16.5	8/26/2009	15.0	8/26/2010	14.5	8/26/2011	15.75	8/25/2012		8/26/2013		8/26/2014	28.50	8/26/2015	34.00	8/25/2016	39.50	8/26/2017		8/26/2018		8/26/2019	39. 5	8/25/2020	36.250				
8/26/2008		8/27/2009	15.0	8/27/2010		8/27/2011		8/26/2012		8/27/2013		8/27/2014	28.50	8/27/2015	34.25	8/26/2016	39.50	8/27/2017		8/27/2018	40.50	8/27/2019	39.00	8/26/2020	36.000				
8/27/2008	16.5	8/28/2009	15.0	8/28/2010		8/28/2011		8/27/2012	15.25	8/28/2013		8/28/2014	28.50	8/28/2015	34.25	8/27/2016		8/28/2017	31.75	8/28/2018	40.50	8/28/2019	39.00	8/27/2020	36.000				
8/28/2008	16.5	8/29/2009		8/29/2010		8/29/2011	15.50	8/28/2012	15.25	8/29/2013		8/29/2014	28.50	8/29/2015		8/28/2016		8/29/2017	31.75	8/29/2018	40.25	8/29/2019	39.00	8/28/2020	36.000				
8/29/2008	16.5	8/30/2009		8/30/2010	14.0	8/30/2011	15.50	8/29/2012	15.25	8/30/2013		8/30/2014		8/30/2015		8/29/2016	39.75	8/30/2017	31.75	8/30/2018	40.25	8/30/2019	38.75	8/29/2020					
8/30/2008		8/31/2009	15.0	8/31/2010	14.0	8/31/2011	15.50	8/30/2012	15.25	8/31/2013		8/31/2014		8/31/2015	34.75	8/30/2016	40.00	8/31/2017	31.75	8/31/2018	40.25	8/31/2019		8/30/2020					
8/31/2008		9/1/2009	15.0	9/1/2010	14.0	9/1/2011	15.50	8/31/2012	15.00	9/1/2013		9/1/2014		9/1/2015	35.00	8/31/2016	40.25	9/1/2017	31.50	9/1/2018		9/1/2019		8/31/2020	35.750				
9/1/2008		9/2/2009	15.0	9/2/2010	14.0	9/2/2011	15.25	9/1/2012		9/2/2013		9/2/2014	28.25	9/2/2015	35.25	9/1/2016	40.50	9/2/2017		9/2/2018		9/2/2019		9/1/2020	35.500				
9/2/2008	16.5	9/3/2009	14.5	9/3/2010	14.0	9/3/2011		9/2/2012		9/3/2013		9/3/2014	28.25	9/3/2015	35.25	9/2/2016	40.50	9/3/2017		9/3/2018		9/3/2019	38.50	9/2/2020	35.500				
9/3/2008	16.5	9/4/2009	14.5	9/4/2010		9/4/2011		9/3/2012		9/4/2013		9/4/2014	28.25	9/4/2015	35.50	9/3/2016		9/4/2017		9/4/2018	40.25	9/4/2019	38. 5	9/3/2020	35.500				
9/4/2008	16.5	9/5/2009		9/5/2010		9/5/2011		9/4/2012	15.00	9/5/2013	18.00	9/5/2014	28.25	9/5/2015		9/4/2016		9/5/2017	31.25	9/5/2018	40.25	9/5/2019	38. 5	9/4/2020	35.250				
9/5/2008	16.5	9/6/2009		9/6/2010		9/6/2011	15.00	9/5/2012	15.00	9/6/2013	18.00	9/6/2014		9/6/2015		9/5/2016		9/6/2017	31.00	9/6/2018	40.25	9/6/2019	38.00	9/5/2020					
9/6/2008		9/7/2009	14.5	9/7/2010	14.0	9/7/2011	15.00	9/6/2012	15.00	9/7/2013		9/7/2014		9/7/2015		9/6/2016	41.00	9/7/2017	31.00	9/7/2018	40.25	9/7/2019		9/6/2020					
9/7/2008		9/8/2009	14.5	9/8/2010	14.0	9/8/2011	15.00	9/7/2012	15.00	9/8/2013		9/8/2014	28.25	9/8/2015	35.50	9/7/2016	41.00	9/8/2017	30.75	9/8/2018		9/8/2019		9/7/2020					
9/8/2008	16.0	9/9/2009	14.0	9/9/2010	14.0	9/9/2011	15.00	9/8/2012		9/9/2013	17.75	9/9/2014	28.25	9/9/2015	35.75	9/8/2016	41.00	9/9/2017		9/9/2018		9/9/2019	38. 5	9/8/2020	35.250				
9/9/2008	16.0	9/10/2009	14.0	9/10/2010	14.0	9/10/2011		9/9/2012		9/10/2013	17.75	9/10/2014	28.25	9/10/2015	35.75	9/9/2016	41.00	9/10/2017		9/10/2018	40.50	9/10/2019	38. 5	9/9/2020	35.000				
9/10/2008	16.0	9/11/2009	14.0	9/11/2010		9/11/2011		9/10/2012	15.00	9/11/2013	17.75	9/11/2014	28.25	9/11/2015	35.75	9/10/2016		9/11/2017	30.50	9/11/2018	40.50	9/11/2019	38. 5	9/10/2020	35.000				
9/11/2008	16.0	9/12/2009		9/12/2010		9/12/2011	14.75	9/11/2012	15.00	9/12/2013	17.75	9/12/2014	28.25	9/12/2015		9/11/2016		9/12/2017	30.50	9/12/2018		9/12/2019	38.00	9/11/2020	35.000				
9/12/2008	16.0	9/13/2009		9/13/2010	13.5	9/13/2011	14.75	9/12/2012	15.00	9/13/2013	17.75	9/13/2014		9/13/2015		9/12/2016	41.25	9/13/2017	30.50	9/13/2018	41.25	9/13/2019	38.00	9/12/2020					
9/13/2008		9/14/2009	14.0	9/14/2010	13.5	9/14/2011	14.75	9/13/2012	15.00	9/14/2013		9/14/2014		9/14/2015	35.75	9/13/2016	41.50	9/14/2017	30.50	9/14/2018	41.25	9/14/2019		9/13/2020					
9/14/2008		9/15/2009	13.5	9/15/2010	13.5	9/15/2011	14.75	9/14/2012	14.75	9/15/2013		9/15/2014	28.00	9/15/2015	36.00	9/14/2016	42.00	9/15/2017	30.50	9/15/2018		9/15/2019		9/14/2020	34.750				
9/15/2008	16.0	9/16/2009	13.5	9/16/2010	13.5	9/16/2011	14.50	9/15/2012		9/16/2013	17.50	9/16/2014	28.00	9/16/2015	36.25	9/15/2016	42.25	9/16/2017		9/16/2018		9/16/2019	37.75	9/15/2020	34.750				
9/16/2008	16.0	9/17/2009	13.5	9/17/2010		9/17/2011		9/16/2012		9/17/2013	17.50	9/17/2014	28.00	9/17/2015	36.50	9/16/2016	42.50	9/17/2017		9/17/2018	41.25	9/17/2019	37.75	9/16/2020	34.750				

9/17/2008	16.0	9/18/2009	13.5	9/18/2010		9/18/2011		9/17/2012	14.75	9/18/2013	17.50	9/18/2014	28.00	9/18/2015	36.50	9/17/2016		9/18/2017	30.50	9/18/2018	41.25	9/18/2019	37.75	9/17/2020	34.500		
9/18/2008	16.0	9/19/2009		9/19/2010		9/19/2011	14.50	9/18/2012	14.75	9/19/2013	17.25	9/19/2014	28.00	9/19/2015		9/18/2016		9/19/2017	30.25	9/19/2018	41.25	9/19/2019	37.75	9/18/2020	34.500		
9/19/2008	16.0	9/20/2009		9/20/2010	13.5	9/20/2011	14.50	9/19/2012	14.75	9/20/2013	17.25	9/20/2014		9/20/2015		9/19/2016	42.50	9/20/2017	30.25	9/20/2018	41.25	9/20/2019	37.75	9/19/2020			
9/20/2008		9/21/2009	13.0	9/21/2010	13.5	9/21/2011	14.50	9/20/2012	14.75	9/21/2013		9/21/2014		9/21/2015	36.50	9/20/2016	42.50	9/21/2017	30.25	9/21/2018	41.25	9/21/2019		9/20/2020			
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9/22/2008	16.0	9/23/2009	13.0	9/23/2010	13.5	9/23/2011	14.25	9/22/2012		9/23/2013	17.00	9/23/2014	28.00	9/23/2015	36.50	9/22/2016	42.50	9/23/2017		9/23/2018		9/23/2019	37. 5	9/22/2020	34.000		
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11/25/2008		11/26/2009	13.5	11/26/2010		11/26/2011		11/25/2012		11/26/2013	13.75	11/26/2014	30.00	11/26/2015		11/25/2016	41.75	11/26/2017		11/26/2018	4 .75	11/26/2019	37.00	11/25/2020	30.000		
11/26/2008		11/27/2009	13.5	11/27/2010		11/27/2011		11/26/2012	12.00	11/27/2013	13.75	11/27/2014		11/27/2015	40.00	11/26/2016		11/27/2017	3 .500	11/27/2018	4 .75	11/27/2019	37.00	11/26/2020			
11/27/2008		11/28/2009		11/28/2010		11/28/2011	11.50	11/27/2012	12.00	11/28/2013		11/28/2014	30.00	11/28/2015		11/27/2016		11/28/2017	33.500	11/28/2018	4 .75	11/28/2019		11/27/2020	30.000		
11/28/2008		11/29/2009		11/29/2010	15.0	11/29/2011	11.50	11/28/2012	12.00	11/29/2013	13.25	11/29/2014		11/29/2015		11/28/2016	41.75	11/29/2017	33.500	11/29/2018	4 .75	11/29/2019	36.75	11/28/2020			
11/29/2008		11/30/2009	14.0	11/30/2010	15.0	11/30/2011	11.50	11/29/2012	12.00	11/30/2013		11/30/2014		11/30/2015	40.25	11/29/2016	41.75	11/30/2017	33.750	11/30/2018	4 .75	11/30/2019		11/29/2020			
11/30/2008		12/1/2009	14.0	12/1/2010	15.0	12/1/2011	11.25	11/30/2012	12.00	12/1/2013		12/1/2014	30.50	12/1/2015	40.25	11/30/2016	42.00	12/1/2017	33.750	12/1/2018		12/1/2019		11/30/2020	30.250		
12/1/2008	16.5	12/2/2009	14.0	12/2/2010	15.0	12/2/2011	11.25	12/1/2012		12/2/2013		12/2/2014	30.50	12/2/2015	40.25	12/1/2016	42.00	12/2/2017		12/2/2018		12/2/2019	37.00	12/1/2020	30.250		
12/2/2008	16.5	12/3/2009	14.0	12/3/2010	15.0	12/3/2011		12/2/2012		12/3/2013	13.25	12/3/2014	30.75	12/3/2015	40.25	12/2/2016	42.25	12/3/2017		12/3/2018	42.75	12/3/2019	37.00	12/2/2020	30.250		
12/3/2008	17.0	12/4/2009	14.0	12/4/2010		12/4/2011		12/3/2012	12.00	12/4/2013	13.00	12/4/2014	30.75	12/4/2015	40.25	12/3/2016		12/4/2017	35.250	12/4/2018	42.75	12/4/2019	37.00	12/3/2020	30.500		
12/4/2008	17.0	12/5/2009		12/5/2010		12/5/2011	11.00	12/4/2012	12.00	12/5/2013	13.00	12/5/2014	30.75	12/5/2015		12/4/2016		12/5/2017	35.250	12/5/2018	42.75	12/5/2019	37.25	12/4/2020	30.500		
12/5/2008	17.0	12/6/2009		12/6/2010	15.0	12/6/2011	11.00	12/5/2012	12.00	12/6/2013	13.00	12/6/2014		12/6/2015		12/5/2016	42.50	12/6/2017	35.250	12/6/2018	42.75	12/6/2019	37.25	12/5/2020			
12/6/2008		12/7/2009	15.5	12/7/2010	15.0	12/7/2011	11.00	12/6/2012	12.00	12/7/2013		12/7/2014		12/7/2015	40.00	12/6/2016	42.50	12/7/2017	35. 50	12/7/2018	42.75	12/7/2019		12/6/2020			
12/7/2008		12/8/2009	15.5	12/8/2010	15.0	12/8/2011	11.00	12/7/2012	11.75	12/8/2013		12/8/2014	30.75	12/8/2015	40.00	12/7/2016	42.50	12/8/2017	35. 50	12/8/2018		12/8/2019		12/7/2020	30.250		
12/8/2008	17.0	12/9/2009	15.5	12/9/2010	15.0	12/9/2011	11.00	12/8/2012		12/9/2013	13.00	12/9/2014	30.75	12/9/2015	39.75	12/8/2016	42.50	12/9/2017		12/9/2018		12/9/2019	37.50	12/8/2020	30.250		
12/9/2008	17.0	12/10/2009	15.5	12/10/2010		12/10/2011		12/9/2012		12/10/2013	13.00	12/10/2014	30.75	12/10/2015	39.75	12/9/2016	42.50	12/10/2017		12/10/2018	43.00	12/10/2019	37.50	12/9/2020	30.250		
12/10/2008	17.0	12/11/2009	15.5	12/11/2010		12/11/2011		12/10/2012	11.75	12/11/2013	13.00	12/11/2014	30.75	12/11/2015	39.75	12/10/2016		12/11/2017	35.500	12/11/2018	43. 50	12/11/2019	37. 5	12/10/2020	30.250		
12/11/2008	17.0	12/12/2009		12/12/2010		12/12/2011	11.00	12/11/2012	11.75	12/12/2013	12.75	12/12/2014	30.75	12/12/2015		12/11/2016		12/12/2017	35.500	12/12/2018	43. 50	12/12/2019	37. 5	12/11/2020	30.250		
12/12/2008	17.0	12/13/2009		12/13/2010	15.0	12/13/2011	11.00	12/12/2012	11.75	12/13/2013	12.75	12/13/2014		12/13/2015		12/12/2016	42.75	12/13/2017	35.500	12/13/2018	43. 50	12/13/2019	37.50	12/12/2020			

| | | |

APPENDIX D

Miscellaneous Documents

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION
Planning • Engineering • Environmental Services • Photogrammetry • Surveying • Construction Management
2024 North King Street Suite 200
Honolulu Hawaii 96819

TRUE NORTH
1" = 500'

200
400
400

PUU KAPELE AVE.
ANAKAHI AVE.
HAUAKEA AVE.
NENEHANAUPO AVE.
FARRINGTON AVE.
MOOMOMI AVE.

EXISTING UNPAVED ROADWAY
2722.5'
(NEW PAVED ROADWAY)
EXISTING PAVED ROADWAY

PUU KAPELE AVE.

LOT 104D

4 LOTS

EXISTING UNPAVED ROADWAY
3443.86'
(NEW PAVED ROADWAY)
EXISTING PAVED ROADWAY

FARRINGTON AVE.

PROPOSED FARRINGTON AVE.
CULVERT CROSSING
11'x8' BOX CULVERT (2-BARREL)

LOT 17

8 LOTS

MOOMOMI AVE.

EXISTING UNPAVED ROADWAY
3629.15'
(NEW PAVED ROADWAY)
EXISTING PAVED ROADWAY

OVERALL ROAD LAYOUT PLAN

SCALE: 1" = 500'

GRAPHIC SCALE:
500' 250' 0 500' 1000'
1" = 500'
SCALES IN FEET

REVISION | DATE | BRIEF

APPROVED BY

ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

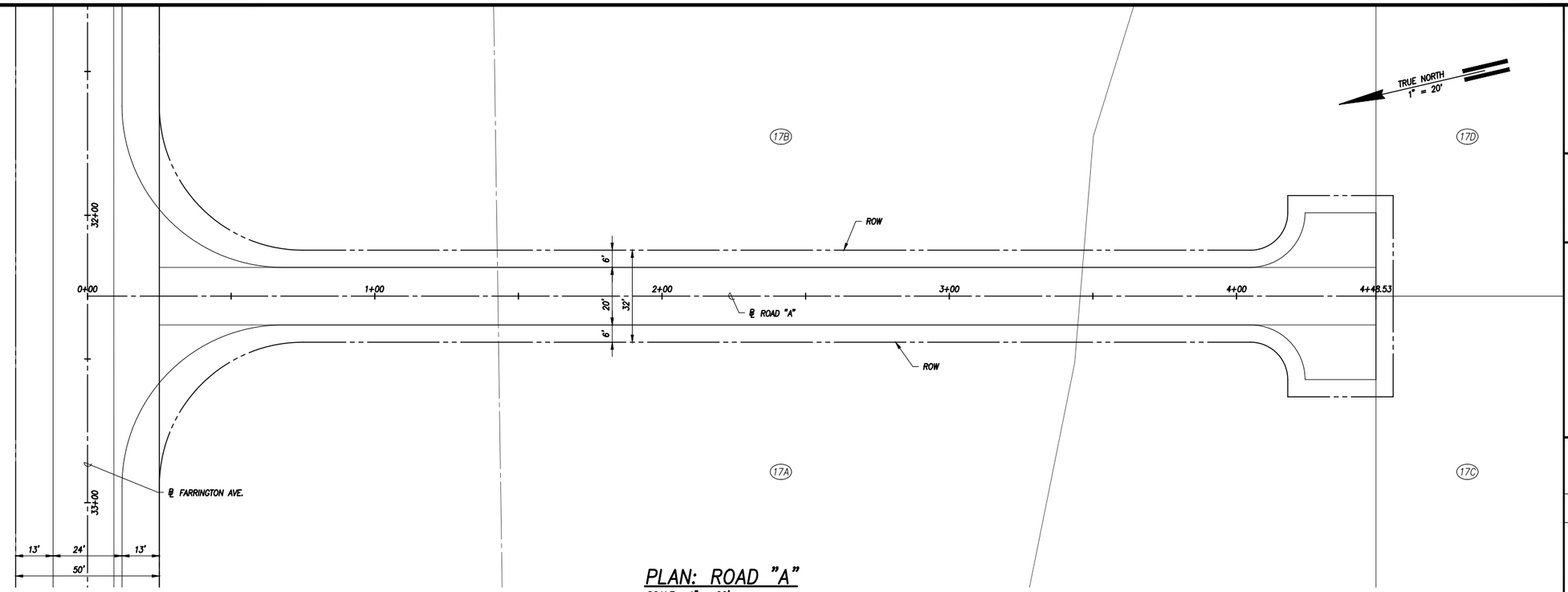
OVERALL
ROAD LAYOUT PLAN

RMTC JOB NO.: 1-23452-0E

K:\civil\23375 Hoolehua Naiwa\PER\Hoolehua\04 Roads\CAD files\C100_Overall Road Layout Plan.dwg October 26, 2023

C100 SHEET OF SHEETS

FILE	POCKET	FOLDER	NO.



PLAN: ROAD "A"
SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION
Planning · Engineering · Environmental Services · Photogrammetry · Surveying · Construction Management
2024 North King Street, Suite 200A
Honolulu, Hawaii 96819

BY	APPROVED

BRIEF

DATE

REVISION

APPROVED BY

ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

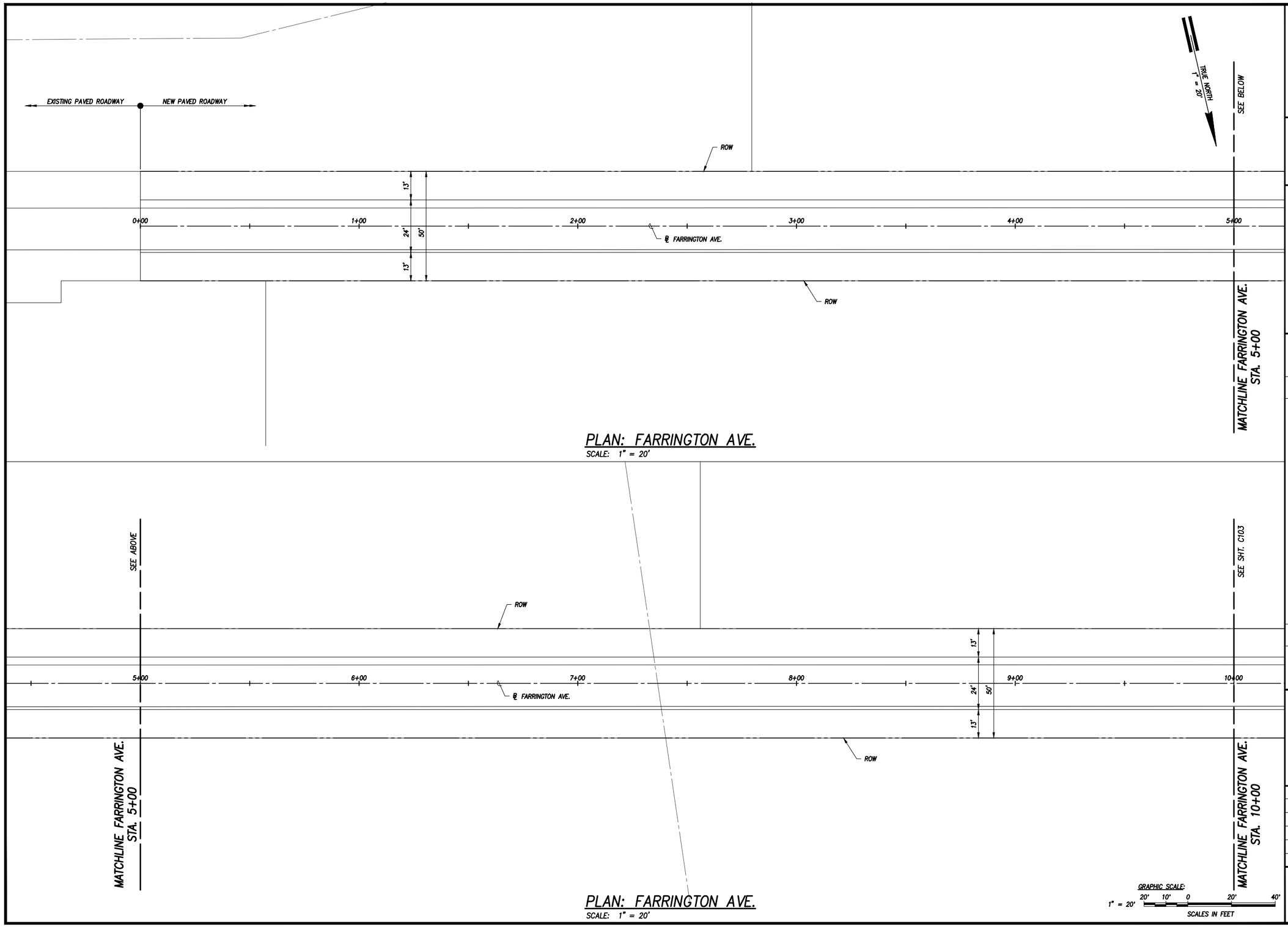
ROAD "A" PLAN
(STA. 0+00 TO 4+42.53)

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C101_Road A Plan - 1.dwg 11? 26, 2021

C101 SHEET OF SHEETS

FILE	POCKET	FOLDER	NO.



HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

APPROVED BY

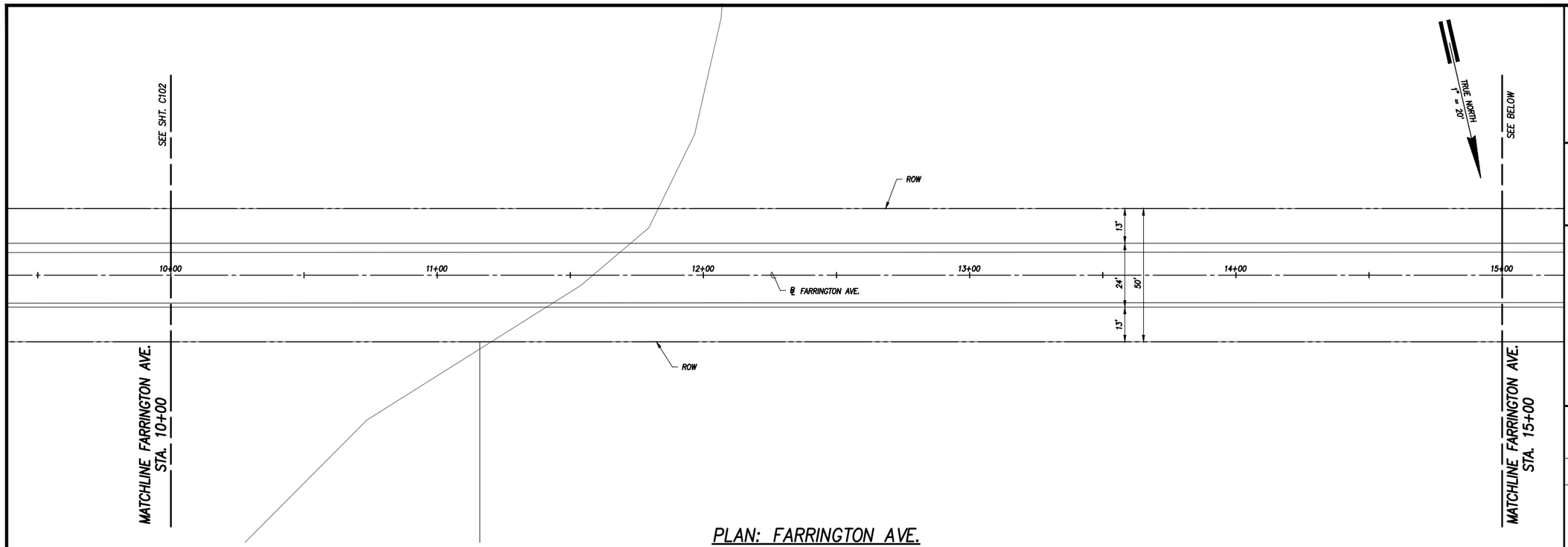
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

FARRINGTON AVE. PLAN–1
(STA. 0+00 TO 10+00)

RMTC JOB NO.: 1–23452–0E

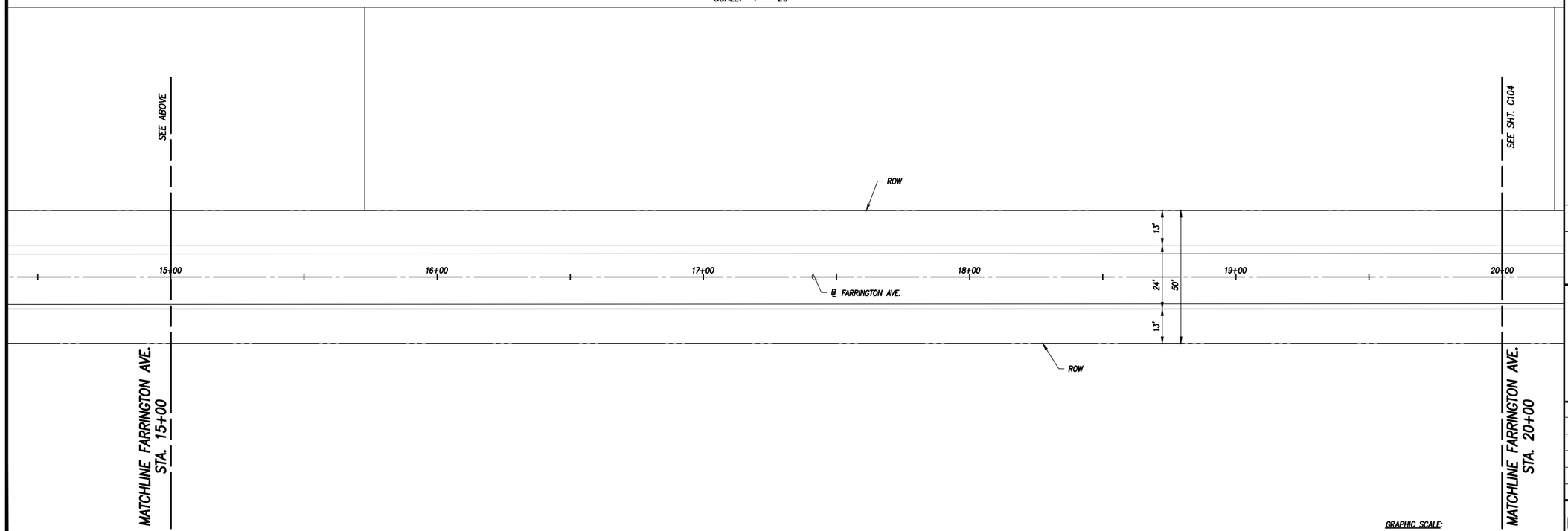
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FILE	POCKET	FOLDER	NO.



PLAN: FARRINGTON AVE.

SCALE: 1" = 20'



PLAN: FARRINGTON AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

APPROVED BY	
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

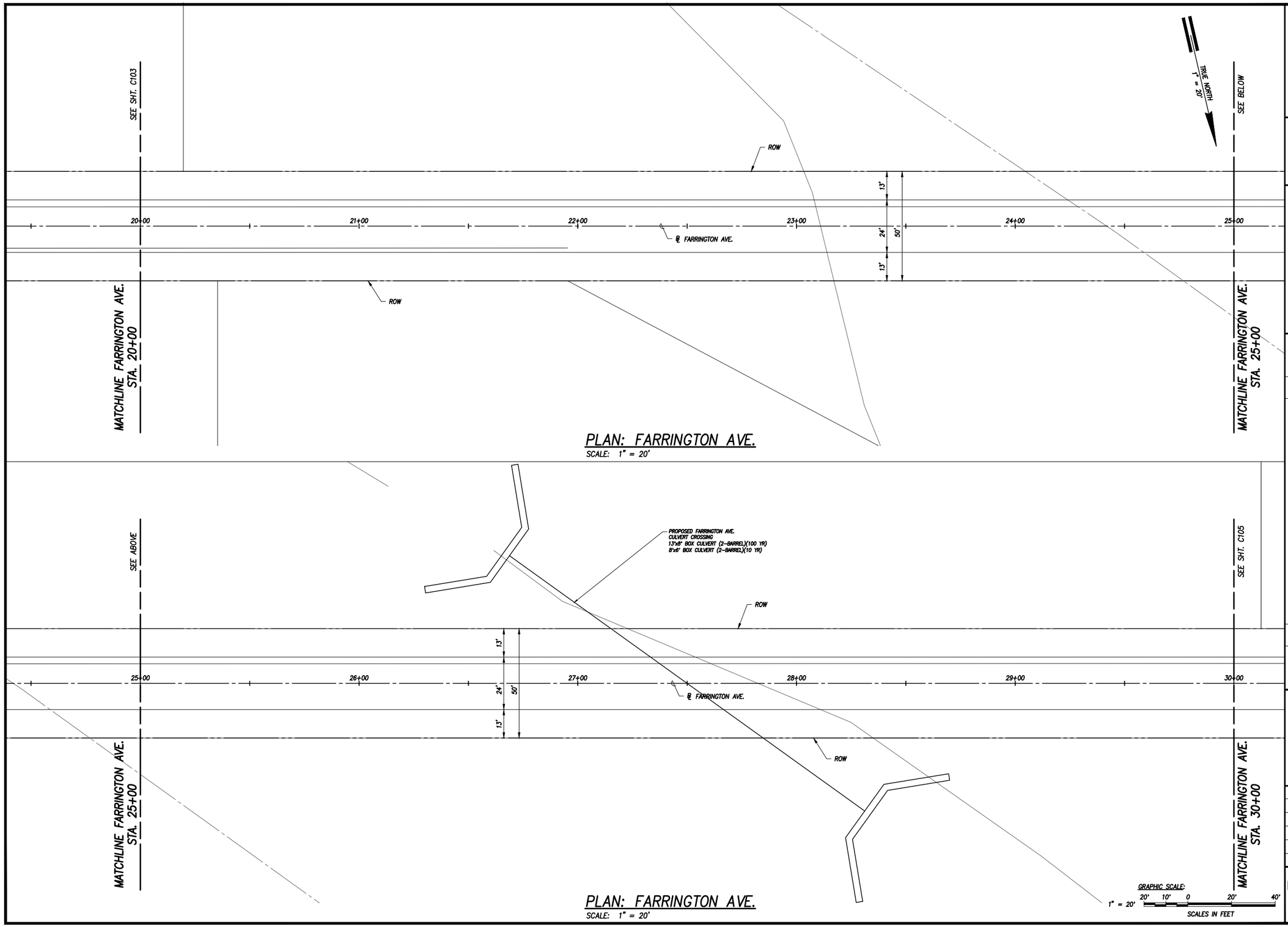
FARRINGTON AVE. PLAN-2
(STA. 10+00 TO 20+00)

APPROVED BY
BY
REVISION
DATE
BRIEF

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C103_FARRINGTON AVE Plan - 2.dwg 11? 26, 2021

FILE	POCKET	FOLDER	NO.



PLAN: FARRINGTON AVE.
SCALE: 1" = 20'

PLAN: FARRINGTON AVE.
SCALE: 1" = 20'

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

APPROVED BY

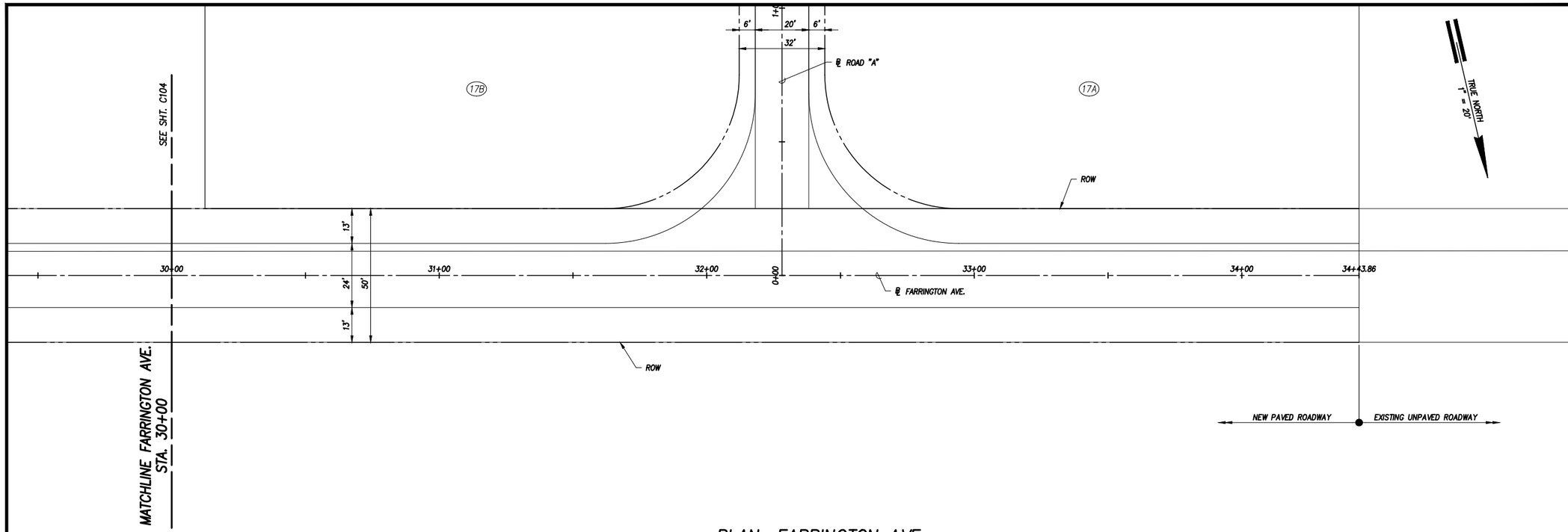
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DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

FARRINGTON AVE. PLAN-3
(STA. 20+00 TO 30+00)

FILE	POCKET	FOLDER	NO.

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C104_FARRINGTON AVE Plan - 3.dwg December 3, 2021



PLAN: FARRINGTON AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

APPROVED BY	
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

FARRINGTON AVE. PLAN-4
(STA.30+00 TO 34+43.86)

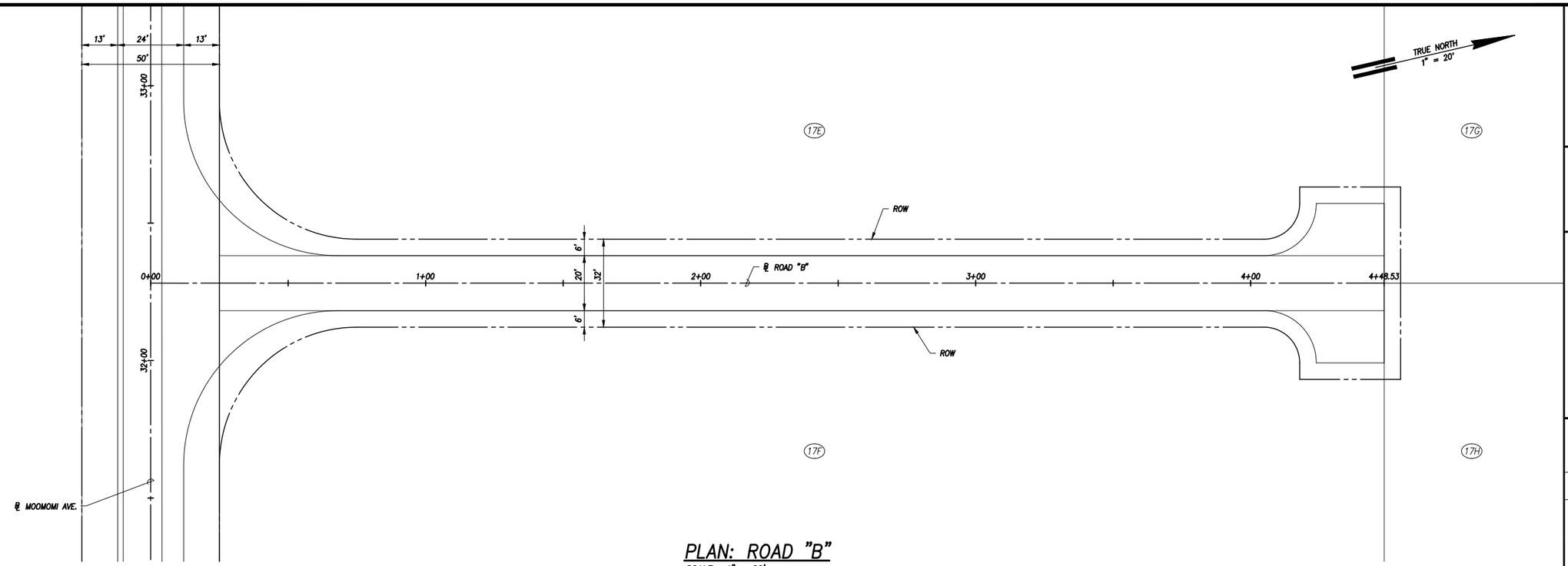
REVISION	DATE	BY	APPROVED

BRIEF

RMTC JOB NO.: 1-23452-0E

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FILE	POCKET	FOLDER	NO.



PLAN: ROAD "B"
SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

APPROVED	
BY	
BRIEF	
DATE	
REVISION	

APPROVED BY

ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

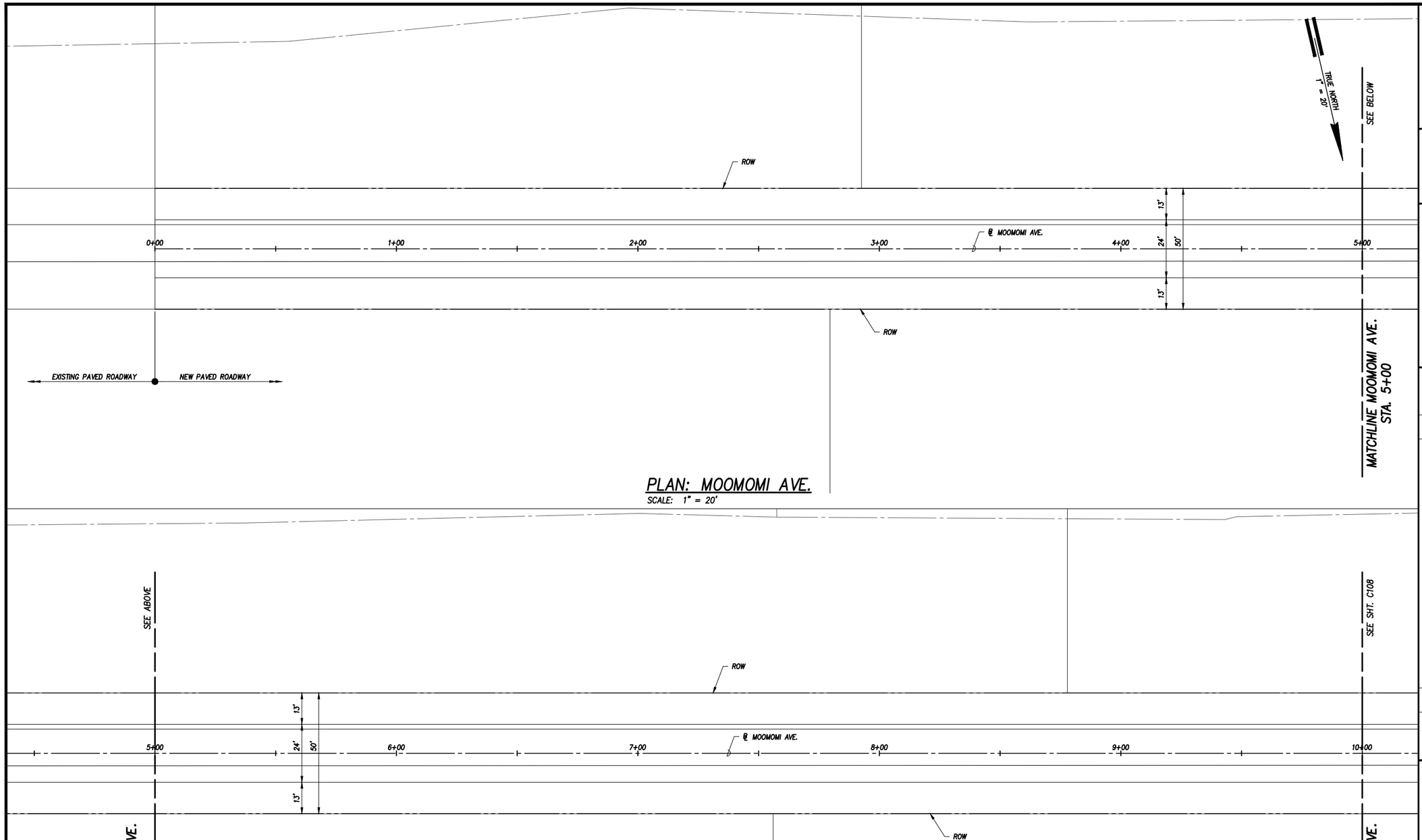
ROAD "B" PLAN
(STA. 0+00 TO 4+48.53)

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C106_Road B Plan - 1.dwg 11? 26, 2021

C106 SHEET OF SHEETS

FILE	POCKET	FOLDER	NO.



PLAN: MOOMOMI AVE.
SCALE: 1" = 20'

PLAN: MOOMOMI AVE.
SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BRIEF

APPROVED BY

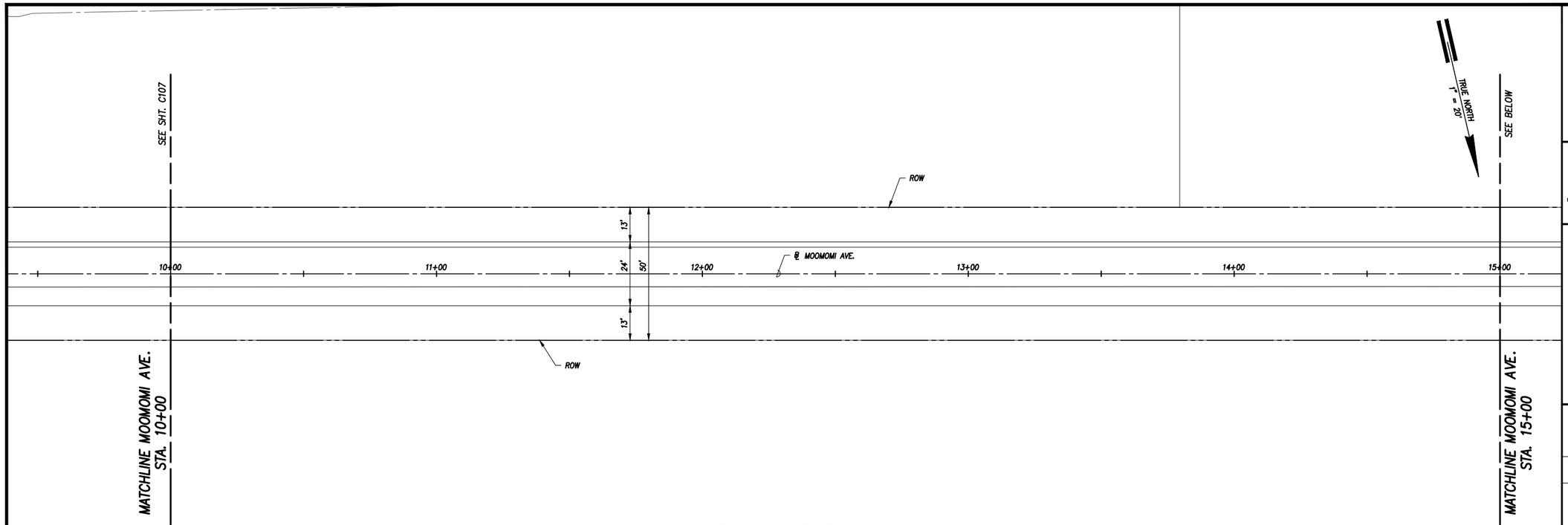
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

MOOMOMI AVE. PLAN-1
(STA. 0+00 TO 10+00)

RMTC JOB NO.: 1-23452-0E

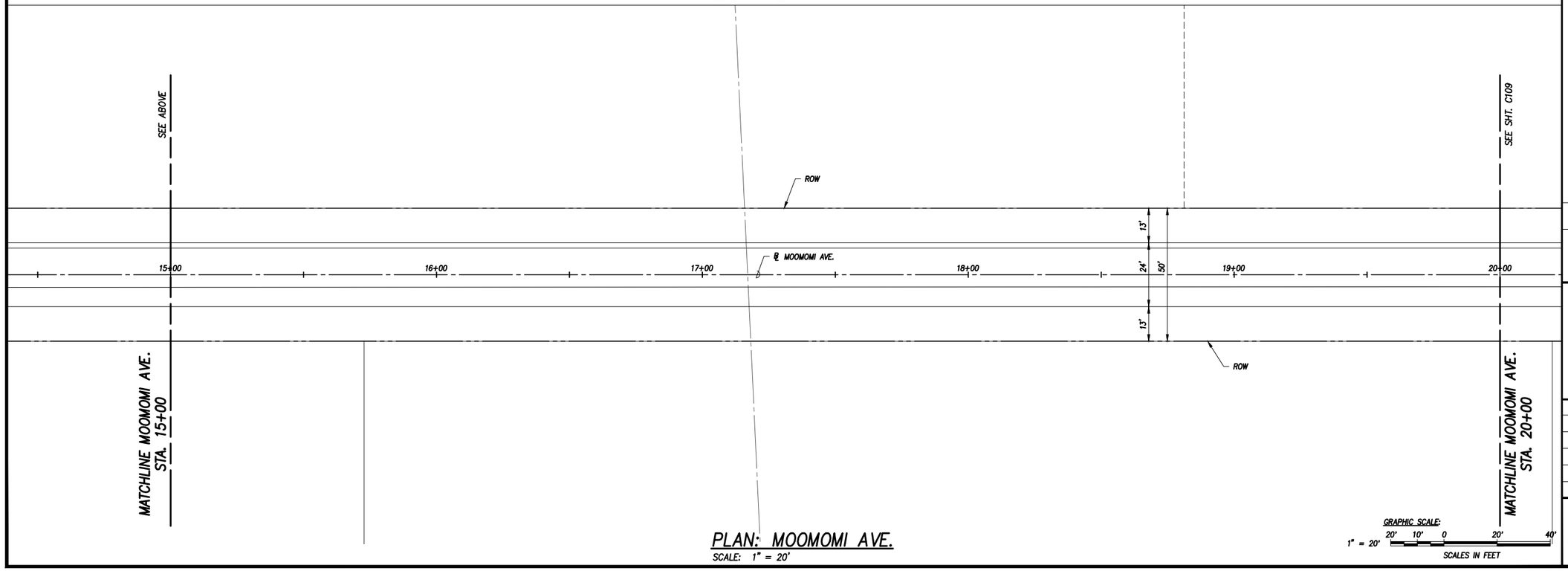
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FILE	POCKET	FOLDER	NO.



PLAN: MOOMOMI AVE.

SCALE: 1" = 20'



PLAN: MOOMOMI AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:

1" = 20' 20' 10' 0 20' 40'

SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

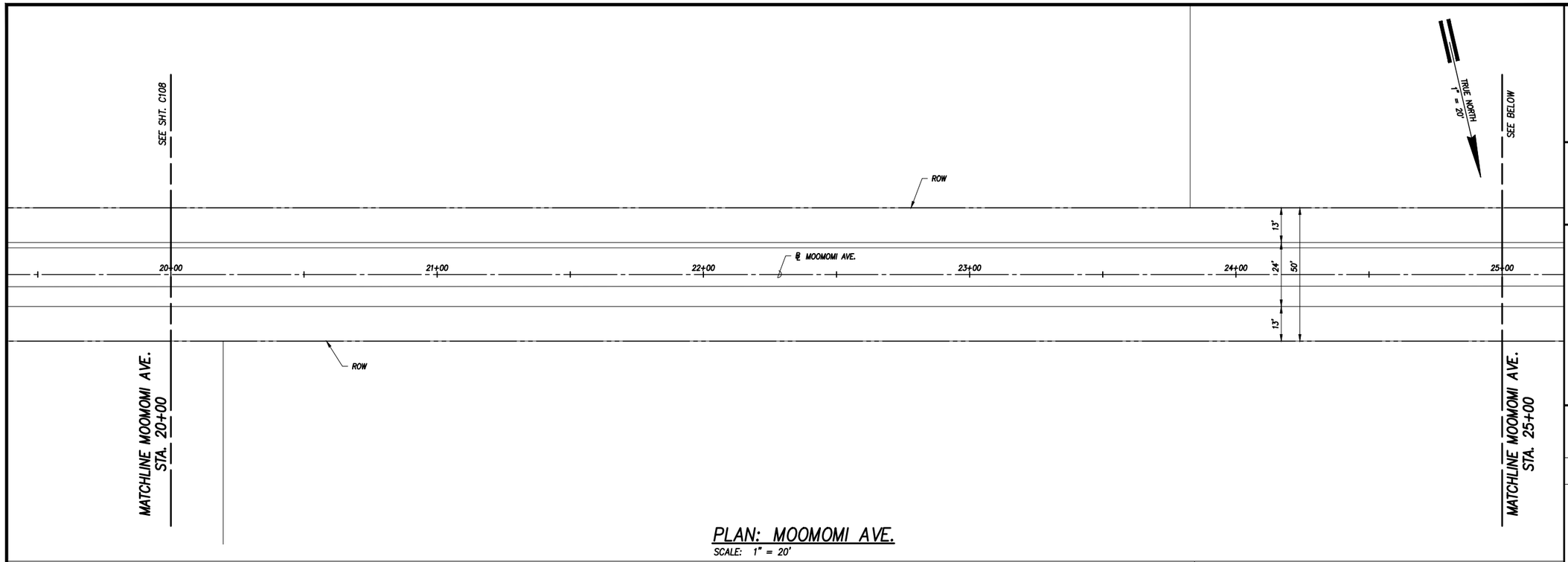
APPROVED BY	
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

MOOMOMI AVE. PLAN–2
(STA. 10+00 TO 20+00)

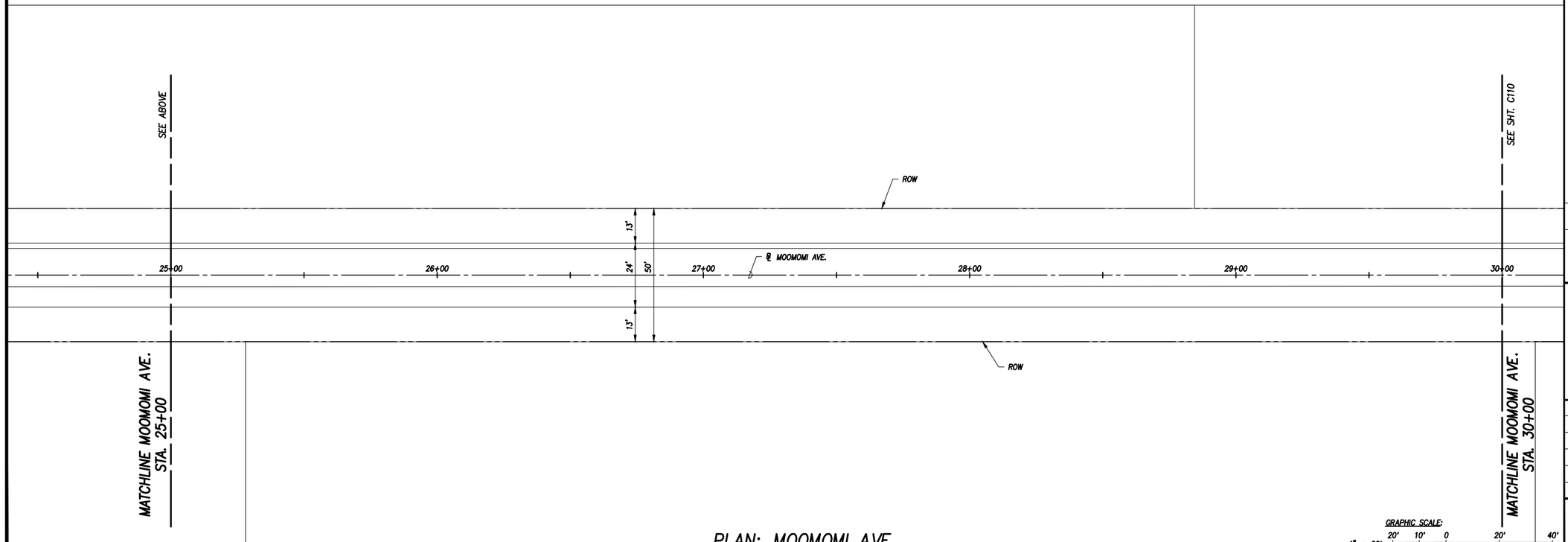
FILE	POCKET	FOLDER	NO.

RMTC JOB NO.: 1–23452–0E

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PLAN: MOOMOMI AVE.
SCALE: 1" = 20'



PLAN: MOOMOMI AVE.
SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20'
20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

APPROVED BY	
ENGINEER	
DRAFTSMAN	
CHECKED BY	
SCALE	AS SHOWN
DATE	
DPP FILE NO.	

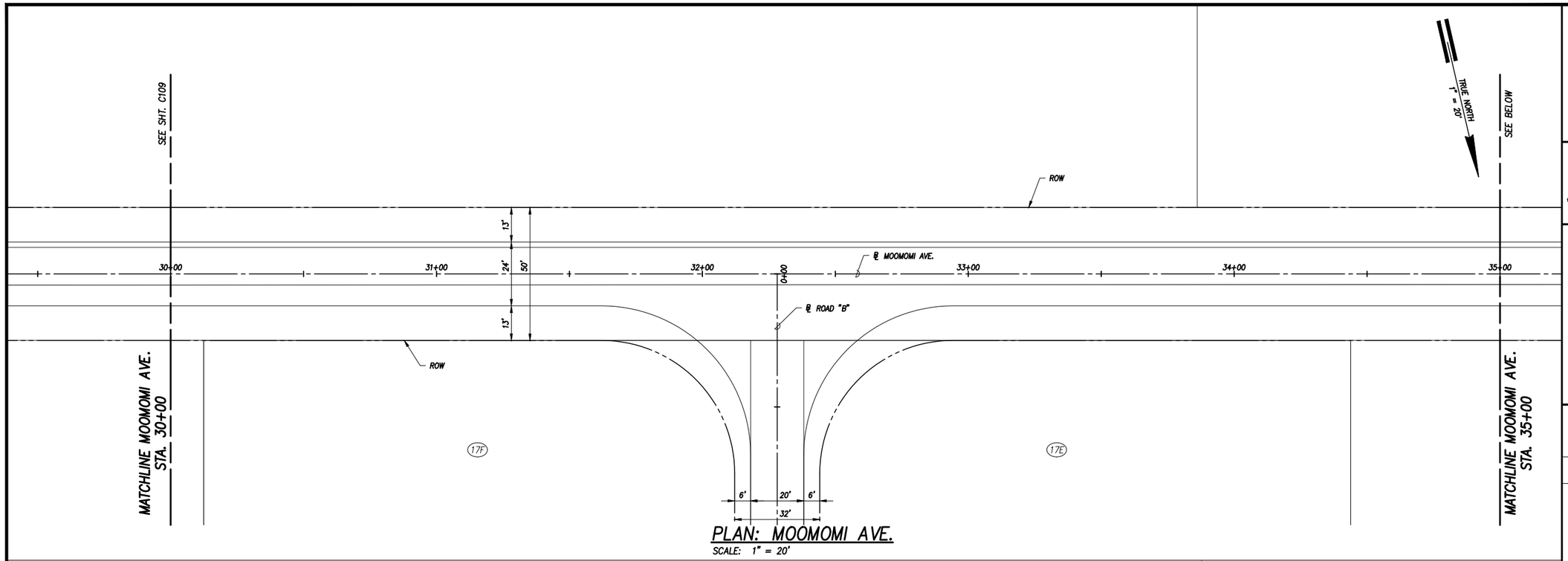
MOOMOMI AVE. PLAN–3
(STA. 20+00 TO 30+00)

REVISION | DATE | BY | APPROVED | BRIEF

RMTC JOB NO.: 1–23452–0E

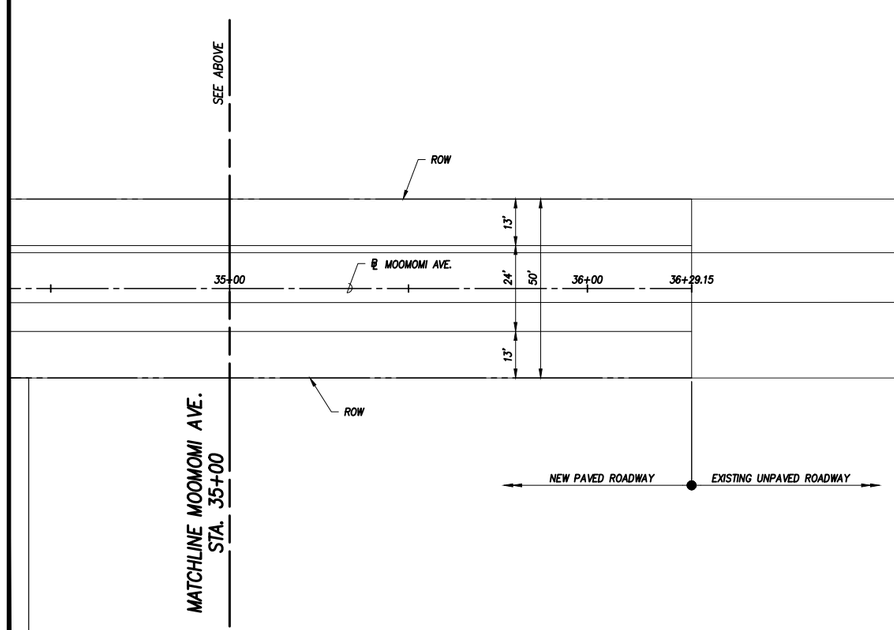
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FILE	POCKET	FOLDER	NO.



PLAN: MOOMOMI AVE.

SCALE: 1" = 20'



PLAN: MOOMOMI AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20' 20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

APPROVED BY

ENGINEER

DRAFTSMAN

CHECKED BY

SCALE AS SHOWN

DATE

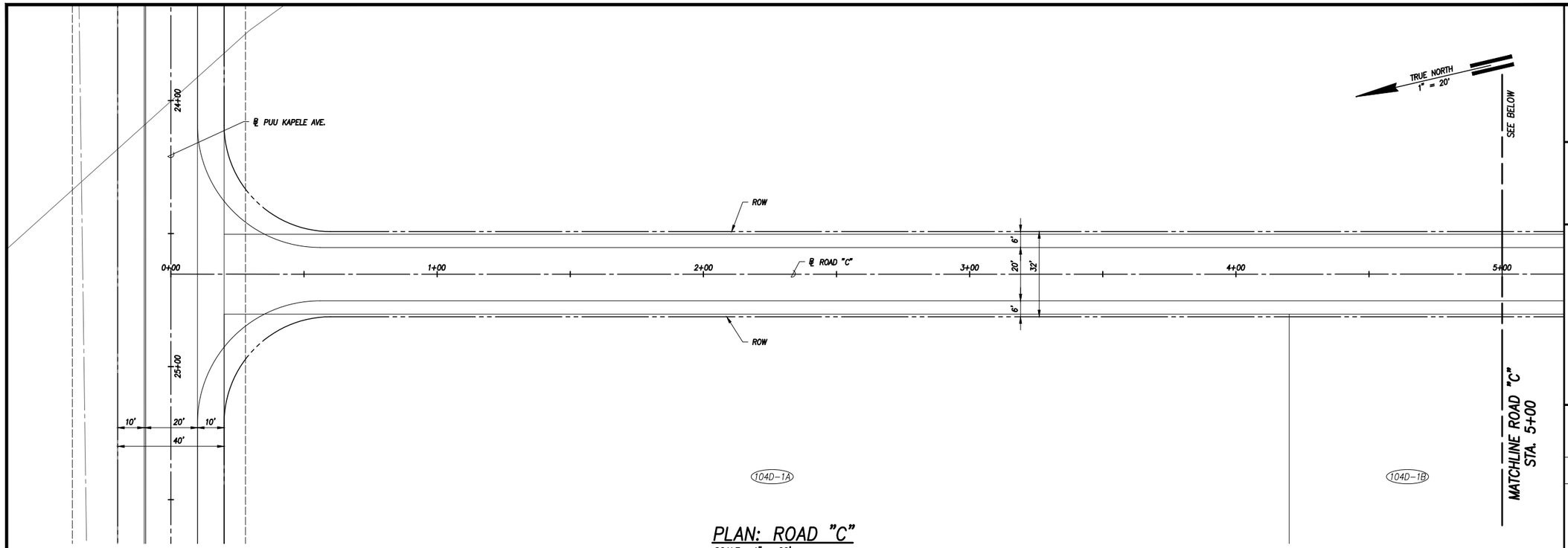
DPP FILE NO.

MOOMOMI AVE. PLAN-4
(STA.30+00 TO 36+29.15)

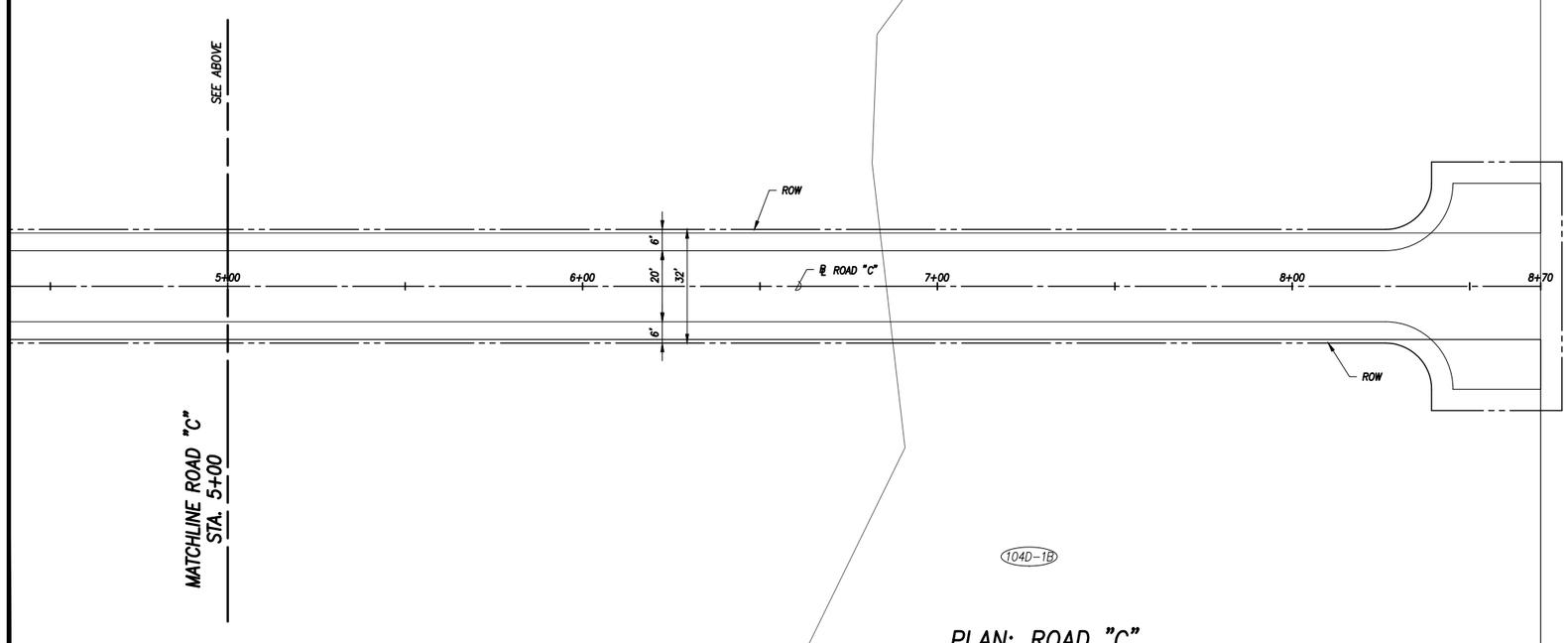
FILE	POCKET	FOLDER	NO.

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C110_MOOMOMI AVE Plan - 4.dwg 11? 26, 2021



PLAN: ROAD "C"
SCALE: 1" = 20'



PLAN: ROAD "C"
SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20' 20' 10' 0 20' 40'
SCALES IN FEET

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C111_Road C Plan - 1.dwg 11? 26, 2021

C111 SHEET OF SHEETS

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

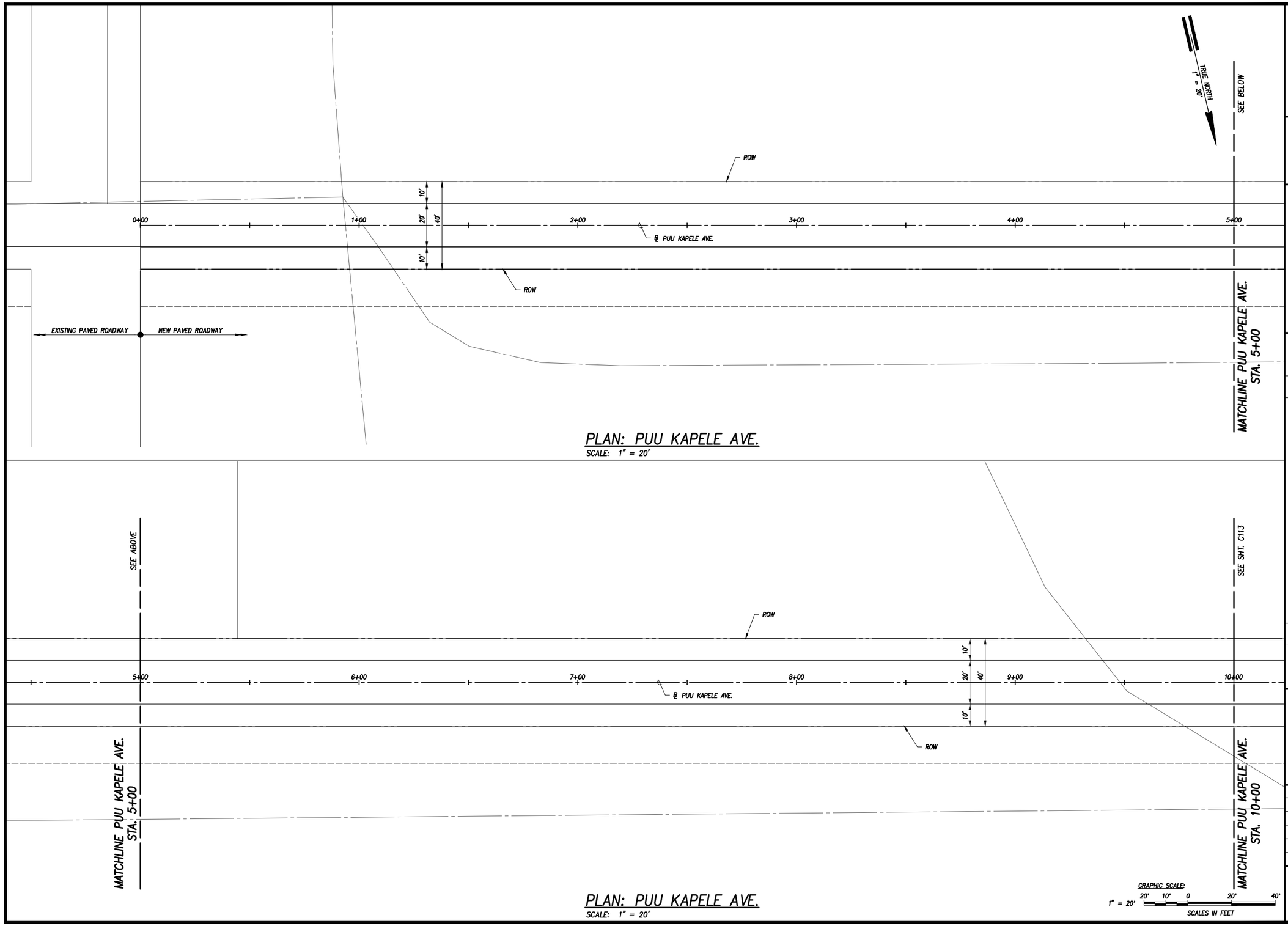
REVISION	DATE	BY	APPROVED

APPROVED BY

ENGINEER
DRAFTSMAN
CHECKED BY
SCALE AS SHOWN
DATE
DPP FILE NO.

ROAD "C" PLAN
(STA. 0+00 TO 8+70)

FILE	POCKET	FOLDER	NO.



PLAN: PUU KAPELE AVE.
SCALE: 1" = 20'

PLAN: PUU KAPELE AVE.
SCALE: 1" = 20'

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

APPROVED BY

ENGINEER

DRAFTSMAN

CHECKED BY

SCALE AS SHOWN

DATE

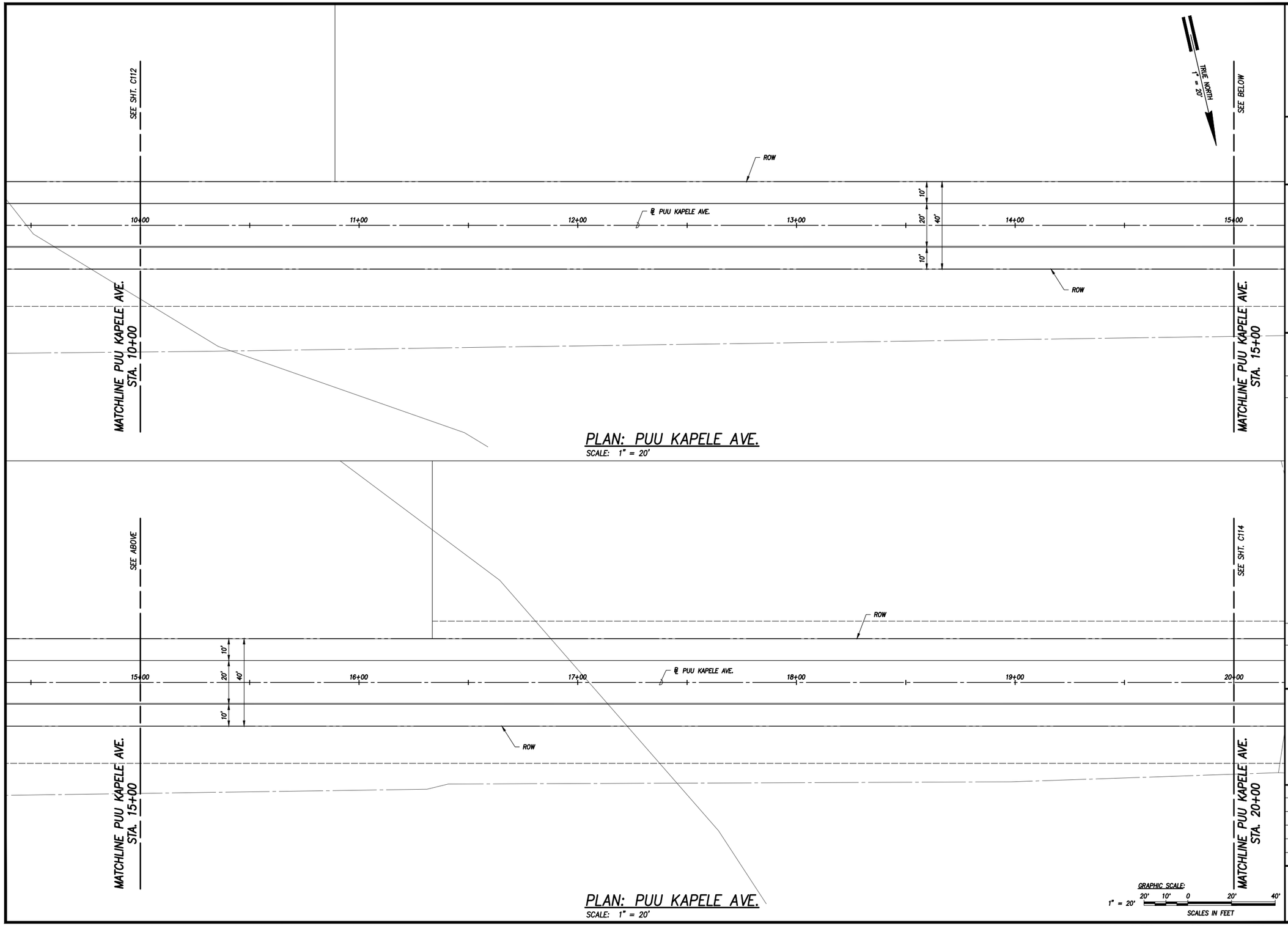
DPP FILE NO.

PUU KAPELE AVE. PLAN-1
(STA. 0+00 TO 10+00)

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C112_PUU KAPELE AVE Plan - 1.dwg 11? 26, 2021

FILE	POCKET	FOLDER	NO.



PLAN: PUU KAPELE AVE.
SCALE: 1" = 20'

PLAN: PUU KAPELE AVE.
SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20' 20' 10' 0 20' 40'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BRIEF

APPROVED BY

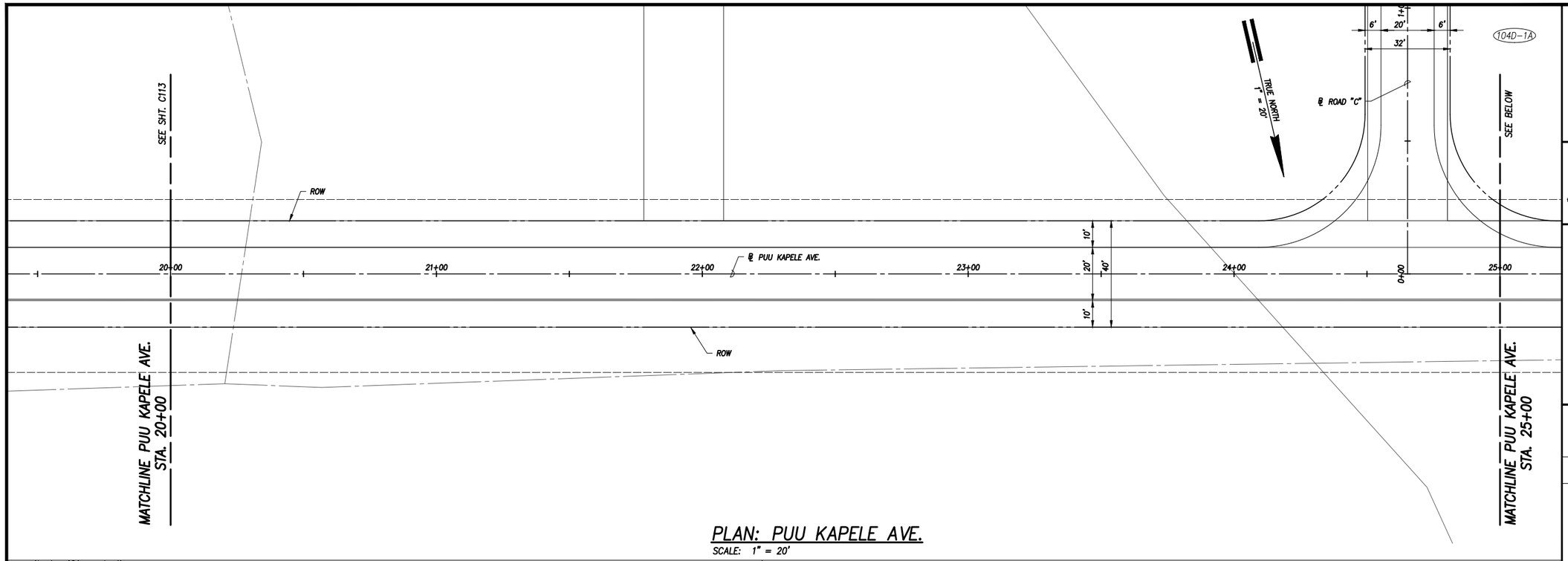
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PUU KAPELE AVE. PLAN–2
(STA. 10+00 TO 20+00)

RMTC JOB NO.: 1–23452–0E

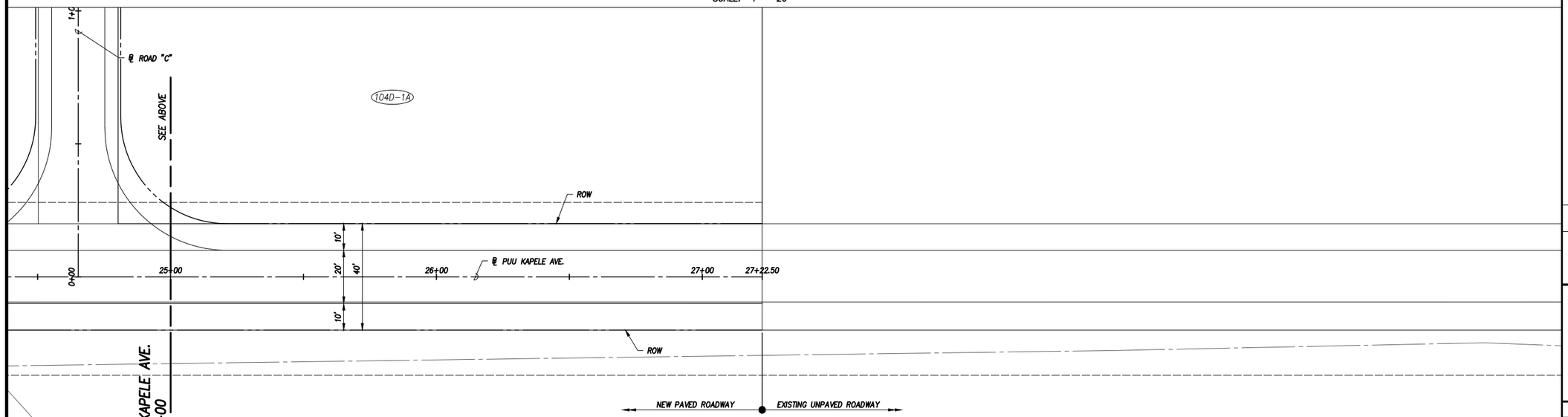
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FILE	POCKET	FOLDER	NO.



PLAN: PUU KAPELE AVE.

SCALE: 1" = 20'



PLAN: PUU KAPELE AVE.

SCALE: 1" = 20'

GRAPHIC SCALE:
1" = 20' 20' 10' 0 20' 40'
SCALES IN FEET

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C114_PUU KAPELE AVE Plan - 3.dwg 11? 26, 2021

C114 SHEET OF SHEETS

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

APPROVED BY

ENGINEER

DRAFTSMAN

CHECKED BY

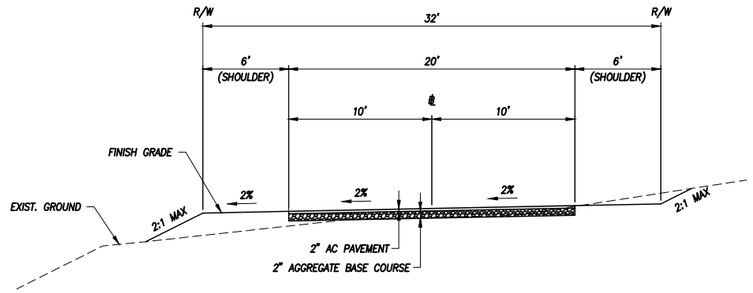
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DATE

DPP FILE NO.

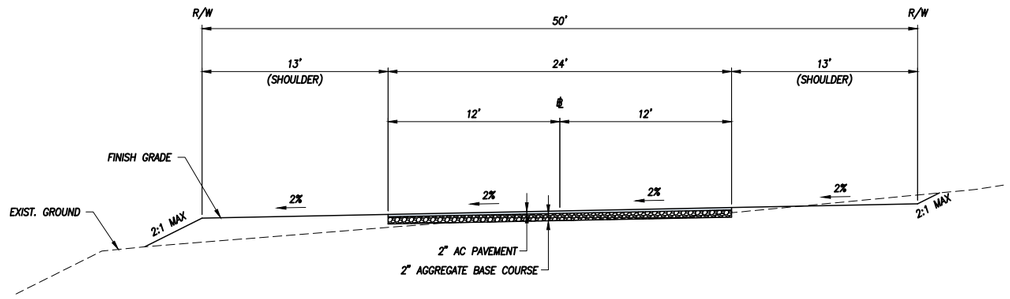
PUU KAPELE AVE. PLAN-3
(STA.20+00 TO 27+22.50)

FILE	POCKET	FOLDER	NO.



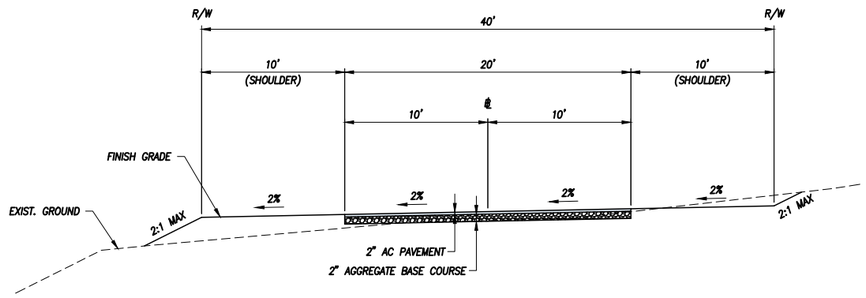
TYPICAL SECTION – ROAD "A", "B", "C"

SCALE: 1" = 5'



TYPICAL SECTION – "FARRINGTON" AVENUE AND "MOOMOMI" AVENUE

SCALE: 1" = 5'



TYPICAL SECTION – "PUU KAPELE" AVENUE

SCALE: 1" = 5'

GRAPHIC SCALE:
1" = 5'
5' 0 5' 10'
SCALES IN FEET

HOOLEHUA

MOLOKAI, HAWAII

R. M. TOWILL CORPORATION

REVISION	DATE	BY	APPROVED

APPROVED BY

ENGINEER

DRAFTSMAN

CHECKED BY

SCALE AS SHOWN

DATE

DPP FILE NO.

TYPICAL SECTIONS

RMTC JOB NO.: 1-23452-0E

Z:\12. 2021 Project\JN-2143 RM-Hoolehua PER\01. 30%\Construction Dwgs\Road\C121 Typical Road Sections.dwg 11? 29, 2021

C121 SHEET OF SHEETS

FILE	POCKET	FOLDER	NO.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Island of Molokai, Hawaii

Lot 17



January 3, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

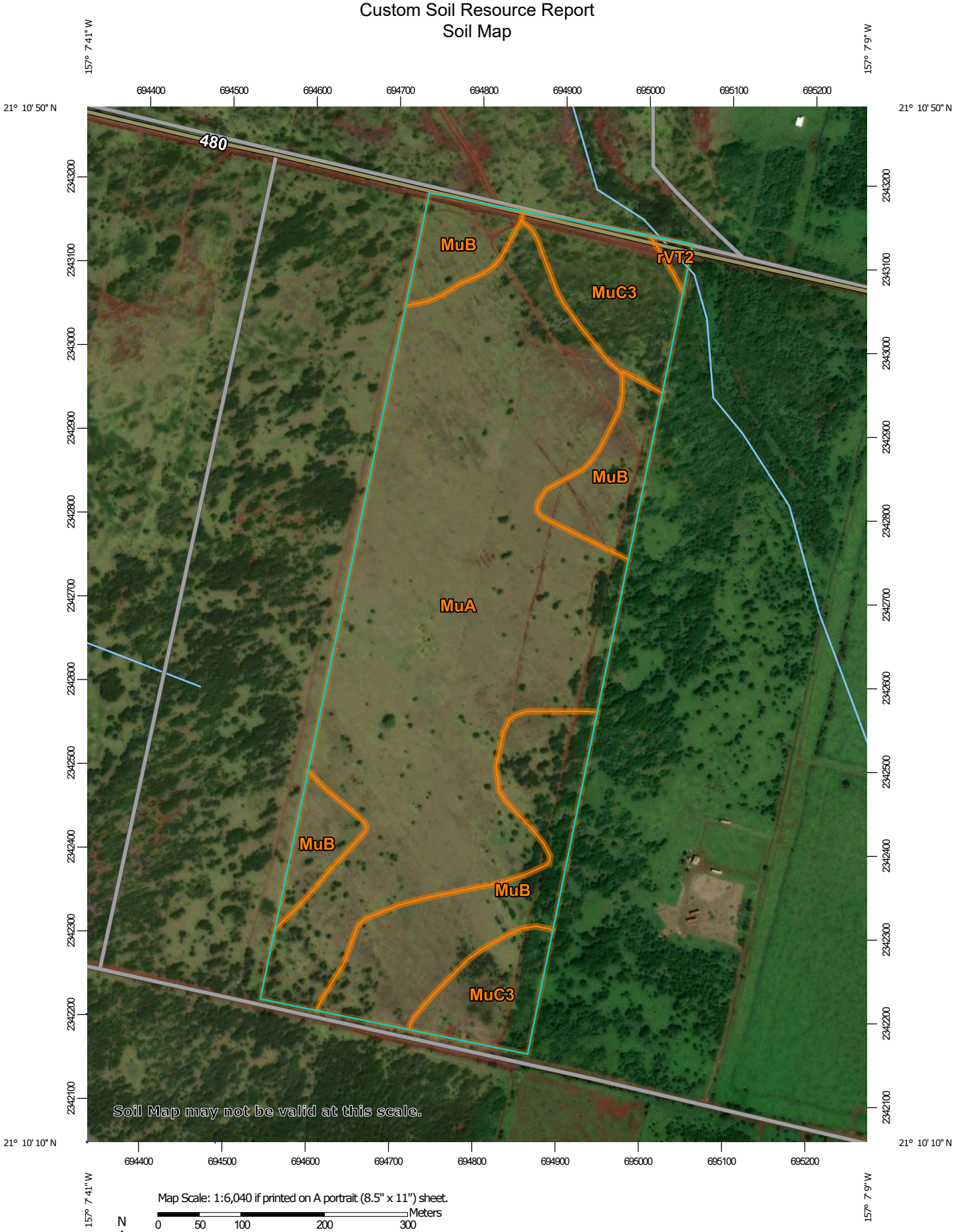
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:6,040 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 4N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Molokai, Hawaii
Survey Area Data: Version 16, Sep 15, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 29, 2017—Oct 11, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MuA	Molokai silty clay loam, 0 to 3 percent slopes, MLRA 158	50.8	64.0%
MuB	Molokai silty clay loam, 3 to 7 percent slopes, MLRA 158	18.8	23.7%
MuC3	Molokai silty clay loam, 7 to 15 percent slopes, severely eroded, MLRA 158	9.4	11.9%
rVT2	Very stony land, eroded	0.4	0.5%
Totals for Area of Interest		**79.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Island of Molokai, Hawaii

MuA—Molokai silty clay loam, 0 to 3 percent slopes, MLRA 158

Map Unit Setting

National map unit symbol: 2w049
Elevation: 0 to 1,500 feet
Mean annual precipitation: 20 to 25 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Molokai and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Molokai

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from basalt

Typical profile

Ap1 - 0 to 7 inches: silty clay loam
Ap2 - 7 to 15 inches: silty clay loam
Bto1 - 15 to 35 inches: silty clay loam
Bto2 - 35 to 64 inches: silty clay loam
Bto3 - 64 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 7.0
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Ecological site: R158XY002HI - Isohyperthermic Torric Naturalized Grassland
Hydric soil rating: No

MuB—Molokai silty clay loam, 3 to 7 percent slopes, MLRA 158

Map Unit Setting

National map unit symbol: 2w04b
Elevation: 0 to 1,500 feet
Mean annual precipitation: 20 to 25 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Molokai and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Molokai

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from basalt

Typical profile

Ap1 - 0 to 7 inches: silty clay loam
Ap2 - 7 to 15 inches: silty clay loam
Bto1 - 15 to 35 inches: silty clay loam
Bto2 - 35 to 64 inches: silty clay loam
Bto3 - 64 to 72 inches: silty clay loam

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 7.0
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Ecological site: R158XY002HI - Isohyperthermic Torric Naturalized Grassland
Hydric soil rating: No

MuC3—Molokai silty clay loam, 7 to 15 percent slopes, severely eroded, MLRA 158

Map Unit Setting

National map unit symbol: 2w04d
Elevation: 0 to 1,500 feet
Mean annual precipitation: 20 to 25 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Molokai and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Molokai

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from basalt

Typical profile

Ap - 0 to 5 inches: silty clay loam
Bto1 - 5 to 35 inches: silty clay loam
Bto2 - 35 to 60 inches: silty clay loam

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 7.0
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R158XY002HI - Isohyperthermic Torric Naturalized Grassland
Hydric soil rating: No

rVT2—Very stony land, eroded

Map Unit Setting

National map unit symbol: hq70
Elevation: 0 to 1,500 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Very stony land, eroded, eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Very Stony Land, Eroded, Eroded

Setting

Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Aa lava and volcanic ash

Typical profile

H1 - 0 to 10 inches: extremely stony silty clay loam
H2 - 10 to 30 inches: extremely stony silty clay loam
H3 - 30 to 40 inches: bedrock

Properties and qualities

Slope: 7 to 30 percent
Depth to restrictive feature: 5 to 35 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Island of Molokai, Hawaii

Lot 104D



April 24, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

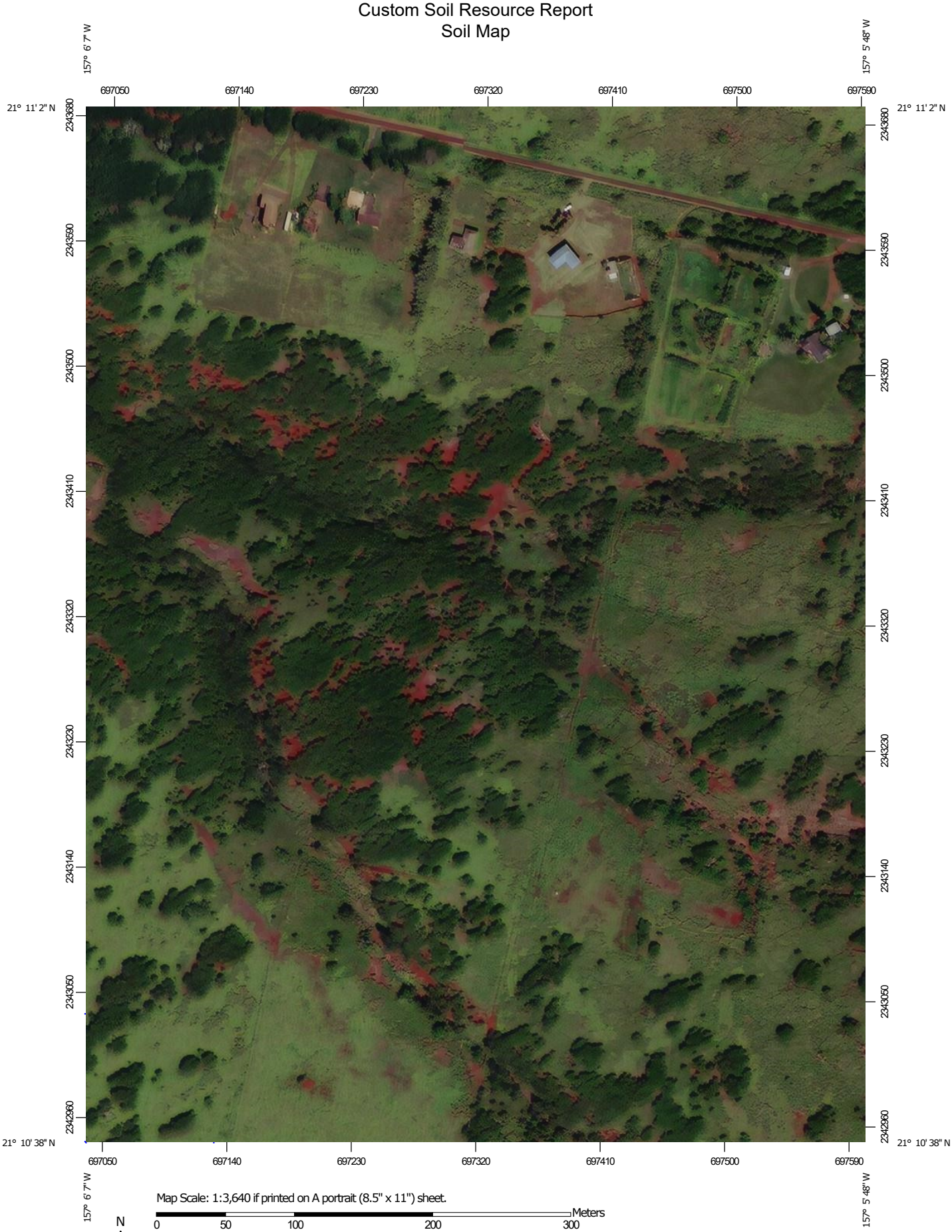
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,640 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 4N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Molokai, Hawaii
Survey Area Data: Version 18, Sep 8, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 29, 2017—Oct 11, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MuB	Molokai silty clay loam, 3 to 7 percent slopes, MLRA 158	16.4	62.9%
MvD3	Lithic Eutrotorrox, 15 to 25 percent slopes, severely eroded, MLRA 158	9.7	37.1%
Totals for Area of Interest		**26.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Island of Molokai, Hawaii

MuB—Molokai silty clay loam, 3 to 7 percent slopes, MLRA 158

Map Unit Setting

National map unit symbol: 2w04b
Elevation: 0 to 1,500 feet
Mean annual precipitation: 20 to 25 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Molokai and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Molokai

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from basalt

Typical profile

Ap1 - 0 to 7 inches: silty clay loam
Ap2 - 7 to 15 inches: silty clay loam
Bto1 - 15 to 35 inches: silty clay loam
Bto2 - 35 to 64 inches: silty clay loam
Bto3 - 64 to 72 inches: silty clay loam

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 7.0
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Ecological site: R158XY002HI - Isohyperthermic Torric Naturalized Grassland
Hydric soil rating: No

MvD3—Lithic Eutrotorrox, 15 to 25 percent slopes, severely eroded, MLRA 158

Map Unit Setting

National map unit symbol: 2w04f
Elevation: 0 to 1,500 feet
Mean annual precipitation: 20 to 25 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Lithic eutrotorrox and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lithic Eutrotorrox

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from basalt

Typical profile

Bto1 - 0 to 3 inches: silty clay loam
Bto2 - 3 to 18 inches: silty clay loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 7.0
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 15 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop, interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: Unranked

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APPENDIX B-1.

GROUND WATER USE PERMIT

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

MICHAEL G. BUCK
ELIZABETH A. CHAR, M.D.
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DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

Aug 6, 2021

01100 gwup.docx

Honorable William J. Aila, Jr., Chairman
Department of Hawaiian Home Lands
State of Hawaii
P.O. Box 1879
Honolulu, HI 96805

Aloha Mr. Aila:

Approval of Ground Water Use Permit (GWUP No. 01100)
For Well Nos. 4-0801-002, 4-0801-001
Kualapuu Ground Water Management Area, Molokai

The Commission on Water Resource Management (Commission) approved your Ground Water Use Permit on July 20, 2021. Your approved permit is for 0.595 million gallons per day (mgd) of water on a 12-month moving average basis from the Kauluwai 2, Kauluwai 1 Well (Well Nos. 4-0801-002, 4-0801-001). The following special conditions were added as part of the Commission's approval and are part of your permit under Standard Permit Condition 19:

Special Conditions

1. This permit is subject to suspension and/or revocation if the use as described in Table DHHL-3, and/or the service area in Exhibit 1 of the staff submittal, changes. This includes, but is not limited to: type of use, location of use, land use classification changes, or anything that varies from the application.

2. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

3. The approved allocation is subject to revision should well interference deviate from the USGS's model's predictions and there are negative impacts to adjacent wells.

4. You must implement the following mitigative measures, subject to future revisions when if/when the other applications in the aquifer are acted on:

    - Work to implement community-led efforts to replace invasive species with native species to try to improve the health of the coastal ecosystem;
    - Support and encourage efforts to reduce erosion and restore native vegetation in Kalama'ula's mauka areas; and
    - Make available certain Community Use designated areas as outdoor classrooms for schoolchildren, particularly for the perpetuation of traditional and customary groundwater dependent practices and resource management.

5. You must report back to the Commission in one year from the issuance of this permit, to update the Commission on mitigation efforts described in item 4 above.

Your ground water use permit is enclosed with this letter of approval. Please be sure to read the conditions of this permit.

We draw your attention to two key conditions of your permit that require your response. First, in accordance with Hawaii Administrative Rule §13-168-7, you are required to keep a record of your monthly total pumpage, water level, salinity, and water temperature. This information must be submitted to the Commission on a regular monthly basis using the form that can be found on our website at http://hawaii.gov/dlnr/cwrm/forms/GWUR-MON.pdf

Second, in a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. To plan for such a contingency, you are required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your individual water shortage plan should identify what you are willing to do should the Commission declare a water shortage situation in the Kualapuu Ground Water Management Area. The plan may be brief, but must be clear. The Commission is required by law to formulate a plan to implement such area-wide reductions. The Commission will seek to accommodate your plan in any overall reductions. By submitting your water shortage plan, you help the Commission formulate an overall Water Shortage Plan.

If you have any questions, please call Ryan Imata of the Commission staff at (808) 587-0255.

Ola i ka wai,

M. Kaleo Manuel, Deputy Director for
Suzanne D. Case, Chairperson

Attachment: GWUP No. 01100

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

GROUND WATER USE PERMIT

GWUP NO. 01100

PERMITTEE

Permittee/Water User

Address Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, HI 96805

Landowner of Source

Address Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, HI 96805

PERMITTED SOURCE INFORMATION

Island: Molokai

Water Management Area

Aquifer Sector: Central

Aquifer System: Kualapuu

System Sustainable Yield: 5 mgd

State Well No.	Well Name
4-0801-001	Kauluwai 1
4-0801-002	Kauluwai 2

PERMITTED USE INFORMATION

Withdrawal (12 month moving ave.) 0.595 mgd

Reasonable Beneficial Use	TMK	State Land Use Classification	County Zoning Classification
New committed service connections	(0) 0-0-000:000		
Maui County delivered water	(0) 0-0-000:000		
Homestead residential service connections	(0) 0-0-000:000		
5 commercial agricultural service connections	(0) 0-0-000:000		
Homestead agricultural service connections	(0) 0-0-000:000		
Other commercial connections	(0) 0-0-000:000		
Sub-dividable homestead lots	(0) 0-0-000:000		

Pursuant to Hawaii's State Constitution, Article XI, Section 7, Hawaii Revised Statutes, Chapter 174C; Hawaii Administrative Rules, Chapters 13-167 through 13-171; and Hawaii decisional law and custom, the permittee is hereby authorized to use ground water from the sources and in the amount and from and upon the locations described above; subject however, to the requirements of law including but not limited to the following conditions:

1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)

2. The right to use ground water is a shared use right.

3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:

   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with State and County general plans and land use designations;
   f. Is consistent with County land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).

4. The ground water use here must not interfere with surface or other ground water rights or reservations.

5. The ground water use here must not interfere with interim or permanent instream flow standards. If it does, then:

   a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
   b. The interim or permanent instream flow standard, as applicable, must be amended.

6. The ground water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

7. The ground water use permit application and submittal, as amended, approved by the Commission at its July 20, 2021 meeting are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:

   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;
   c. insure adequate conservation measures;
   d. require efficiency of water uses;
   e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

   Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. An approved flowmeter(s) must be installed to measure monthly withdrawals and monthly records of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on the form located at http://hawaii.gov/dlnr/cwrm/forms/GWUR-MON.pdf

11. This permit shall be subject to the Commission's periodic review of the Kualapuu Aquifer System Area's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the Kualapuu Aquifer System Area, or relevant modified aquifer(s), is reduced.

12. A permit may be transferred, in whole or in part, from the permittee to another, if:

    a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
    b. The Commission is informed of the transfer within ninety days.

    Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer, which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

13. The use(s) authorized by law and by this permit do not constitute ownership rights.

14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances that will affect the permittee's water use.

15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservation, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.

16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the Kualapuu Ground Water Management Area.

17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.

18. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

19. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

M. Kaleo Manuel, Deputy Director for
Suzanne D. Case, Chairperson
Commission on Water Resource Management

Attachment

APPENDIX B-2.

U.S. ARMY CORPS OF ENGINEERS APPROVED JURISDICTIONAL DETERMINATION

DEPARTMENT OF THE ARMY
HONOLULU DISTRICT, U.S. ARMY CORPS OF ENGINEERS
230 OTAKE STREET, CEPOH-RO
FORT SHAFTER, HAWAII 96858-5440

May 22, 2025

SUBJECT: Approved Jurisdictional Determination and No Permit Required,
DA File No. POH-2024-00163

Neil Nugent
Department of Hawaiian Home Lands
Post Office Box 1879
Honolulu, Hawaii 96805

Dear Mr. Nugent:

The Honolulu District, U.S. Army Corps of Engineers (Corps), Regulatory Branch has received your request for an approved jurisdictional determination (AJD) and determination whether a Department of the Army (DA) permit is required for the Ho`olehua Scattered Lots Subdivision located at Tax Map Keys (TMKs) (2) 5-2-005:031, (2) 5-2-026:003, (2) 5-2-026:014, (2) 5-2-026:016, and (2) 5-2-026:017 centered on 21.181133°, -157.099203° in Ho'olehua, Island of Molokai, HI. Your request has been assigned DA file number POH-2024-00163. Please reference this number in all future correspondence with our office relating to this action.

The 51.7-acre review area is depicted on the attached map (Enclosure 1). The review area does not include the stream directly southwest of the eastern section of the review area.

Based on our review of the information you provided dated October 24, 2024, the Corps has determined the site does not contain waters of the U.S., including wetlands or navigable waters of the U.S., as defined by 33 CFR Parts 328 and 329, respectively. Therefore, a DA permit under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899 is not required.

This AJD is valid for a period of five (5) years from the date of the AJD form, unless new information supporting a revision is provided to us before the expiration date. The basis for this determination can be found in the enclosed AJD form(s) (Enclosure 2). Additionally, a Notification of Administrative Appeal Options and Process and Request for Appeal form regarding this AJD (see section labeled “Approved Jurisdictional Determination”) is enclosed (Enclosure 3).

While a DA permit is not required for your proposed project, you are responsible for obtaining all other applicable Federal, state, or local authorizations required by law.

Thank you for your cooperation with the Honolulu District Regulatory Program. If you have any questions related to this determination, please contact David Rojek at 808-459-0179 or via e-mail at David.J.Rojek@usace.army.mil. You are encouraged to provide comments on your experience with the Honolulu District Regulatory Office by accessing our web-based customer survey form at https://regulatory.ops.usace.army.mil/customer-service-survey/. For additional information about our Regulatory Program, please visit our web site at https://www.poh.usace.army.mil/Missions/Regulatory.aspx .

Sincerely,



Jen Martin
Chief, Regulatory Office

Enclosure
1. Map
2. MFR
3. Appeal Form

cc:
Emily Y.K. Murai, Munekiyo Hiraga (planning@munekiyohiraga.com)



POH-2024-00163

0 0.28 0.55 1.1

mi

Map Center: 157.110499°W 21.182889°N

Map Created by: David Rojek

Date: 5/21/2025

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Projection: Mercator Auxiliary Sphere

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, CEPOH-RO
FORT SHAFTER, HAWAII 96858-5440

CEPOH-RO 22 May 2025

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Approved Jurisdictional Determination in accordance with the "Revised Definition of 'Waters of the United States'"; (88 FR 3004 (January 18, 2023) as amended by the "Revised Definition of 'Waters of the United States'; Conforming" (8 September 2023) ,[1] POH-2024-00163

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[2] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[3]

On January 18, 2023, the Environmental Protection Agency (EPA) and the Department of the Army ("the agencies") published the "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule"). On September 8, 2023, the agencies published the "Revised Definition of 'Waters of the United States'; Conforming", which amended the 2023 Rule to conform to the 2023 Supreme Court decision in *Sackett v. EPA*, 598 U.S., 143 S. Ct. 1322 (2023) ("*Sackett*").

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. For the purposes of this AJD, we have relied on Section 10 of the Rivers and Harbors Act of 1899 (RHA),[4] the 2023 Rule as amended, as well as other applicable guidance, relevant case law, and longstanding practice in evaluating jurisdiction.

[1] While the Revised Definition of "Waters of the United States"; Conforming had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] 33 CFR 331.2.
[3] Regulatory Guidance Letter 05-02.
[4] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

1. SUMMARY OF CONCLUSIONS.

   a. The review area is comprised entirely of dry land (i.e., there are no waters such as streams, rivers, wetlands, lakes, ponds, tidal waters, ditches, and the like in the entire review area and there are no areas that have previously been determined to be jurisdictional under the Rivers and Harbors Act of 1899 in the review area).

      There are no areas that have previously been determined to be jurisdictional under the Rivers and Harbors Act of 1899 or Clean Water Act of 1972 in the review area. A review of the National Hydrography Dataset (NHD), the U.S. Fish and Wildlife National Wetlands Inventory (NWI), Hawaii Division of Aquatic Resources (DAR) Stream Database, as well as aerial imagery showed no bodies of surface water or water flow paths in the review area. A review of the NRCS Web Soil Survey showed both sections of the review area consisted of Molokai silty clay loam and contains no hydric soils. The site does not include any of the three parameters of a wetland (hydrophytic vegetation, hydric soils, hydrology).

2. REFERENCES.

   a. “Revised Definition of ‘Waters of the United States,’” 88 FR 3004 (January 18, 2023) (“2023 Rule”)

   b. “Revised Definition of ‘Waters of the United States’; Conforming” 88 FR 61964 (September 8, 2023))

   c. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

   d. January 2023 Rule preamble at 88 FR 3090

3. REVIEW AREA.



Figure 1: Review Area with DAR Hawaii Streams Layer

The 51.7-acre review area consists of the entirety of Tax Map Keys (TMKs) (2) 5-2-005:031, (2) 5-2-026:003, (2) 5-2-026:014, (2) 5-2-026:016, and (2) 5-2-026:017 in Hoʻolehua, Island of Molokai, Hawaii and is depicted in the map (Figure 1). The review area does not include the stream directly southwest of the eastern section of the review area.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), THE TERRITORIAL SEAS, OR INTERSTATE WATER TO WHICH THE AQUATIC RESOURCE IS CONNECTED.

The review area is comprised of entirely uplands. The closest navigable waterway to the review area is the Pacific Ocean, 0.79 miles from the northernmost boundary of the review area.

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, THE TERRITORIAL SEAS, OR INTERSTATE WATER.

N/A

6. SECTION 10 JURISDICTIONAL WATERS[5]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[6]

   There are no jurisdictional aquatic resources in accordance with Section 10 of the Rivers and Harbors Act of 1899 in the review area. The review area is comprised of entirely uplands. The closest navigable waterway to the review area is the Pacific Ocean, 0.79 miles from the northernmost boundary of the project area.

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the 2023 Rule as amended, consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the 2023 Rule as amended. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

   There are no aquatic resources in the review area that were found to meet the definition of waters of the United States in accordance with the 2023 rule as amended, consistent with the Supreme Court's decision in Sackett. The review area is comprised of entirely uplands. There are no impoundments, tributaries, adjacent wetlands, or additional waters in the review area with a significant nexus to a jurisdictional water.

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

[5] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.

[6] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

a. Describe aquatic resources and other features within the review area identified in the 2023 Rule as amended as not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5). Include the type of excluded aquatic resource or feature, the size of the aquatic resource or feature within the review area and describe how it was determined to meet one of the exclusions listed in 33 CFR 328.3(b).[7]

   There are no aquatic resources or other features within the review area identified in the 2023 Rules as amended as not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5). There are no impoundments, tributaries, adjacent wetlands, or additional waters in the review area with a significant nexus to a jurisdictional water. The review area is comprised of entirely uplands.

b. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the 2023 Rule as amended (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).

   There are no aquatic resources or features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the 2023 Rule as amended. The review area is comprised of entirely uplands.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

   a. Google Earth aerial imagery accessed 21 May 2025.

   b. National Hydrology Dataset accessed 21 May 2025.

   c. Hawaii Division of Aquatic Resources Stream Database accessed 21 May 2025.

   d. FWS National Wetland Inventory accessed 21 May 2025.

10. OTHER SUPPORTING INFORMATION. N/A

[7] 88 FR 3004 (January 18, 2023)

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Neil Nugent	File Number: POH-2024-00163	Date: 5/22/2025

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
x	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A. INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT: If you received a Standard Permit or a Letter of Permission (LOP), you may sign the permit document and return it to the district commander for final authorization. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.**
- **OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district commander. Your objections must be received by the district commander within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district commander will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district commander will send you a proffered permit for your reconsideration, as indicated in Section B below.**

B. PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit or a Letter of Permission (LOP), you may sign the permit document and return it to the district commander for final authorization. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

C. PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

D. APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

E. PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Honolulu District, U.S. Army Corps of Engineers
Regulatory Office, CEPOH-RO
Building 230
Fort Shafter, Hawaii 96858-5440
808-835-4303

If you only have questions regarding the appeal process you may also contact:

Kate Bliss
Regulatory Program Manager
U.S. Army Corps of Engineers, Pacific Ocean Division
Building 525
Fort Shafter, HI 96858-5440
808-835-4626
Kate.m.bliss@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Commanders personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, CEPOH-RO
FORT SHAFTER, HAWAII 96858-5440

December 29, 2025

SUBJECT: Approved Jurisdictional Determination and No Permit Required,
DA File No. POH-2025-00176

Robert Ing
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, HI 96805

Dear Mr. Ing:

The Honolulu District, U.S. Army Corps of Engineers (Corps), Regulatory Branch has received your request for an approved jurisdictional determination (AJD) and determination whether a Department of the Army (DA) permit is required for the Ho'olehua Scattered Lots Roadway and Drainage Improvements located along Mo'omomi Avenue, Farrington Avenue, and Pu'u Kapele Avenue in Kualapuu, Island of Molokai, Hawaii. Your request has been assigned DA file number POH-2025-00176. Please reference this number in all future correspondence with our office relating to this action.

The review area for this AJD includes, and is limited to, the three drainage improvement sections, totaling 2.8 acres, along Mo'omomi Avenue (centered at 21.169901, -157.121590), Farrington Avenue (centered at 21.178704, -157.119895), and Pu'u Kapele Avenue (centered at 21.182776, -157.095557) located in Kualapuu, Island of Molokai, Hawaii, and is depicted in yellow, labeled "Roadway and Drainage Improvements", on the enclosed map (Enclosure 1).

Based on our review of the information you provided dated August 8, 2025, the Corps has determined the site does not contain waters of the U.S., including wetlands or navigable waters of the U.S., as defined by 33 CFR Parts 328 and 329, respectively. Therefore, a DA permit under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899 is not required.

This AJD is valid for a period of five (5) years from the date of the AJD form, unless new information supporting a revision is provided to us before the expiration date. The basis for this determination can be found in the enclosed AJD form(s) (Enclosure 2). Additionally, a Notification of Administrative Appeal Options and Process and Request for Appeal form regarding this AJD (see section labeled "Approved Jurisdictional Determination") is enclosed (Enclosure 3).

While a DA permit is not required for your proposed project, you are responsible for obtaining all other applicable Federal, state, or local authorizations required by law.

Thank you for your cooperation with the Honolulu District Regulatory Program. If you have any questions related to this determination, please contact me at (808) 459-0179 or via e-mail at david.j.rojek@usace.army.mil. For additional information about our Regulatory Program, please visit our web site at https://www.poh.usace.army.mil/Missions/Regulatory.aspx.

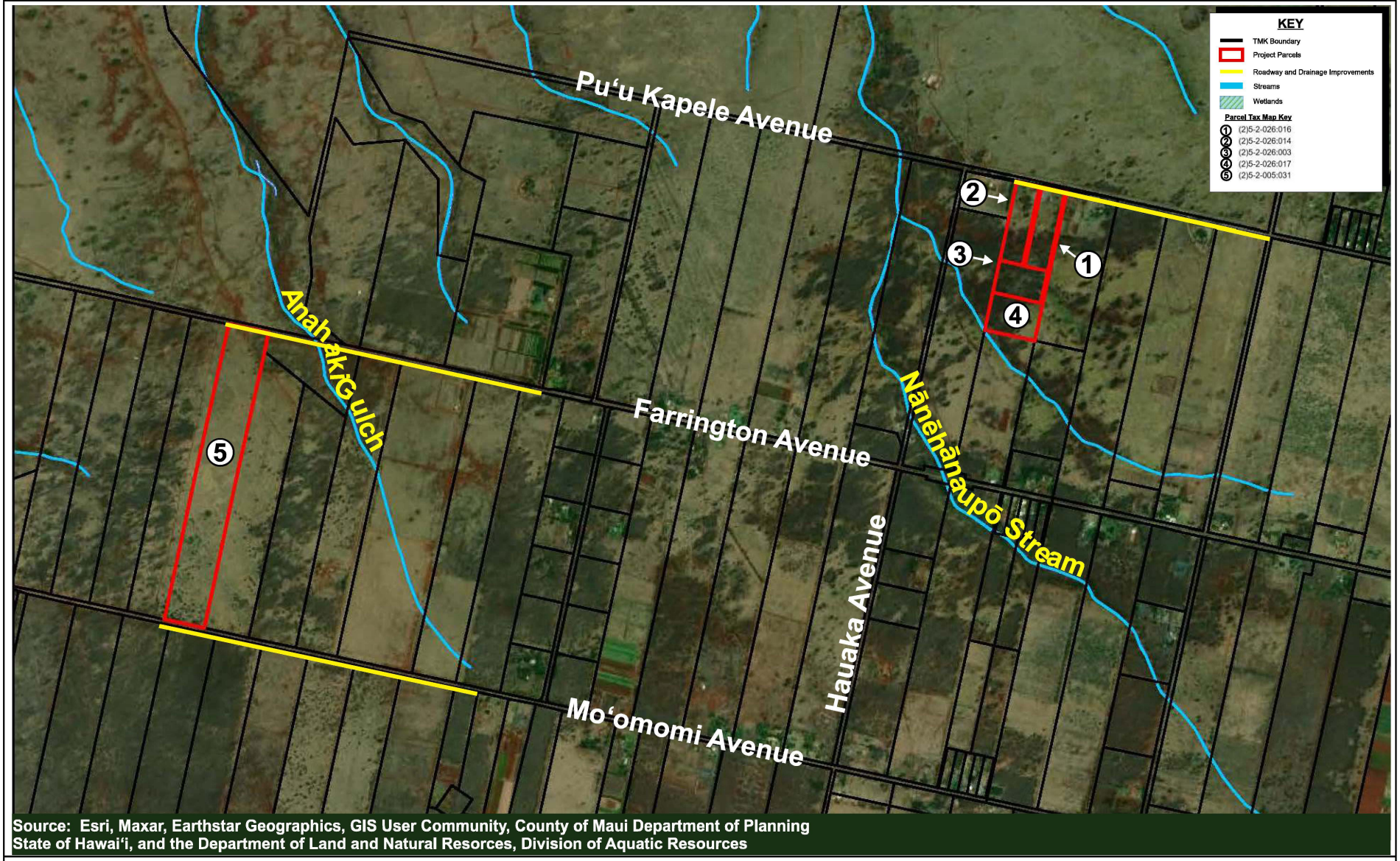
Sincerely,

David Rojek

David Rojek
Regulatory Specialist

Enclosures

cc:
Patrick McCormic (Munekiyo Hiraga), patrick@munekiyohiraga.com



Source: Esri, Maxar, Earthstar Geographics, GIS User Community, County of Maui Department of Planning State of Hawai‘i, and the Department of Land and Natural Resorces, Division of Aquatic Resources

DHHL Ho‘olehua Scattered Lots Subdivision and Improvements

Streams and Wetlands Map

0 750 Feet
375 1,500

MUNEKIYO HIRAGA

Prepared for: State of Hawai‘i, Department of Hawaiian Home Lands

SOH DHHL\Hoolehua Scattered Lots\Applications\Figures\Streams\JD

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, CEPOH-RO
FORT SHAFTER, HAWAII 96858-5440

CEPOH-RO December 29, 2025

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Approved Jurisdictional Determination in accordance with the "Revised Definition of 'Waters of the United States'"; (88 FR 3004 (January 18, 2023) as amended by the "Revised Definition of 'Waters of the United States'; Conforming" (8 September 2023) ,[1] POH-2025-00176

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[2] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[3]

On January 18, 2023, the Environmental Protection Agency (EPA) and the Department of the Army ("the agencies") published the "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule"). On September 8, 2023, the agencies published the "Revised Definition of 'Waters of the United States'; Conforming", which amended the 2023 Rule to conform to the 2023 Supreme Court decision in *Sackett v. EPA*, 598 U.S., 143 S. Ct. 1322 (2023) ("*Sackett*").

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. For the purposes of this AJD, we have relied on Section 10 of the Rivers and Harbors Act of 1899 (RHA),[4] the 2023 Rule as amended, as well as other applicable guidance, relevant case law, and longstanding practice in evaluating jurisdiction.

[1] While the Revised Definition of "Waters of the United States"; Conforming had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] 33 CFR 331.2.
[3] Regulatory Guidance Letter 05-02.
[4] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

      i. Section of Anahaki Gulch that crosses under Farrington Avenue, Kualapuu, Island of Molokai, Hawaii (21.178925, -157.121301), non-jurisdictional

      ii. Uplands, non-jurisdictional

2. REFERENCES.

   a. "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule")

   b. "Revised Definition of 'Waters of the United States'; Conforming" 88 FR 61964 (September 8, 2023))

   c. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

   d. January 2023 Rule preamble at 88 FR 3090

3. REVIEW AREA.

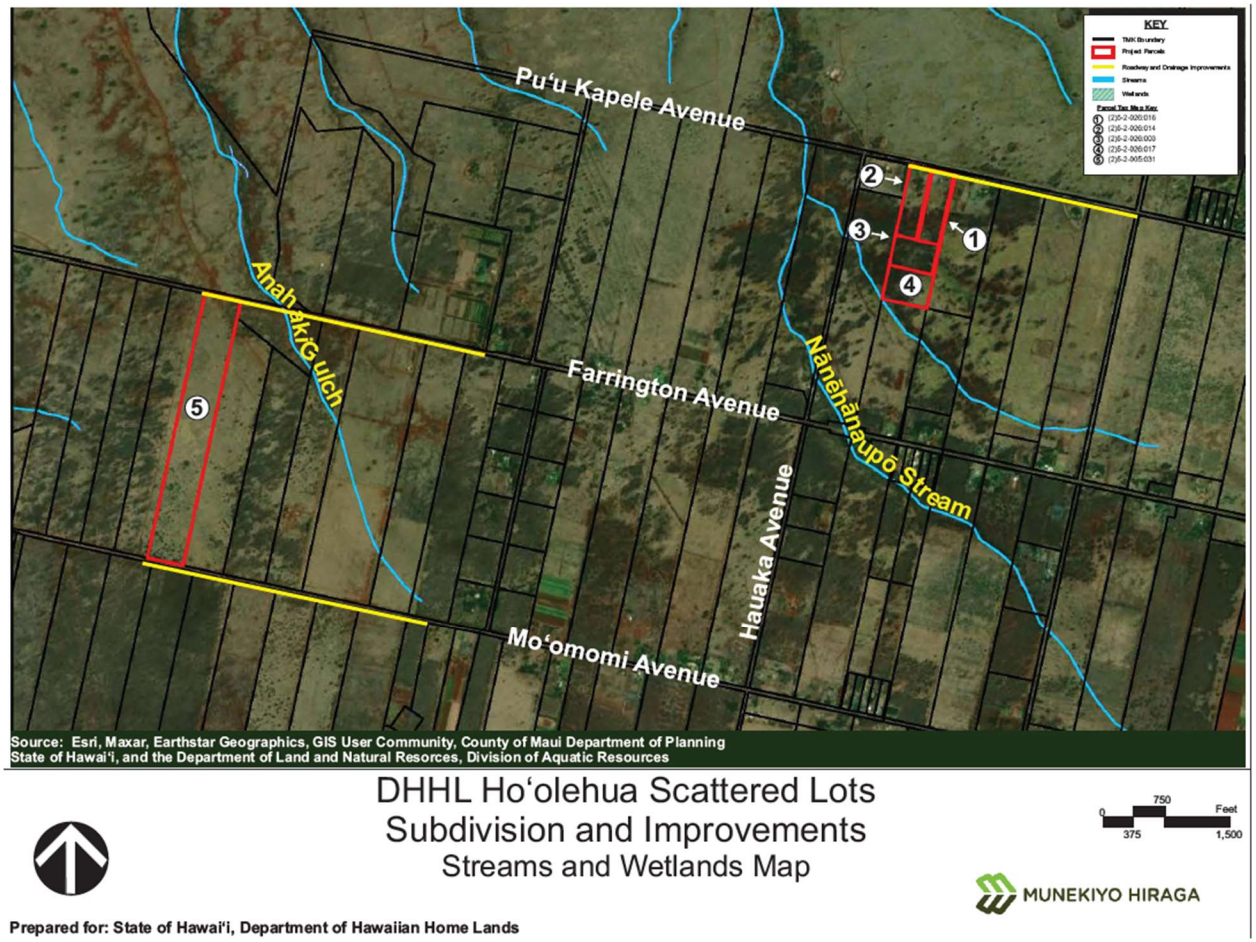


Figure 1: Review Area depicted in yellow.

The review area includes, and is limited to, the three sections of drainage improvements, totaling 2.8 acres, along Mo'omomi Avenue (centered at 21.169901, -157.121590), Farrington Avenue (centered at 21.178704, -157.119895), and Pu'u Kapele Avenue (centered at 21.182776, -157.095557) located in Kualapuu, Island of Molokai, Hawaii, and is depicted in yellow, labeled "Roadway and Drainage Improvements" in the above map (Figure 1).

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), THE TERRITORIAL SEAS, OR INTERSTATE WATER TO WHICH THE AQUATIC RESOURCE IS CONNECTED.

There are no TNWs in the review area. The closest TNW is the Pacific Ocean located 0.78 miles north of the northernmost section of the review area.

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, THE TERRITORIAL SEAS, OR INTERSTATE WATER.

   Anahaki Gulch flows north and directly discharges into the Pacific Ocean 0.78 linear miles north of the northernmost section of the review area.

6. SECTION 10 JURISDICTIONAL WATERS[5]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[6]

   There are no jurisdictional aquatic resources in accordance with Section 10 of the Rivers and Harbors Act of 1899 in the review area. The closest navigable waterway is the Pacific Ocean located 0.78 miles north of the northernmost section of the review area.

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the 2023 Rule as amended, consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the 2023 Rule as amended. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

   There are no aquatic resources in the review area that were found to meet the definition of waters of the United States in accordance with the 2023 rule as amended, consistent with the Supreme Court's decision in Sackett. The review area

[5] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.
[6] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

is comprised of entirely uplands. There are no impoundments, tributaries, adjacent wetlands, or additional waters in the review area with a significant nexus to a jurisdictional water.

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

   a. Describe aquatic resources and other features within the review area identified in the 2023 Rule as amended as not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5). Include the type of excluded aquatic resource or feature, the size of the aquatic resource or feature within the review area and describe how it was determined to meet one of the exclusions listed in 33 CFR 328.3(b).[7]

      There are no aquatic resources or other features within the review area identified in the 2023 Rules as amended as not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5). There are no impoundments, tributaries, adjacent wetlands, or additional waters in the review area with a significant nexus to a jurisdictional water.

   b. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the 2023 Rule as amended (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).

      Anahaki Gulch is determined to be non-jurisdictional because it does not meet one or more categories of waters of the United States under the 2023 Rule as amended. On April 11, 2025, AECOS Inc. surveyed the Anahaki Gulch site and found the site does not include any of the three parameters of a wetland (hydrophytic vegetation, hydric soils, hydrology). Photos of the site show a dry gulch at the site with no standing or flowing water. Additionally, the survey and photos lack indicators of an ordinary high water mark (i.e. no shelving, channel bar, or instream bedforms). Vegetation includes 90% coverage of *Megathyrsus maximus* (FAC) and 20% coverage of *Leucaena leucocephala* (UPL). Soil at the site is characterized as sandy down to 13 inches depth and does not contain hydric soils.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

[7] 88 FR 3004 (January 18, 2023)

a. GEGD Pro aerial imagery taken December 12, 2025.

b. National Hydrology Dataset accessed December 15, 2025.

c. Photos provided by the applicant in their report dated June 12, 2025.

d. FWS National Wetland Inventory accessed December 15, 2025.

e. Wetland Survey conducted by AECOS Inc. on April 11, 2025.

10. OTHER SUPPORTING INFORMATION. N/A

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Robert Ing	File Number: POH-2025-00176	Date: 12/29/2025

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
x	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A. INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT: If you received a Standard Permit or a Letter of Permission (LOP), you may sign the permit document and return it to the district commander for final authorization. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.**
- **OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district commander. Your objections must be received by the district commander within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district commander will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district commander will send you a proffered permit for your reconsideration, as indicated in Section B below.**

B. PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit or a Letter of Permission (LOP), you may sign the permit document and return it to the district commander for final authorization. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

C. PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

D. APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

E. PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

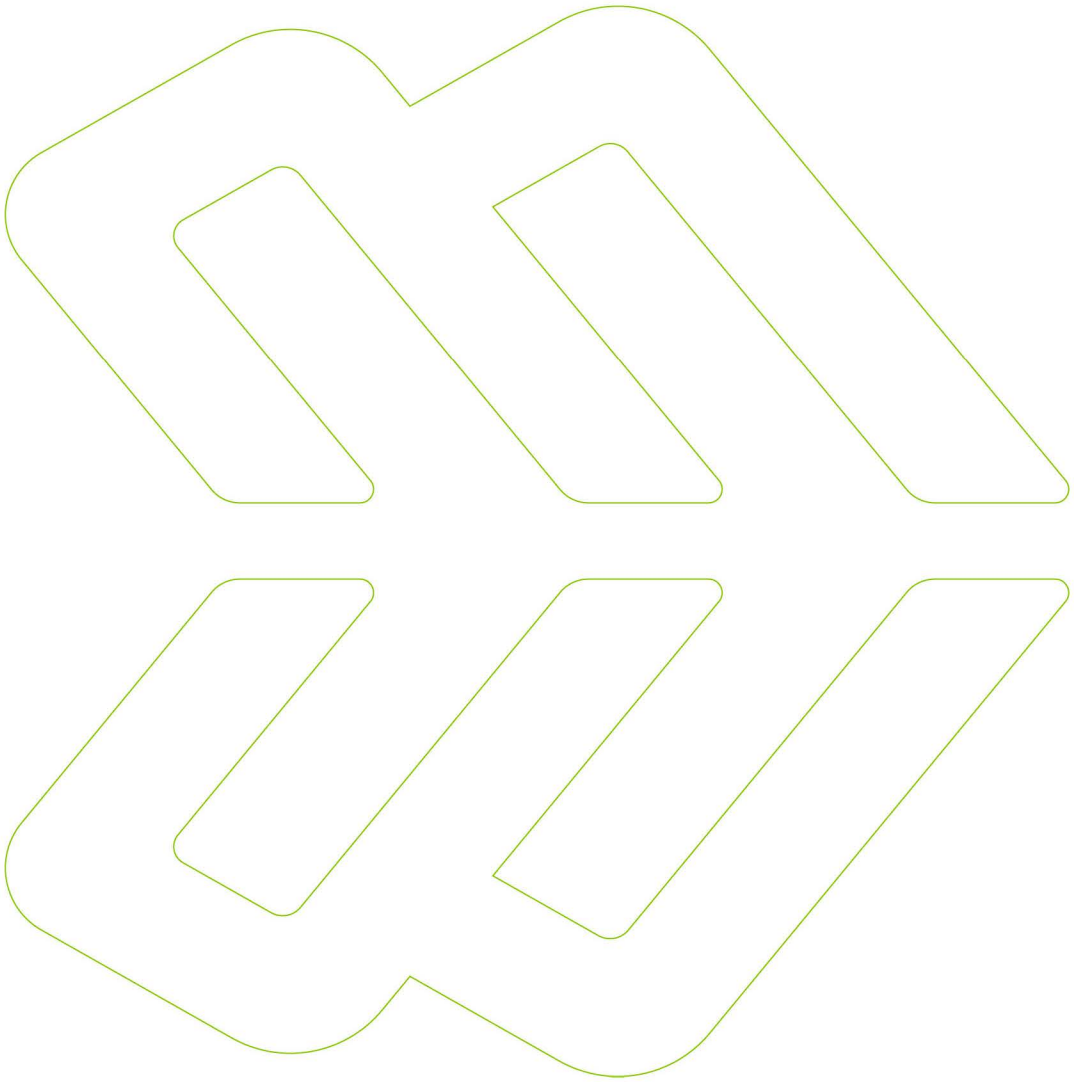
Honolulu District, U.S. Army Corps of Engineers
Regulatory Office, CEPOH-RO
Building 230
Fort Shafter, Hawaii 96858-5440
808-835-4303

If you only have questions regarding the appeal process you may also contact:

Kate Bliss
Regulatory Program Manager
U.S. Army Corps of Engineers, Pacific Ocean Division
Building 525
Fort Shafter, HI 96858-5440
808-835-4626
Kate.m.bliss@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Commanders personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		



MUNEKIYO HIRAGA

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