DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

ALAN M. ARAKAWA
Mayor
CAROL K. REIMANN
Director
JAN SHISHIDO
Deputy Director

2200 MAIN STREET • SUITE 546 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165
MAILING ADDRESS: 200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • EMAIL: director.hhc@mauicounty.gov

March 22, 2016

Ms. Jessica Wooley, Director
Office of Environmental Quality Control
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Dear Ms. Wooley:

SUBJECT: Draft Environmental Assessment (DEA) for the 100% affordable Hana Housing Development located at TMK (2) 1-3-04:01 portion in Hana, Maui, Hawaii

The Department of Housing and Human Concerns (Department) has reviewed the Draft EA and anticipates a finding of no significant impact (FONSI) determination. We respectfully request the publication of the Draft Environmental Assessment for the subject project in the next available issue of *The Environmental Notice*.

Enclosed please find the following:

1. OEQC Publication Form w/ Project Summary Description;
2. Distribution List; and
3. One copy of the DEA.

In addition, a CD-ROM with the DEA, Publication Form, and Distribution List is enclosed for your convenience. Should you require clarification or further assistance, please contact Buddy Almeida in our Housing Division Office at (808) 270-7351.

Sincerely,

Jan Shishido

for CAROL K. REIMANN
Director of Housing and Human Concerns

Enclosures
cc: Mr. Brett Davis (w/o enclosures)
Buddy Almeida, Housing Administrator

APPLICANT PUBLICATION FORM

Project Name:	Hana Affordable Housing Development
Project Short Name:	Hana Affordable Housing Development
HRS §343-5 Trigger(s):	Use of State or County funds
Island(s):	Maui
Judicial District(s):	Hana
TMK(s):	(2) 1-3-004:001 portion
Permit(s)/Approval(s):	HRS Chapter 343 Compliance, Draft Environmental Assessment, Final Environmental Assessment, Maui County 201H Affordable Housing Application Permit, Building Permit, Wastewater Discharge (Hookup) Permit, Grading and Grubbing Permit, NPDES Permit, Air Pollution Control Permit, Community Noise Permit, Drainage Approval
Approving Agency:	Maui County Department of Housing and Human Concerns
Contact Name, Email, Telephone, Address	Ms. Carol Reimann, Director, carol.reimann@co.maui.hi.us , 808-270-7805 2200 Main St. Suite 546, Wailuku, HI 96793
Applicant:	Mr. Gabriel Hoeffken, Project Manager
Contact Name, Email, Telephone, Address	Mr. Gabriel Hoeffken, gabe@tomsbackhoe.com , 808-357-2727 561 Papipi Road, Kula HI 96790
Consultant:	Chris Hart and Partners, Inc.
Contact Name, Email, Telephone, Address	Mr. Jordan E. Hart, President, jhart@chpmaui.com , 808-242-1955 115 N. Market St. Wailuku, HI 96793

Status (select one)	**Submittal Requirements**
__X__ DEA-AFNSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
____ FEA-FONSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
____ DEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
____ FEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
____ FEIS Acceptance Determination	The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
____ FEIS Statutory Acceptance	The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS

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

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

The proposed project is a 100% affordable single family residential development that will include construction of a total of 24 single family homes with necessary supporting infrastructure and roadway access to Hana Highway. The 24 lots are a minimum of 10,000 square feet in size and therefore will allow for ohana units. The single family homes will be built in accordance with the Single family residential construction standards.

Associated infrastructure improvements include paved roadways, grassed swales, driveways and graded building pads and landscape planting. The right of way width for the access driveway will be forty four (44) feet wide with twenty (20) feet of pavement. The road shoulders will be grassed and there are no concrete curbs, gutters and sidewalks proposed with this project. All utilities will be overhead for electrical, telephone and cable TV.

Of the proposed 24 single family dwellings, 10 of these will service people 80% and below median income the remaining 14 will service those between 140% and 90% and below. The exact breakdown will depend on actual cost of development, demand from the Hana community and where individuals and families fall in the affordable spectrum.

Consolidated
Draft Environmental Assessment
&
201H Application

100% Affordable Hana Housing Project

TMK's (2) 1-3-004:001 portion

Hana, Maui, Hawaii

March 2016

Prepared for:
GTH Land Company LLC
Mr. Gabe Hoeffken
651 Papipi Road
Kula, HI
808-357-2727

Prepared by:
Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, Maui, Hawaii 96793
808-242-1955

Draft EA/201H Report Text

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I. PROJECT INFORMATION

A. Overview of the Request

On behalf of the Owner, GTH Land Company, LLC. Chris Hart and Partners, Inc. has prepared this consolidated 201H Application and Draft Environmental Assessment (DEA) to construct a twenty-four (24) 100% affordable single family subdivision with the option for an Ohana unit on each lot. **(See: Figures 1, Regional Location Map, 3 Site Photographs, & 4 Conceptual Site Plan.)**

The 201H Application process allows the applicant to request exemptions from impact fees, zoning changes, and other development costs in order to provide affordable housing. The Applicant is proposing a 100% affordable project which is above and beyond the required 51% in the 201H application process and the draft requested exemptions for the proposed project are provided in **(See: Appendix I, Draft 201H exemption list).**

The project site for the 100% affordable housing development is a 6.7 acre portion of a larger 72.81 acre parcel located in Hana, Maui and is identified by TMK (2) 1-3-004:001. **(See: Figure 2, Tax Map Key.)**

The project site is located in the State Agricultural District and the Maui County Zoning is Interim District. The Hana Community Plan Map identifies the project site as Rural (R). The project site is located within the Rural Growth Boundary in the Maui Island Plan. **(See: Figures 5, State Land Use District Map, 6, Maui County Zoning Map, 7, Hana Community Plan Map, & 8 Maui Island Plan Map.)** As part of this 201H application, the Applicant is requesting exemptions from the requirement for a State Land Use District Boundary amendment, a Change in Zoning and Community Plan amendment for the proposed project. A full list of exemptions are provided in Appendix I **(See: Appendix I, Draft 201H exemption list).**

This DEA has been prepared in accordance with Chapter 343, Hawaii Revised Statutes (HRS). The DEA describes the proposed project, evaluates the potential impacts the action may have on the environment, public services, and infrastructure, and discusses appropriate measures to minimize impacts to the environment.

B. Project Profile

Tax Map Key:	(2) 1-3-04:01 portion
Project Name:	100% Affordable Hana Housing Project
Street Address:	4356 Hana Highway
Land Area:	6.7 acres
Applicant:	Mr. Gabe Hoeffken 651 Papipi Road Kula, HI 96790 Phone: 808-357-2727
Landowner:	GTH Land Company LLC Thomas H. Hoeffken 651 Papipi Road Kula, HI 96790 Phone: (808) 269-0876
Planning Consultant:	Chris Hart & Partners, Inc. Mr. Brett Davis 115 N. Market Street Wailuku, HI 96793 Email: bdavis@chpmaui.com Phone: (808) 242-1955 Fax: (808) 242-1956
State Land Use District:	Agricultural
Hana Community Plan:	Rural (R)
Maui County Zoning:	Interim District
Maui Island Plan:	Rural Growth Boundary
Flood Insurance Rate Map:	Zones X & A

Existing Land Use:	Mauka of the project site is a permitted mining and resources extraction occurring under a special use permit.
Proposed Use:	100% affordable 24 lot single family subdivision on 6.7 acres (Ohana Units would be permitted)
Existing Access:	An unpaved driveway provides access to the site from Hana Highway and is used for the existing mining operation. This driveway will be improved for the development of the proposed affordable housing.

C. Chapter 343, HRS Accepting Agency

Agency:

Maui County
Department of Housing and Human Concerns
Ms. Carol Reimann, Director
One Main Plaza #546
2200 Main Street
Wailuku, HI 96793
Phone: (808) 270-7805

D. Required Permits and Approvals

1. State Land Use Commission Special Permit (SUP) for mining and resource extraction on a 12 acre portion of a 72.81 acre parcel. (SUP2 2014/0002). Note the Applicant has obtained this permit. **(See: Appendix H, SUP2 2014/0002 Approval dated July 29, 2015)**

2. A 201H Affordable Housing application is subject to approval by the Maui County Council.

3. Environmental Assessment Review by the State of Hawaii, Department of Health, Office of Environmental Quality Control.

4. Building Permit approval by Development Services Administration, Maui County Department of Public Works.

5. Subdivision approval by Development Services Administration, Maui County Department of Public Works.

E. Early Consultation

As part of the early consultation process for the preparation of the Draft EA and 201H affordable housing project, a letter dated July 29, 2014, requesting comments on the proposed project was mailed to various County, State, Federal agencies and others. The agency comment letters, with responses are included in Appendix A. **(See: Appendix A, Early Consultation Letters)**

In addition to sending out the early consultation letter the Applicant/Owner met with the Hana Advisory Committee on March 9, 2015 for approval of a Special Use Permit (SUP) for resource extraction and mining. At the March 9 meeting all public testimony was positive and in favor of granting the SUP and the proposed 201H single family subdivision was also discussed. There were concerns about archaeological sites on the property prior to the sharing of the archaeological survey. There were concerns about whether or not the land proposed for mining was productive agriculture land and thus would be better utilized for farming. The concerns led to a site visit and continuation of the meeting on March 17, 2015. At this meeting there was more discussion and a recommendation for approval of the SUP with amendments. **(See: Appendix H, SUP2 2014/0002 Approval dated July 29, 2015)**

II. DESCRIPTION OF THE PROPERTY AND PROPOSED PROJECT

A. PROPERTY LOCATION

Identified by TMK (2) 1-3-04:01, the Applicant/Owner's property is located in Hana, Maui and occupies an area of 72.81 acres and is located to the west of Kawaipapa Stream and mauka of Hana Highway. The proposed 100% affordable 201H housing project is located on a 6.7 acre portion of the owners parcel. **(See: Figures 1, Regional Location Map, & 2 Tax Map Key)**

B. EXISTING SITE CONDITIONS

The 72.81 acre property consist primarily of lava outcrops and dense jungle with trees, shrubs vines and ferns with approximately 13 acres of open spaces and roads that have been mechanically cleared. The Applicant currently operates a mining and extraction operation on a 12 acre portion of the property located mauka of the proposed 6.7 acre affordable housing project site. The mining operation includes a small truck parking area, a small shed with restroom, and rock crushing machinery. (**See: Figure No. 4a Existing Conditions Map)**

The 6.7 acre 100% affordable housing project site contains a mix of dense vegetation and cleared space with existing dirt roadways. 2 historic sites have been identified within the 6.7 acre project boundary. The historic sites are discussed further in section III. A.7 "Archaeological and Historical Resources" **(See Figure 3, Site Photographs.)**

C. LAND USE HISTORY

The subject property was purchased by Thomas Hoeffken on October 10, 2004 and a State Land Use Commission Special Use Permit (SUP2 2014/0002) for mining and resource extraction on a 12 acre portion of the property was granted on August 11, 2015 for a period of 3 years. The rest of the property is vacant vegetated land. **(See Appendix H, SUP2 2014/0002 Approval dated July 29, 2015)**

D. ALTERNATIVES

1. **No Action:** This alternative would forego improvements to the project.

   Positive Impacts: By leaving the property in its existing undeveloped state, the short-term impacts associated with construction would be avoided. Maintaining the site

as undeveloped would reduce energy consumption, and the number of automobiles in the immediate area.

Negative Impacts: The County would not realize higher tax revenues associated with residential development of the property. Businesses and services in the Hana area and on the island would not benefit from spending by occupants of the development on the property, if the "No Action" plan were followed. The residents of Hana would continue to be limited in their options for affordable housing. The high carrying costs of the property would be a burden for the landowner to absorb for an indefinite period of time and likely result in the sale of the property.

2. **Deferred Action:** This alternative would delay development to a later time.

Positive Impacts: There would be no immediate construction-related impacts associated with development.

Negative Impacts: A delay in commencing development would result in uncertainties related to market conditions, interest rates, construction costs, and availability of infrastructure. These considerations along with the carrying costs of the property would be financially burdensome for the landowner.

3. **Alternative Site:** This option would require that the owner/applicant find and develop another residential parcel.

Positive Impacts: The short term and peripheral impacts associated with construction would be avoided.

Negative Impacts: The community of Hana would lose an opportunity for new affordable single-family housing. The applicant does not own another suitable site and the land costs involved in acquiring a suitable site could be high.

E. DESCRIPTION OF THE PROPOSE ACTION (PREFERED ALTERNATIVE)

3. Preferred Action Single Family Subdivision

As mentioned above, the proposed single family subdivision project is the preferred alternative.

The proposed project is a 100% affordable single family residential development that will include construction of a total of 24 single family homes with necessary supporting infrastructure and roadway access to Hana Highway. The 24 lots are a minimum of 10,000 square feet in size and therefore will allow for ohana units. (**See: Figure No. 4b Conceptual Site Plan)** The single family homes would be built in accordance with the Single family residential construction standards.

Associated infrastructure improvements include paved roadways, grassed swales, driveways and graded building pads and landscape planting. The right of way width for the access driveway will be forty four (44) feet wide with twenty (20) feet of pavement. The road shoulders will be grassed and there are no concrete curbs, gutters and sidewalks proposed with this project. All utilities will be overhead for electrical, telephone and cable TV.

The proposed project will be 100% affordable and will provide more than the required amount (25%) of units of a market-rate subdivision, at an affordable price. Of the proposed 24 single family dwellings, 10 of these will service people 80% and below median income the remaining 14 will service those between 140% and 90% and below. The exact breakdown will depend on actual cost of development, demand from the Hana community and where individuals and families fall in the affordable spectrum.

At this time it is estimated that the houses with lot are estimated to cost between $250,000 and $445,000 using 2015 Affordable Sales Price Guild-Line for Hana single family homes.

The initial design and planning phase is being funded personally by the property land owner, Tom Hoeffken, and Gabriel Hoeffken, the Manager of GTH Land Company. Money will need to be borrowed to complete road paving and the connection to the Hana Highway. This work can be done last reducing any duration interest to be paid on borrowed funds.

Repayment will be made through the sale of property to the entities building the houses (Habitat for Humanity)

The estimated start-up expenses are approximately $250,000 which have been and will continue to be self-financed by property owner Tom Hoeffken and GTH Land Co.

No Net Equity will be contributed as there is very little profit in the project.

The project's estimated cost for land, planning, and infrastructure is approximately $2.9 million dollars. Most of this expense is being deferred or self-funded until project is complete. Toward the end of the project up to $500,000 may need to be financed to complete the roadway.

The home construction will be financed through the development organization (Habitat for Humanity) who will secure individual financing for prospective home owners. The proposed project is expected to start site work grading in 2017 and occupied by 2020. The homes will be sold in accordance with the requirements of the Department of Housing and Human Concerns.

III. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

Existing Conditions. Identified by TMK (2) 1-3-04:01, the subject property is located in Hana, Maui and occupies an area of 72.81 acres and is located to the west of Kawaipapa Stream and mauka of Hana Highway. The proposed 201H affordable housing project is located on a 6.7 acre portion of the parcel. The State land use, zoning, Maui Island Plan and Hana Community Plan designations for surrounding properties are summarized below:

North:
Community Plan: Rural and Agriculture
State Land Use: Rural
Zoning: Interim
Maui Island Plan: Rural Growth Boundary
Existing Uses: Rural Single Family Subdivision

South:
Community Plan: Rural
State Land Use: Agricultural
Zoning: Ru -0.5 and Interim
Maui Island Plan: Rural Growth Boundary
Existing Uses: Kawaipapa Stream, AG land

East:
Community Plan: Agriculture
State Land Use: Rural
Zoning: Interim
Maui Island Plan: Rural Growth Boundary
Existing Uses: Rural single family Subdivision

West:
Community Plan: Agricultural
State Land Use: Agricultural
Zoning: Agricultural
Maui Island Plan: Agricultural
Existing Uses: Applicant owned land for Mining and resource extraction

Potential Impacts and Mitigation Measures. The subject parcel is located in between existing residential developments within a developed portion of Hana south of the Hana High school. The proposed use of the subject parcel for affordable residential purposes is compatible with current uses in the surrounding area.

From a long-term perspective, the proposed project is not anticipated to have an adverse impact on land uses in the vicinity and will supplement the basic character of the surrounding environs.

2. Topography and Soils

Existing Conditions. A Preliminary Engineering Report was prepared by Wayne Arakaki Engineering. The parcel slopes down in a north to south direction from an elevation of approximately 180 feet above mean sea level to approximately 160 feet above mean seal level, averaging approximately 4%. **(See: Appendix C, Preliminary Engineering Report.)**

According to the *Soil Survey of the Islands of Kauai, Oahu, Maui, Moloka`i, and Lana`i, State of Hawai`i, April 1972*, prepared by the United States Department of Agriculture, the soil associated with the subject parcel is MYD. **(See: Figure 9, Soil Classifications Map.)** This soil is comprised entirely of the Malama extremely stony muck, 3-25% slope (MYD). Permeability is very rapid. Runoff is very slow, and the erosion hazard rate is no more than slight.

The existing mining and rock crushing operation is occurring on a 12- acre portion of the property mauka of the proposed affordable housing project site. The Applicant improved the area mining site with a sedimentation pond, drainage system and earth berms. There are existing roads and a water meter for irrigation and dust control.

ALISH. In 1977, the State Department of Agriculture developed a classification system to identify Agricultural Lands of Importance to the State of Hawaii (ALISH). The classification system is based primarily, although not exclusively, upon the soil characteristics of the lands. The three (3) classes of ALISH lands are: "Prime", "Unique", and "Other", with all remaining lands termed "Unclassified". When utilized with modern farming methods, "Prime" agricultural lands have a soil quality, growing season and moisture supply necessary to produce sustained crop yields economically. "Unique" agricultural lands possess a combination of soil quality, growing season, and moisture supply to produce sustained high yields of a

specific crop. "Other" agricultural lands include those that have not been rated as "Prime" or "Unique" but are still considered important agricultural lands.

The ALISH system classifies the property "Unclassified". **(See: Figure 11, "Agricultural Lands of Importance to the State of Hawaii Map").** The supply of good farmland of which there is also a large supply. As such, the proposed project is not expected to impact the long-term viability or growth of agriculture on the island of Maui.

LSB. In 1967 The University of Hawaii, Land Study Bureau (LSB), developed the Overall Productivity Rating, which classifies soils according to five (5) levels, ranging from "A", representing the class of highest productivity soils, to "E", representing the lowest.

The lands underlying the project site are classified as "E", or very poorly suited for agricultural production **(See: Figure 12, "Land Study Bureau Map").**

Potential Impacts and Mitigation Measures. The LSB and ALISH classification systems indicate that the lands underlying the project site possess poor soil and low soil ratings for productive agricultural uses. As such, the utilization of these poorly-rated agricultural lands for urban use and development is deemed appropriate.

As mentioned the project site has been partially cleared of dense vegetation and dirt roadways for the permitted mining and resource extraction are present. Grading work will include the roadways and building pads for the proposed 24- lot single family development. The proposed project will limit altering the topography of the site and to the extent possible to reduce site work costs and maintain the natural topography when possible.

Best Management Practices (BMPs) will be implemented during construction activities to control fugitive dust, soil erosion, storm water runoff, and non-point source pollution. The BMPs will be prepared in accordance with Chapter 20.08, Maui County Code, *Soil Erosion and Sedimentation Control*.

As part of the conditions of approval of the mining operation the Applicant must operate the mining and resource extraction activities in compliance with all applicable government requirements.

3. Flood and Tsunami Hazards

Existing Conditions. The flood insurance rate map (Map Number 1500030670E, Revised September 25, 2009) prepared by the Federal Emergency Management Agency, reveals that the majority of the subject parcel is located in Zone "X". Zone X is area determined to be outside the 0.2% annual chance floodplain (i.e., a low risk flood hazard area). A small portion of the property along the Kawaipapa Stream is situated in Flood A. Zone A is a flood zone with no Base Flood Elevation determined. **(See: Figure 10, Flood Hazard Assessment Map.)**

Potential Impacts and Mitigation Measures. The site of the proposed single family residential subdivision is located in Flood Zone X. The proposed actions are not anticipated to have any adverse effects with respect to flooding since no habitable structures are being built outside of Zone X. The proposed project should not be affected by or have adverse impacts upon its neighbors with regards to flood hazard potential since the increase in drainage from the project will be retained onsite. See Section III.D.3 for a discussion on drainage.

4. Flora and Fauna

Existing Conditions. A Botanical and Fauna Survey was conducted in March 2014 for the proposed project by Mr. Robert W. Hobdy. **(See: Appendix B-1, "Botanical and Fauna Survey".)** The vegetation of the project area is a diverse array of tropical forest and shrubland species. A total of 98 plant species were recorded during the course of the survey. Of these eight species were common: Hilo Grass (*Paspalum conjugatum*), Mango (mangifera indica), maile hohono (Ageratum conyzoides), false daisy (Eclipta prostrata), African tulip tree (Spathodea campanulata), little bell (Ipomoea triloba), glycine (Nenotonia wightii) and gunpowder tree (trema orientalis).

A walk-through Fauna survey was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. In addition an evening visit was made to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

Four non-native mammal species were recorded within the project area during two site visits. Most common were axis deer (*Axis axis*), domestic cats (*Felis catus*), mice (*Mus domesticus*) and domestic dogs (*Canis familiaris*). Other mammals likely to

utilize this property, but which were not observed include rats (*Rattus* spp.) and mongoose (*Herpestes auropunctatus*).

A special effort was made to look for the native Hawaiian hoary bat by making an evening survey of the area. An estimated 2 or 3 bats were detected over a ten minute period using a bat detection device (Batbox IIID) was employed, set to the frequenct of 27,000 hertz which this species is known to use.

Birdlife was moderate both in species present and in total numbers. Most common were zebra dove (*Geopelia striata*) and spotted dove (Steptopelia chinensis) and norther cardinal (Cardinalis cardinalis) No native forest birds occur anywhere in the vicinity of this propery. They are presently restricted to middle and upper elevation native forests were suitable habitat exists and moqsquito-borne diseases are absent.

One insect species was abundant throughout the project area: beet Webworm moth (*Spladea recurvalis*). Also common were the longtail blue butterfly (*Lampides boeticus*), monarch butterfly (Danaus plexippus) and the small rice grasshopper (Oxya japonica). **(See: Appendix B-1, Botanical and Fauna Survey.)**

Potential Impacts and Mitigation Measures. The vegetation throughout the project area is comprised mainly of non-native species. No federally listed Threatened or Endangered species (USFWS, 2014) were found on the property nor were any found that are candidates for such status. No special habitats were found on the property. No wetlands as defined by the U.S. Army Corps of Engineers occur on the property. Because of the existing conditions the proposed project is not expected to have a significant negative impact on the botanical resources in the project area.

As recommended by the botanist, this Flora and Fauna report was submitted to the U.S. Fish and Wildlife for suggested guidance on practices that will ensure safety for the Hawaii hoary bats. The USFW provided a response via email **(See: Appendix B-2, Email correspondence with U.S. Fish and Wildlife)** on the appropriate mitigation measures as follows;

- Trees greater than 15 feet in height not be cut or trimmed between June 1 and September 15 during the hoary bat pupping season.
- Barbed wire not be used as part of the proposed project as Hawaiian hoary bats can become entangled, and die as a result.

The Applicant is committed to not cutting or trimming trees during the pupping season and no barbed wire will be used for the 100% affordable housing project.

5. Noise Characteristics

Existing Conditions. The level of ambient noise is an important indicator of environmental quality. Noise in the project area is attributable to the permitted mining activities mauka of the project site, and vehicular traffic on Hana Highway and surrounding roads.

Potential Impacts and Mitigation Measures. The existing mining activity is approved until August July 29, 2018. Noise from construction equipment, such as excavators, rock crushing equipment and trucks would be the dominant source of noise resulting from the permitted mining operation. Impacts from these sources can be minimized by using appropriate sound-dampening devices (e.g., baffles, mufflers) and by properly maintaining all equipment, vehicles, and machinery.

To minimize noise impacts during the life of the permitted mining activities, the Applicant will limit construction to normal daylight hours and operate in full compliance with all applicable governmental requirements.

During the short-term construction period, ambient noise levels will temporarily increase during the subdivision infrastructure improvements and construction of the homes.

In the long-term, the single family homes will generate noise typically associated with a single family subdivision and therefore is not expected to have an adverse impact on ambient noise levels.

6. Air Quality

Existing Conditions. Air quality refers to the presence or absence of pollutants in the atmosphere. It is the combined result of natural conditions (e.g. dust from wind erosion) and emissions from a variety of pollution sources (e.g. automobiles, power-generating plants). Generally, the impact of a development upon air quality depends upon the type of project (e.g., residential, commercial, industrial) and its stage of progress (e.g., site preparation, infrastructure development, building construction).

The air quality in the Hana region and Maui in general is relatively good. Non-point source vehicle emissions do not generate a significant or high concentration of pollutants, as prevailing winds help to disperse emissions quickly.

Potential Impacts and Mitigation Measures. Minimal excavation and fill material will be required for the single family subdivision. As necessary, dust control measures that comply with the provisions of Chapter 11-60.1, HAR (*Pollution Control)* and Section 11-60.1-33, HAR (*Fugitive Dust)*, will be implemented during

construction to minimize the effects of fugitive dust. Examples of such measures include but are not limited to the following:

- Ensure that an adequate source of water is available for dust control before the start of construction.
- Use dust fences, water sprinklers, and water wagons to prevent airborne dust from leaving the site.
- Temporarily cover exposed areas with plywood or plastic sheeting material.
- Phase site work to limit the exposure of bare areas and leave existing vegetation in place for as long as possible prior to clearing.
- Place soil stockpiles away from adjacent properties and cover the stockpiles with plastic sheeting or similar material when not in use.
- Limit the areas of disturbance and hydromulch or grass finished areas on a timely basis.
- Water loose soil until damp and spray water during grading to control airborne dust.
- Use dust control measures during weekends, after hours and prior to daily start-up of construction activities.

From a long-term perspective, the proposed 100% affordable single family subdivision is not anticipated to generate adverse air quality impacts after build out.

7. Archaeological/Historical Resources

Existing Conditions. Haun & Associates, conducted an Archaeological Inventory Survey of the 72.81 acre property including the proposed affordable housing project site. The assessment utilized a pedestrian surface survey and subsurface testing to assess site conditions. The AIS identified 26 sites with 169 features located on the entire 72.81 acre property. The interpreted functions of the features included agriculture, permanent habitation, livestock control, animal husbandry, transportation, and historic habitation. Two (2) of the twenty-six (26) sites, a complex of four walls (Site 6548) and a historic habitation and agricultural complex (Site 6551), are located within the boundaries of the proposed 100% affordable single family development. The remaining sites are located outside of the proposed project area. **(See: Appendix F, Archaeological Inventory Survey)**

Haun & Associates also conducted a Cultural Impact Assessment for the proposed project. The objective of the CIA was to identify any culturally significant resources

or traditional cultural practices that occurred within the project area and its immediate vicinity. Four individuals of Hana community share their knowledge of Kawaipapa. The project area has been overgrown with dense vegetation for as long as anyone can remember. Taro and sweet potato were cultivated prehistorically in Kawaipapa. Kuki nuts were gathered for lei making and mangos are harvested presently. The railroad grade was used to transport sugarcane and pineapple to Hana Bay. The Honey Bee Camp was located within the project area, but no one could remember any specifics about the camp. Kawaipapa was a childhood home of Ka'ahumanu and her father, Ke'eaumoku. **(See: Appendix G, Cultural Impact Assessment)**

Potential Impacts and Mitigation Measures Two of the 26 sites, a complex of four walls (Site 6548) and a historic habitation and agricultural complex (Site 6551), are located within the boundaries of the proposed 100% affordable single family development. The AIS concludes that these two sites (Site 6548 and Site 6551) were recommended for no further work or preservation and the Department of Land and Natural Resources State Historic Preservation Division (SHPD) concurred with this recommendation in a letter dated March 31, 2014. **(See: Appendix F-2, SHPD letter dated March 13, 2014)**

The individuals interviewed for the CIA spoke in favor of the proposed project and stated that it would not interfere with any traditional cultural activities within the area, because no cultural activities take place. **(See: Appendix G, Cultural Impact Assessment)**

8. Scenic Resources

Existing Conditions. The site currently does not offer views towards the Pacific Ocean or Haleakala because of the dense vegetation existing on the site. As vegetation is cleared there will be partial ocean views from some upper lots and views towards the summit of Haleakala. **(See: Figure No. 3, Site Photos)**

Potential Impacts and Mitigation Measures. The proposed single family subdivision will be constructed in a vacant slightly sloped open area and the buildings are limited to 30 feet in height and is not expected to impact public views towards Haleakala from the Hana Highway. As such, the proposed project is not anticipated to impact public view corridors, or the visual character of the site and its immediate environs.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

Existing Conditions. The population of the County of Maui has exhibited relatively strong growth over the past decade with a 2010 population of 155,214, a 16.8% increase over 2000 population of 129,078. Maui Island is expected to increase to 181,000 in 2020 and 207,300 in 2030. (*"Table 1.1 Resident Population by County 1980-2040" DBEDT 2040 Series, March 2012*)

Potential Impacts and Mitigation Measures. The proposed 24 lot housing development is not expected to generate a significant amount population increase in the Hana area. The subject parcel is located in the Hana Census Designated Place (CDP). The Hana CDP identifies the average household size as 2.79 people. (U.S. Census Bureau, 2010) The proposed project could increase the immediate population by approximately 67 people. (Methodology: Multiply the average household size by the proposed number of proposed units. (24 units * 2.79= 67 people) Based on the Applicants meeting with the Community it is anticipated that most of future residents for this proposed project currently live in Hana, therefore the limited population increase is not anticipated to significantly impact the local population.

2. Economy

Existing Conditions. The visitor industry is a major component of the island's economy and the dominant economic force in the Hana region. Hana includes visitor attractions, beaches, a boat harbor with a few restaurants and retail.

Potential Impacts and Mitigation Measures. The permitted mining and resource extraction is providing a positive benefit to the Hana Community as the only source of rock for aggregate in the region. In the past this material has been driven from Kahului to Hana for roadway and construction applications. Using a local source will decrease the cost for those in Hana. The mine is producing gravel which will benefit by lowering the cost of materials for home and public improvements. From a short-term perspective, the construction of the 100% affordable single family homes will support the economy via direct and indirect construction-related employment, as well as through the purchase of construction materials and building-related services. During the long-term, the housing development will directly contribute to the economy through property taxes generated by the residents of the property. The proposed project supports will support the local economy in both the short and long term. Total direct construction phase job creation is anticipated to be approximately 6 individual tradesmen, employed for a duration of approximately 10 months.

C. PUBLIC SERVICES AND FACILITIES

1. Recreational Facilities

Existing Conditions. The Maui Department of Parks and Recreation operates and maintains a total of 3 parks in the Hana region, as well as community recreational facilities such as the Helene Hall at Hana Bay. In close proximity to the North of the property is Waiananpa State Park. The Applicant is also the owner of Tom's Backhoe, an excavation company based in Kula, Maui, Hawaii. Tom Backhoe donated the use of heavy machinery and man-hours to help construct the Hana Skate Park in 2012 adding to the diversity of park uses available in Hana.

Potential Impacts and Mitigation Measures. The proposed single family subdivision is not anticipated to have a significant impact upon the population and public facilities such as recreational facilities. As part of the 201H application process the 100% affordable project will be exempt from park dedication or assessment fees pursuant to Section 18.16.320, Maui County Code *Parks and Playgrounds*.

2. Police and Fire Protection

Existing Conditions. The Maui Department of Police is responsible for the preservation of the public peace, prevention of crime, and protection of life and property and is region is serviced by the Hana Police Station on Hana Highway.
The mandate of the Maui Department of Fire and Public Safety is to protect life, property, and the environment from fires, hazardous material releases and other life-threatening emergencies. The Department of Fire and Public Safety has fourteen (14) stations throughout the County including ten (10) stations on the island of Maui. The Hana station is assigned to the Hana region.

Potential Impacts and Mitigation Measures. The proposed single family subdivision is not anticipated to impact the current service area limits for police and fire protection. The proposed project is located between the police and fire stations and Hana town and is therefore in an accessible location to receive police and fire services.

3. Schools

Existing Conditions. Maui schools are organized into complexes and complex-areas. A complex consists of a high school and all of the intermediate/middle and elementary schools that flow into it. The proposed residential subdivision is located within the State Department of Education's (DOE) Hana High School Complex. Hana High & Elementary has partnered with Kamehameha School preschools to

provide all Hana 3 and 4 year old students a preschool education. Nonprofit organizations are located on the school campus and contribute greatly to educating students and involving them in community service activities.

Potential Impacts and Mitigation Measures. The proposed project is a small scale development and not anticipated to generate a substantial amount of school aged children. For the purposes of estimating potential school impacts, we have utilized the anticipated student generation table below provided by the Department of Education (DOE).
(Source:http://www.hawaiipublicschools.org/DOE%20Forms/Impact%20Fees/Central_Maui_Analysis.pdf)

DOE Student Generation		
	Single Family	Multi-Family
Elementary	0.23	0.13
Middle School	0.11	0.04
High school	0.15	0.05

Using the above student generation rates we have prepared the estimates assuming that there are 24 single family homes and 24 Ohana units. The proposed 24 unit single family subdivision with Ohana units would generate a total of 18 students.

Estimated Student Generation	24 single family lots	24 Ohana Units	Total Student Generation
Elementary	24x 0.23 = 5.52	24x 0.13 =3.12	8.64 (9)
Middle School	24x 0.11 = 2.64	24x 0.04 = 0.96	3.6 (4)
High school	24x 0.15 = 3.6	24x 0.05 = 1.2	4.8 (5)
			18 students

The Hana High and Elementary school have adequate capacity for these potential 18 additional students.

4. Medical Facilities

Existing Conditions. Located in Wailuku, the approximately 200-bed Maui Memorial Medical Center provides acute and emergency health care services for the County of Maui. Locally, Hana Health is a federally qualified health Center serving the needs of Hana residents, when they cannot make it to Kahului for medical treatment. In addition, American Medical Response provides 24-hour emergency

medical service through ten ambulance facilities stationed throughout the County, including eight (8) facilities on the island of Maui.

Potential Impacts and Mitigation Measures. The proposed single family subdivision will generate a small demand for new or additional health care facilities or services, however the Hana Health facility has capacity to serve this additional population. The project is not anticipated to have an adverse impact upon existing medical facilities and emergency medical response.

5. Solid Waste

Existing Conditions. The Solid Waste Division of the Department of Environmental Management is responsible for the collection and disposal of residential refuse on the island of Maui. County landfills located in Hana, will accept solid waste for disposal generated by the proposed 100% affordable project.

Potential Impacts and Mitigation Measures. As previously indicated, the single family subdivision will contribute towards an increase in solid waste and residents will coordinate with the County of Maui Environmental Management on the pick-up of residential refuse to be hauled to the Hana Landfill. If construction waste is generated it will be reused or disposed of properly. As such, no significant impacts to solid waste services and facilities are anticipated.

D. INFRASTRUCTURE

1. Water

Existing Conditions. The Maui Department of Water Supply (DWS) provides domestic water and fire flow service to the proposed single family residential project. There is an existing 12-inch waterline along Hana Highway, which will be connected and extended with a 8-inch waterline to the proposed project site. The 12-inch waterline is connected to a 0.5 million gallon water storage tank with an elevation of 325 feet above mean sea level. A water well pump is located in the same area and provides drinking water for the region. **(See: Appendix C, Preliminary Engineering Report.)**

Potential Impacts and Mitigation Measures. The proposed project's domestic water demand has been estimated to be 28,800 gallons per day. (This assumes that each of the 24 lot's is built with a home and ohana unit) In accordance with the DWS standards, the applicant will provide adequate fireflow, and new fire hydrants will be installed with a maximum spacing of 350 feet. **(See: Appendix C, Preliminary Engineering Report.)**

2. Wastewater

Existing Conditions. There are no County sewer facilities in Hana. All waste water systems are considered to be Individual Waste Water Systems (WS) or septic

systems. As previously noted, there is a potable water well in the vicinity of the project that is located over 1,000 feet from the project however there are no additional restrictions or requirements from the Department of Health.**(See: Appendix C, Preliminary Engineering Report.)**

Potential Impacts and Mitigation Measures. Each lot will have an IWS that consist of a 1250 gallon septic tank with leach field. A professional engineer will generate an IWS report for review and approval by the DOH. Once an approved a licensed contractor will install the system and final inspection by the DOH for final certification and use. **(See: Appendix C, Preliminary Engineering Report.)**

3. Drainage

Existing Conditions. The parcel slopes down in a north to south direction from an elevation of approximately 180 feet above mean sea level to approximately 160 feet above mean seal level, averaging approximately 4%. On the East and South boundaries is the Kawaipapa Stream. Off-site runoff flows into Kawaipapa Stream and downstream to the Ocean. There are no signs of erosion due to stormwater on the project site. The existing ground is made up of cinder and rock and runoff percolates into the ground before any substantial flooding is generated. It is estimated that the existing 50-year storm runoff from the project site is 18.36 cfs. **(See: Appendix D, Preliminary Drainage Report.)**

Potential Impacts and Mitigation Measures. The project team Civil Engineer has estimated that the storm water runoff after construction of the proposed project will be 27.82 cfs, an increase of 9.46 cfs. The increase in runoff will be detained in detention basins located mauka of the project site and allow for naturally percolation to recharge the ground water. **(See: Appendix D, Preliminary Drainage Report.)**

Besides the preceding measures, appropriate Best Management Practices (BMPs) will be implemented during construction to ensure that storm water runoff will not adversely affect downstream and adjacent properties or negatively impact stream resources and water quality. Examples of BMPs for controlling soil erosion and sedimentation include but are not limited to the following:

- Clearing shall be kept to the minimum necessary for equipment operation.
- Construction shall be sequenced to minimize the time of exposure of cleared surface areas.
- Stabilization shall be accomplished by protecting areas of disturbed soils from rainfall and runoff by use of structural controls such as PVC sheets, geotextile filter fabric, berms or sediment basins, or vegetative controls such as grass seeding and/or hydro-mulching.
- Temporary erosion controls shall not be removed before permanent erosion controls are in place and established.

- All control measures shall be checked and repaired as necessary (e.g., weekly, during dry periods, and within 24 hours after any rainfall event of 0.5 inches or greater within a 24-hour period). During prolonged rainfall, daily inspection will be required. The contractor shall maintain records of checks and repairs to structural and vegetative controls.

- A stabilized construction entrance with a required 50-foot minimum length shall be provided to reduce vehicle tracking of sediments.

- Frequent wetting of exposed surfaces shall be used to minimize fugitive dust.

- The Contractor shall have established procedures for immediate clean-up of fuel or oil spills.

- The contractor shall keep construction activities under surveillance, management, and control to avoid pollution.

- A dust control program will be implemented, and wind-blown sand and dust shall be prevented from blowing.

- Material delivery and storage shall take place in designated areas.

- The work shall be completed in accordance with all applicable State and County health and safety regulations.

- Concrete truck wash water shall be contained in pits or other containment devices provided with impermeable liners for evaporative dissipation. Spoil shall be disposed of at an appropriate landfill site.

- Stockpiled material for use or reuse in construction shall not be co-mingled with concrete truck wash water, equipment wash down effluent or other spoil.

The proposed project is not expected to result in any adverse drainage impacts to adjoining or downstream properties.

4. Roadways

Existing Conditions. As requested by the Department of Transportation, Phillip Rowell and Associates prepared a Traffic Impact Assessment Report (TIAR) for the proposed project. **(See: Appendix E, Traffic Impact Assessment Report)** The proposed project site is located along the west side of the Hana Highway.

In the project area, Hana Highway is the main transportation route and is classified as an arterial by the State. To the north and south of the project site Waikoloa Road

and Uakea Road are considered collector roads that serve residential properties are under the control of the Maui Department of Public Works (DPW).

Current weekday peak traffic volumes were obtained at the intersection of Hana highway and Waikoloa Road, which is the closest existing intersection of the proposed project driveway. The counts were performed while public schools were in session and the traffic counts estimated that the morning peak hour volume is 255 vehicles per hour and that the afternoon peak hour volume is 325 vehicles per hour.

An existing mining and resource extraction operation results in 3 trips day to and from the subject property.

A review of the Maui Bus routes determined that no bus service is available along Hana highway in the vicinity of the proposed project site.

Potential Impacts and Mitigation Measures. The proposed project site road will be connected to Hana Highway. The right-of-way width will be 44 feet wide and 20 feet of pavement. Within the project site there will be no curb, gutters, or sidewalks and the road shoulders will be grassed. The cul-de-sacs will have an edge of pavement radius of 43 feet and a right-of-way radius of 50 feet. The TIAR identified existing and projected traffic conditions and analyzed potential mitigation measures.

A trip generation analysis was performed and estimates that the proposed project of 24 single family homes with potential Ohana units could **generate 42 trips during the morning peak hour and 60 trips during the afternoon peak hour.** The limited amount of trip generation implies that the scope of work should be limited to an "access location and design review".

For the purposes of identifying potential future impacts of potential developments, the TIAR also analyzed the potential traffic impacts of a 14 agricultural lot subdivision mauka of the 201H affordable housing project. The remaining portion of the owner's property not used for the affordable housing project is estimated to allow for the creation on 14 agricultural lots. The TIAR estimated that the separate and future 14 agricultural lot subdivision could generate 31 trips during the morning peak hour and 43 trips during the afternoon peak hour.

In total the proposed 201H project and a potential 14 lot agricultural subdivision could generate 73 trips during the morning peak hour and 103 trips during the afternoon peak hour.

In conclusion the TIAR has determined that the proposed 100% affordable housing project is relatively small in scale and is not anticipated to have a significant impact on traffic conditions in the Hana region.

A level of service analysis of the intersection of Hana Highway at the Project Driveway was performed to confirm that the intersection will operate at an acceptable level-of-service. The level-of-service analysis concluded that the intersection will operate at Level-of-Service A, the highest level, during the morning and afternoon peak hours.

An assessment of the need for a separate left turn lane along Hana Highway at the intersection with the project driveway was performed. This assessment concluded that a separate left turn lane along Hana Highway was not justified. **(See: Appendix E, Traffic Impact Assessment Report)**

5. Electrical and Telephone Systems

Existing Conditions. There is no electrical power overhead or underground serving the proposed 100% affordable project site. There are existing overhead electrical and telephone and cable transmission lines along Hana Highway fronting the project site and there is an existing Maui Electric Substation located near the project site that can power the proposed 24 single family subdivision with Ohana units.

Potential Impacts and Mitigation Measures. The Applicant is proposing that electrical, cable and telephone service for the 100% affordable project will be located above ground. Above ground utilities are consistent with the neighboring residential areas in Hana.

IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE LAW

The rules of the State Land Use Commission are set forth in Chapter 205, HRS. These rules establish four (4) land use districts in the State of Hawai`i into which all lands in the State are placed: *Urban, Rural, Agricultural,* and *Conservation*. The subject parcel is located in the **State Agricultural District**. **(See: Figure 5, State Land Use District Map.)**

The proposed 100% affordable housing project is pursuing a 201H exemption from State Land Use Agricultural District Standards in order to develop the project as proposed.

B. Hawaii State Plan

The Hawaii State Plan (Chapter 226, HRS), establishes a set of goals, objectives, and policies that serve to guide the long-term growth and development of the State. The Plan consists of three (3) parts. Part I includes its Overall Theme, Goals, Objectives, and Policies; Part II encompasses Planning, Coordination, and Implementation; and Part III establishes Priority Guidelines. Since Part II of the State Plan covers its administrative structure and implementation process, comments relating to the applicability of Part II to the proposed project are not appropriate. In addition to sections of the State Plan that are applicable to the proposed project, a discussion of how the project conforms to the State Plan is included below.

Hawaii State Plan, Chapter 226, HRS Part 1. Overall Themes, Goals, Objectives and Policies Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	**S**	**N/S**	**N/A**
HRS 226-1: Findings and Purpose			
HRS 226-2: Definitions			
HRS 226-3: Overall Theme			

HRS 226-4: State Goals. In order to guarantee, for the present and future generations, those elements of choice and mobility that insure 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.

Analysis: The proposed 100% affordable housing project achieves the above-referenced goals by 1) contributing real property taxes and 2) creating affordable rental housing for Maui residents, thereby providing greater opportunity for self-reliance and self-determination. In addition the existing mining operation is currently providing jobs in the Hana region and the extracted materials are being used exclusively for private and public projects in Hana.

Chapter 226-5, HRS, Objective and Policies for Population

Objective: 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.

Policies:	**S**	**N/S**	**N/A**
(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.	✓		
(3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.	✓		
(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area. [L 1978, c 100, pt of §2; am L 1986, c 276, §4; am L 1988, c 70, §3; am L 1993, c 213, §3]	✓		

Analysis: The proposed project is a 100% affordable residential project that will help accommodate foreseeable population growth on Maui. The project area within the Rural Growth Boundary by the Maui Island Plan, the project site is in an appropriate location for new single family development and growth. The project site is located adjacent to residential neighborhoods and existing infrastructure and public facilities are in close proximity, making this location ideal for growth.

The existing mining operation is strengthening Maui's economy by creating jobs for Maui

residents which will in turn have a positive impact on the rest of the Maui economy. The result will be an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires, which will promote increased opportunities for Hawaii.

Chapter 226-6, HRS, Objectives and Policies for the Economy – in General

Objectives: Planning for the State's economy in general shall be directed toward achievement of the following objectives:

Objectives:	**S**	**N/S**	**N/A**
(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.	✓		
(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.	✓		
Policies:	**S**	**N/S**	**N/A**

Analysis: The existing mining operation is strengthening Maui's economy by creating jobs for Maui residents which will in turn have a positive impact on the rest of the Maui economy. The result will be an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires, which will promote increased opportunities for Hawaii.

Chapter 226-11, HRS, Objectives and Policies for the Physical Environment – Land Based, Shoreline, and Marine Resources

(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:

Objectives:	**S**	**N/S**	**N/A**
(1) Prudent use of Hawaii's land-based, shoreline, and marine resources.	✓		
(2) Effective protection of Hawaii's unique and fragile environmental resources.	✓		

Policies:

Analysis: The proposed project site does not lie within the Special Management Area for the island of Maui. No listed or endangered species of flora and fauna were identified on the property. During the construction and operational phases of the project, Best Management

Practices (BMPs) will be implemented to mitigate non-point source pollution to coastal resources and mitigate the effects of fugitive dust. Through the public review process for the Draft EA and 201H applications, mitigation measures will be identified to help address any environmental impacts that may arise from the proposed project.

Chapter 226-12, HRS, Objective and Policies for the Physical Environment – Scenic, Natural Beauty, and Historic Resources

Objective: 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.

Policies:	**S**	**N/S**	**N/A**
(1) Promote the preservation and restoration of significant natural and historic resources.	✓		
(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.	✓		
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.	✓		
(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.	✓		
(5) Encourage the design of developments and activities that complement the natural beauty of the islands. [L 1978, c 100, pt of §2; am L 1986, c 276, §11]	✓		

Analysis: As discussed in Section III.A. 7 (Archaeological/Historical Resources) The proposed project will not impact Kawaipapa Stream and is not anticipated to significantly impact the physical environment.

The AIS concludes that these two sites (Site 6548 and Site 6551) were recommended for no further work or preservation and the Department of Land and Natural Resources State Historic Preservation Division (SHPD) concurred with this recommendation. **(See: Appendix F-2, SHPD letter dated March 13, 2014)**

As discussed in Section III.B.4 (Cultural Resources) the cultural impact statement (CIA) which was prepared for the proposed project reported that there were no visible cultural resources, (*i.e.* medicinal plants, shoreline resources, religious sites, or archeological resources) observed on the property. From a cultural practices and beliefs perspective, the subject property bears no apparent signs of cultural practices or any gatherings currently taking place on the site. The oral history interviews did not reveal any known gathering places on the subject property nor did any access concerns surface as a result of the proposed

Project. In light of the foregoing, it can be concluded that development of the site will not impact cultural resources on the property or within its immediate vicinity.

As discussed in Section III.A.9 (Visual Resources) the Piilani Promenade is not anticipated to have significant impacts on views from Hana Highway toward Haleakala. The property is setback and screened with mature landscaping along Highway and building heights are limited to 30 feet. The proposed project will complement the architectural character of Hana as well as other developed properties in the area.

Chapter 226-13, Hawaii Revised Statutes, Objectives and Policies for the Physical Environment – Land, Air, and Water Quality

Objectives:	**S**	**N/S**	**N/A**
(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.	✓		
Policies:	**S**	**N/S**	**N/A**
(2) Promote the proper management of Hawaii's land and water resources.	✓		
(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.	✓		
(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawaii's people.	✓		
(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.	✓		
(6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.	✓		
(7) Encourage urban developments in close proximity to existing services and facilities.	✓		
(8) Foster recognition of the importance and value of the land, air, and water resources to Hawaii's people, their cultures and visitors. [L 1978, c 100, pt of §2; am L 1986, c 276, §12]	✓		

Analysis: No federally listed Threatened or Endangered species (USFWS, 2014) were found on the property nor were any found that are candidates for such status. No special habitats were found on the property. No wetlands as defined by the U.S. Army Corps of Engineers occur on the property. Because of the existing conditions the proposed project is not expected to have a significant negative impact on the botanical resources in the project area.

From a site planning perspective, the design and layout of the project involved an evaluation

of existing topographic conditions in order to create a viable development plan which would minimize potential impacts to the land form. To the extent practicable, the layout and orientation of future buildings will strive to take advantage of the trade winds.

As discussed in Section III.A.6 (Air Quality), appropriate mitigation measures will be implemented during construction to minimize any temporary impacts on air quality. The proposed project will be developed in accordance with applicable Federal and/or State air quality standards.

As discussed in Section III.A.4 (Natural Hazards), the development of the 100% affordable project will not increase the possibility of natural hazards such as flooding, tsunami inundation, hurricanes, and earthquakes. The project will be constructed in compliance with County, State and Federal standards.

Chapter 226-16, Hawaii Revised Statutes, Objectives and Policies for Facility Systems - Water.

Objective: Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

Policies:	**S**	**N/S**	**N/A**
(1) Coordinate development of land use activities with existing and potential water supply.	✓		
(2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.	✓		
(3) Reclaim and encourage the productive use of runoff water and wastewater discharges.	✓		
(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.	✓		
(5) Support water supply services to areas experiencing critical water problems.	✓		
(6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs. [L 1978, c 100, pt of §2; am L 1986, c 276, §15]	✓		

Analysis: As discussed in Section III.D.4 (Water), the drinking water source for the project is water provided by the Maui Department of Water Supply (DWS). The proposed project is

within close proximity to a County water line with adequate capacity for the proposed project. In addition the developer is committed to water conservation strategies for reducing consumption, conserving resources, and minimizing water demands, and implementing the water conservation measures of the DWS.			
Chapter 226-19 Objectives and policies for socio-cultural advancement-housing.			
Objectives: Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:			
Objectives:	**S**	**N/S**	**N/A**
(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.	✓		
(2) The orderly development of residential areas sensitive to community needs and other land uses.	✓		
(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawaii's people.	✓		
Policies:	**S**	**N/S**	**N/A**
(1) Effectively accommodate the housing needs of Hawaii's people.	✓		
(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.	✓		
(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.	✓		
(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.	✓		
(6) Facilitate the use of available vacant, developable, and underutilized urban lands for housing.	✓		
Analysis: As discussed in Section III.B.2 (Housing), the proposed project will offer 100%			

affordable single family housing to address the housing needs of Hana residents. The single-family housing development is providing more units than the required by Maui County Code, Chapter 2.96 (Residential Workforce Housing Policy) and are available for full-time Maui residents.

PART III. PRIORITY GUIDELINES

The priority guidelines of the Hawaii State Plan establish overall priority guidelines which address areas of State-wide concern. The Hawaii State Plan notes that the State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in five (5) major areas of Statewide concern which merit priority attention: 1) economic development; 2) population growth 3) affordable housing; 4) crime and criminal justice; and 5) quality education (§226-102). The development of the Piilani Promenade is supportive of the following priority guidelines of the Hawaii State Plan.

Hawaii State Plan, Chapter 226, HRS Part III. Priority Guidelines Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable	**S**	**N/S**	**N/A**
HRS 226-101: Purpose. The purpose of this part is to establish overall priority guidelines to address areas of statewide concern.			
HRS 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 five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education. [L 1978, c 100, pt of §2; am L 1986, c 276, §29]			
HRS 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;			
Priority Guidelines:	**S**	**N/S**	**N/A**
(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.	✓		
(A) Encourage investments which:			

(i) Reflect long term commitments to the State;	✓		
(ii) Rely on economic linkages within the local economy;	✓		
(iii) Diversify the economy;	✓		
(iv) Reinvest in the local economy;	✓		
(v) Are sensitive to community needs and priorities; and	✓		
(vi) Demonstrate a commitment to provide management opportunities to Hawaii residents.	✓		
(5) Streamline the building and development permit and review process, and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where public health, safety and welfare would not be adversely affected.	✓		
(B) A clean industry that would have minimal adverse effects on Hawaii's environment.	✓		
(C) An industry that is willing to hire and train Hawaii's people to meet the industry's labor needs at all levels of employment.	✓		
(D) An industry that would provide reasonable income and steady employment.	✓		
(10) Enhance the quality of Hawaii's labor force and develop and maintain career opportunities for Hawaii's people through the following actions:	✓		
(D) Promote career opportunities in all industries for Hawaii's people by encouraging firms doing business in the State to hire residents.	✓		
(E) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on- the-job training opportunities.	✓		
(e) Priority guidelines for water use and development:			
Priority Guidelines:	**S**	**N/S**	**N/A**
(1) Maintain and improve water conservation programs to reduce the overall water consumption rate.	✓		
(2) Encourage the improvement of irrigation technology and promote the use of non-drinking water for agricultural and landscaping purposes.	✓		
(f) Priority guidelines for energy use and development:			
Priority Guidelines:	**S**	**N/ S**	**N/A**

(4) Encourage the development and use of energy conserving and cost-efficient transportation systems.	✓		
Chapter 226-104, HRS, Population Growth and Land Resources Priority Guidelines			
(a) Priority guidelines to effect desired statewide growth and distribution:			
Priority Guidelines:	**S**	**N/S**	**N/A**
(1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.	✓		
(2) Manage a growth rate for Hawaii's economy that will parallel future employment needs for Hawaii's people.	✓		
(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.	✓		
(5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.	✓		
(b) Priority guidelines for regional growth distribution and land resource utilization:			
Priority Guidelines:	**S**	**N/S**	**N/A**
(1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.	✓		
(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.	✓		
(3) Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area.	✓		
(4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.	✓		
(6) Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces.	✓		

(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.	✓		
(10) Identify critical environmental areas in Hawaii to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.	✓		
(12) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.	✓		
(13) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources. [L 1978, c 100, pt of §2; am L 1984, c 236, §16; am L 1986, c 276, §31]	✓		

Analysis: As discussed in Section III.B.1 (Population) the proposed will provide housing for the population of the Hana region. The subject property is located within the Maui Island Plan's Rural Growth Boundary and Significant development and supporting infrastructure are adjacent to the site or are in close proximity.

As discussed in Section III.D (Infrastructure), the proposed will be responsible for required infrastructure improvements including water source and system improvements for drinking water use, onsite drainage improvements, required on- and off-site wastewater system improvements, and utility upgrades as determined by the appropriate governmental agencies and public utility companies.

As discussed in Section III.C.4 (Schools), the proposed project has not been designed to accommodate a public school site and the Hana High school has adequate capacity to accept students generated by the project.

As discussed in Section III.C.3 (Police and Fire protection services) increased tax revenues generated by the project will provide additional funds to the County for police and fire capital facility improvements and service upgrades. Additionally, the applicant will comply with any impact fee ordinances for police and fire.

As discussed in Section III.A.10 (Agricultural Resources) The LSB and ALISH classification systems indicate that the lands underlying the project site possess poor soil and low soil

ratings for productive agricultural uses. As such, the utilization of these poorly-rated agricultural lands for single family use and development is deemed appropriate.

The proposed project does not lie within the Special Management Area for the island of Maui. No listed or endangered species of flora and fauna were identified on the subject property. During the construction and operational phases of the project, Best Management Practices (BMPs) will be implemented to mitigate non-point source pollution to coastal resources and mitigate the effects of fugitive dust. Through the public review process for the EA, mitigation measures will be identified to help address any environmental impacts that may arise from the proposed project.

Chapter 226-106 Affordable housing. Priority guidelines for the provision of affordable housing:

Priority guidelines for the provision of affordable housing:	**S**	**N/S**	**N/A**
(1) Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low- and moderate-income and gap-group households.	✓		
(2) Encourage the use of alternative construction and development methods as a means of reducing production costs.	✓		
(3) Improve information and analysis relative to land availability and suitability for housing.	✓		
(4) Create incentives for development which would increase home ownership and rental opportunities for Hawaii's low- and moderate-income households, gap-group households, and residents with special needs.	✓		
(5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawaii's people for the purchase of initial owner- occupied housing.	✓		
(6) Encourage public and private sector cooperation in the development of rental housing alternatives.	✓		
(7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.	✓		
(8) Give higher priority to the provision of quality housing that is affordable for Hawaii's residents and less priority to development of housing intended primarily for individuals outside of Hawaii. [L 1986, c 276, §33; am L 1989, c 250, §3]	✓		

Analysis: As discussed in Section III.B.2 (Housing), the proposed project will offer 100% affordable single family housing to address the housing needs of Hana residents. The

single-family housing development is providing more units than the required by Maui County Code, Chapter 2.96 (Residential Workforce Housing Policy) and are available for full-time Maui residents therefore the proposed project is supportive of the priority guidelines for affordable housing.

Chapter 226-108 Sustainability priority.

Priority guidelines to promote sustainability:

Priority Guidelines:	**S**	**N/S**	**N/A**
(1) Encouraging balanced economic, social, community, and environmental priorities;	✓		
(2) Encourage planning that respects and promotes living within the natural resources and limits of the State;	✓		
(3) Promote a diversified and dynamic economy;	✓		
(4) Encouraging respect for the host culture;	✓		
(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations;	✓		
(6) Considering the principles of the ahupuaa system; and	✓		
(7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawaii.	✓		

Analysis: The proposed development will provide greatly needed affordable housing units in Hana. Providing Affordable Housing for Maui residents is priority of Maui Island Plan, Hana Community Plan and the Department of Housing and Human Concern. The proposed project also supports Hawaii State Plan Chapter 226, HRS 226-106 "Affordable Housing" which sets priority guidelines for the provision of affordable housing in the State of Hawaii.

The proposed project will complement the existing residential development to the North and East. The Hana High School to the south and is an appropriate location for urban development. The development is approximately 0.25 miles from the Hana High School and 0.4 miles from the commercial services located in Hana town.

The proposed development will provide housing opportunities for workforce residents. The project will support a dynamic economy by proving additional housing options to Maui's

workforce residents.

The Applicant has prepared a Cultural Impact Assessment to study and document cultural practices which may affect the project site. It was determined that the proposed project would not have an adverse impact on any cultural activities or significant historic sites. In addition an Archaeological Inventory was completed and the State Department of Land and Natural Resources, State Historic Preservation Division recommended for no further work or preservation at the project site.

The proposed project site is identified as a growth area and will complement the existing neighborhood and provide much needed affordable housing units in the near future. The project anticipates acceptance of the Final EA which will document the project will not compromise the needs of future generations.

In the context of the Ahupuaa system, the project will seek to improve the quality of storm water runoff as it travels towards the ocean through the implementation of the onsite drainage system which will provide storage for the increase in stormwater runoff in compliance with Chapter 4. "Rules for the Design of Storm Drainage Facilities in the County of Maui" and Chapter 15-11 Rules for the Design of Storm Water Treatment Best Management Practices." The Makai project boundary fronts Hana Highway and is approximately 0.5 miles from the ocean.

The Applicant (as a private company) recognizes the importance of sustainability in Planning and the proposed project has incorporated sustainability design elements such as solar water heaters and the vegetated detention basins located on site to intercept stormwater runoff closer to the source. The Applicant is exploring other renewable energy technologies and conservation measures to promote sustainability.

Chapter 226-109 Climate change adaptation priority.

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:

Priority Guidelines:	**S**	**N/S**	**N/A**
(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid,	✓		

minimize, or mitigate the impacts of climate change;			
Analysis: Sea level rise will have adverse effects on all shoreline communities, our economies, and our natural and cultural resources. The proposed project is not within the Special Management Area for the island of Maui. The project site is located in an area identified for development that is approximately one half mile from the ocean. As discussed in Section III.A.10 (Agricultural Resources) The LSB and ALISH classification systems indicate that the lands underlying the project site possess poor soil and low soil ratings for productive agricultural uses. As such, the utilization of these poorly-rated agricultural lands for urban use and development is deemed appropriate. The project will not impact the adjacent natural Kawaipapa Stream, wetlands, streams, beaches, sand dunes and forest, therefore the project is anticipated to have no significant adverse impact.			

B. GENERAL PLAN OF THE COUNTY

The Maui Island Plan serves as the regional plan for the Island of Maui. The Plan is comprised of the following ten elements: 1) Population; 2) Heritage Resources; 3) Natural Hazards; 4) Economic Development; 5) Housing; 6) Infrastructure and Public Facilities; 7) Land Use; 8) Directed Growth Plan; 9) Long Range Implementation Plan; and 10) Monitoring and Evaluation. Each element contains goals, objectives, policies and implementing actions. The Directed Growth Plan identifies the location of future development through 2030. The Directed Growth Plan is intended to guide the location and general character of future urban development and will direct future zoning changes and guide the development of the County's short-term and long-term capital improvement plan budgets.

The General Plan of the County of Maui refers to a hierarchy of planning documents that together set forth future growth and policy direction in the County. The General Plan is comprised of the following documents: 1) County-wide Policy Plan; 2) Maui Island Plan; and 3) nine community plans.

The County-wide Policy Plan was adopted on March 19, 2010 and is a broad policy document that identifies a vision for the future of Maui County. It establishes a set of guiding principles and provides comprehensive goals, objectives, policies and implementing actions that portray the desired direction of the County's future. The

County-wide Policy Plan provides the policy framework for the development of the Maui Island Plan and nine Community Plans.

The County-wide Policy Plan guiding principles, goals, objectives, policies and implementing actions that are as follows:

A. Protect the Natural Environment The proposed single-family residential project is in close proximity to existing infrastructure systems, public facilities and urban services. The proposed project will not impact natural features such as Kawaipapa Stream and the proposed project will incorporate an engineered drainage system to mitigate stormwater runoff from entering the marine environment.

E. Expand Housing Opportunities for Residents The proposed project will provide 24 100% affordable single family homes including the possibility of building an Ohana unit for Maui residents in Hana, therefore supporting the goal to expand housing opportunities for residents.

F. Strengthen the Local Economy, The proposed project supports will support the local economy in both the short and long term. Total direct construction phase job creation is anticipated to be approximately 6 individual tradesmen, employed for a duration of approximately 10 months.

The proposed 100% affordable single family project will not generate permanent employment however the homes will require long term maintenance and improvements over time which will have a positive impact on building trades and landscape contractors.

G. Improve Parks and Public Facilities The Applicant has consulted with the County of Maui Department of Parks & Recreation and has informed the Department that the proposed project is going to submit a 201H application for a 100% affordable project therefore the project will ask for exemption from the parks and playground assessment requirements pursuant to Section 18.16.320, Maui County Code. However, upon completion, the project will provide real property tax revenues to the County of Maui that is used to support various recreational services and programs and public facilities.

J. Promote Sustainable Land Use and Growth Management, The Project is located within the Maui Island Plan Rural growth boundary therefore the Project is supported by Objective 1 "Improve land use management and implement a directed-growth strategy". The Project supports Objective 3 Policies a, b, c, and f. The

project will incorporate green building practices and technologies to the extent practicable. The project will be designed in accordance with the Hana Design Guidelines to ensure the architecture is appropriate for the Hana area.

The Maui Island Plan functions as a regional plan and addresses the policies and issued that are not confined to just one community plan area, including regional systems such as transportation, utilities and growth management, for the Island of Maui. Together, the Island and Community Plans develop strategies 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. As indicated by the Plan's Directed Growth Maps, the Project lies within the limits of the proposed Rural Growth Boundary for Hana.

Chapters 5 and 7 of the Maui Island Plan (MIP) are applicable to the development of the Project.

Chapter 5. Housing, the MIP states that Maui residents, by almost any measure, face a critical housing situation. The proposed project will provide 24, 100% affordable housing units for Maui residents, therefore directly satisfying the goals, objectives and policies of Chapter 5. A brief analysis of the Housing Section of the Maui Island Plan, in the context of this proposed Hana housing development is as follows:

5.1. Maui will have safe, decent, appropriate, and affordable housing for all residents developed in a way that contributes to strong neighborhoods and a thriving island community.

Analysis. The proposed project will provide affordable homes that will be designed to complement the existing neighborhood. The project is located in between Hana High School and Hana town and therefore an appropriate place for residential development.

5.1.3 Provide affordable housing, rental or in fee, to the broad spectrum of our island community.

Analysis. The proposed project will provide 24 affordable single family homes for Maui residents, therefore directly satisfying this affordable housing objective.

Chapter 7. Land Uses, The Project supports the goal 7.3. "Maui will have livable human scale urban communities, an efficient and sustainable land use pattern, and

sufficient housing and services for Maui residents. A brief analysis of the Land Use Section of the Maui Island Plan, in the context of this proposed affordable housing project is as follows:

7.3.1.a Ensure higher-density compact urban communities, infill, and redevelopment of underutilized urban lots within Urban Growth Boundaries.

7.3.2.d Ensure, where appropriate, that affordable employee housing and multi-modal transportation opportunities are located near major employment centers.

7.3.2.h Encourage the placement of rental housing projects in the same areas as for-sale housing to facilitate mixed income communities.

Analysis. The proposed 100% affordable single family residential project is located between Hana High School and Hana Town which is identified as an appropriate place for development. Additionally the project site and is within the MIP Rural Growth Boundary therefore the proposed project is appropriate for this site.

Directed Growth Plan

The Directed Growth Plan is the backbone of the Maui Island Plan (MIP). Taking into account population projections, it prescribes and outlines how Maui will grow over the next two decades, including the location and general character of new development. The Directed Growth Plan accommodates growth in a manner that provides for economic development, yet protects environmental, agricultural, scenic and cultural resources; economizes on infrastructure and public services; meets the needs of residents; and protects community character.

Chapter 2.80B, MCC, requires the adoption of urban and rural growth areas for the island of Maui. This is the first time Maui County has established growth boundaries, and it represents a significant shift towards a more orderly and predictable development pattern. Communities throughout Hawai`i and the country have used growth boundaries as part of a comprehensive directed growth plan to preserve agricultural lands, protect environmental resources, and create a more predictable land use planning process. Directed growth strategies use population projections and density assumptions to ensure an adequate supply of land is available for future growth, to limit sprawl, and to focus infrastructure investment to areas within the growth boundaries.

The Directed Growth Plan uses MIP goals, objectives, and policies as well as guiding land use principles as a foundation for establishing urban and rural growth boundaries. This chapter describes the types of growth boundary designations and the methodology applied in the identification of these designations. In addition, this section identifies planned protected areas.

Urban and Rural Growth Boundaries Chapter 2.80B, MCC, requires the identification of both urban and rural growth boundaries (which can include small towns, rural residential, rural villages, and other community plan designations). The characteristics used to identify these boundaries and the policy intent for each of these areas is described in the Maui Island Plan.

Analysis. The proposed project is not located within the Urban Growth Boundary however the project site is located in the Rural planned growth Area and therefore remains in harmony with the guiding principle of the MIP's Directed Growth Plan. **(See: Figure No. 8, Maui Island Plan Map)** As part of the 201H application process the Applicant will request exemption form the Maui Island Plan to allow the proposed project to be developed in the Rural Growth Boundary area. The draft requested exemptions for the proposed project are provided as an appendix **(See: Appendix I, Draft 201H exemption list).**

C. HANA COMMUNITY PLAN

Maui County has adopted nine (9) community plans. Each community plan examines the conditions and needs of the planning region and outlines objectives, policies, planning standards and implementing actions to guide future growth and development in accordance with the Maui County General Plan. Each community plan serves as a relatively detailed agenda for implementing the broad General Plan themes, objectives and policies.

The project site is located in the Hana Community Plan region and is designated for *(R) Rural* use. **(See: Figure 7, Hana Community Plan Map.)** The Community Plan was adopted by Ordinance No. 2347 and went into effect on July 1, 1994.

Key problems and were formulated by the 1992 Citizens Advisory Committee and the number 1 problem identified in the Hana community plan is Affordable Housing. The

proposed project is providing 24 single family homes at affordable prices determined by the Maui of County department of Housing and Human Concerns. The project directly help solve the problem of affordable housing in Hana.

The following Community Plan objectives and policies are applicable to the proposed project:

The following Hana Community Plan goals, objectives, and policies are applicable to the proposed action:

LAND USE

Goal

An efficient distribution of urban, rural and agricultural land uses in order to provide for the social and economic well-being of residents in the Hana Community Plan region. Preservation and enhancement of the current land use patterns which establish and enrich the Hana Community Plan region's unique and diverse qualities.

Objectives and Policies

2. Encourage single-family and multi-family land use designations which provide affordable housing opportunities for the region's residents in areas compatible with surrounding uses an in proximity to urban infrastructure and services.

12. Should further land other than that depicted on the Land Use Map be required to accommodate urban growth, limit State Urban District boundary expansion to the State Agricultural and Rural District areas between the current Hana School and the Hasegawa General Store site in Hana Town.

ENVIRONMENT

Goal

Protection and management of Hana's land, water and ocean resources to ensure that future generations can enjoy the regions exceptional environmental qualities.

Objectives and Policies

9. Avoid development of flood prone areas, stream channels and gulches.

CULTURAL RESOURCES

Goal

Identification, preservation, protection, and where appropriate, restoration of significant cultural resources and practices, that provide a sense of history and identity for the Hana region.

Objectives and Policies

1. Identify, preserve and protect historically, archaeologically and culturally significant areas, sites, and features within the Hana District.

Implementing Actions

2. Require development projects to identify all cultural resources within or adjacent to the project area as part of the County development review process. Further require that all proposed development include appropriate mitigation measures including site avoidance, adequate buffer areas and interpretation.

Establish and maintain programs to rejuvenate and exhibit the various cultural practices, skills and traditions of the Hana region, and to reorient youth and adults with their cultural heritage and Hawaiian language.

ECONOMIC ACTIVITY

Goal

A balanced local economy which provides long-term viability and sustainability while meeting residents' needs and respecting the cultural and natural resources of Hana.

Objectives and Policies

12. Encourage contractors to employ qualified Hana District residents when constructing facilities or other structures within the Hana District.

HOUSING

Goal

The provision of housing opportunities to the residents of Hana, for all income and age groups, which are affordable, safe, and environmentally and culturally compatible.

URBAN DESIGN

Goal

Harmony between the natural and man-made environments through building, infrastructure and landscaping design which ensures that the natural beauty and character of the Hana region is preserved.

Objectives and Policies
1. Support design controls for Hana Town and Hana region based on maintaining the existing low rise character and rural scale of the area.

Implementing Actions
3. Limit building heights to two stories or thirty-five (35) feet above grade throughout the region.

PHYSICAL INFRASTRUCTURE

Goal

Timely and environmentally sensitive development and maintenance of infrastructure systems which protect and preserve the safety and health of the Hana region's residents and visitors, including the provision of domestic water, utility and waste disposal services, and effective transportation systems which meet the needs of residents and visitors while protecting the region's rural character.

Objectives and Policies

Water
9. Encourage water conservation measures by residents and businesses.

Energy and Public Utilities
12. Promote energy efficiency as the energy resource of first choice, and encourage energy conservation practices by residents and businesses.

PLANNING STANDARDS

1. Building Height:
Two stories or thirty-five (35) feet above grade throughout the region.

2. Landscaping
Non-retaining wall structures along public roadways shall not exceed four (4) feet in height.

3. Building Design

All commercial buildings, subdivision improvements, multi-family projects, and government or private infrastructure improvements shall be designed in accordance with design guideline developed for Hana Town.

4. Roadways
County-standard curbs, gutters, and sidewalks shall not be required in the Hana District. Grassed shoulders and swales shall be allowed without curbs.

5. Subdivision
Environmental Design
Lot configuration, roadways and subdivision improvements shall be designed to respect existing landforms, coastal and aquatic resources, biological resources and cultural/historic resources to the greatest extent possible.

Improvements
County urban subdivision standards shall not apply to the Hana region, except in areas were deemed appropriate, in regards to the following improvements:

Curb, gutter, sidewalks shall not be required;
Street lighting shall not be required;
Pavement width shall not exceed 20 feet.

Analysis. This 24 lot 100% affordable single family residential subdivision development is being developed in accordance with the goals, objectives of the Hana Community Plan. The proposed project helps to solve the primary problem identified in the Hana Community Plan; Affordable housing.

The proposed 100% affordable residential subdivision is not anticipated to result in significant environmental impacts to surrounding properties, and/or archaeological and historic resources on the site or in the immediate area. Public infrastructure and services are in close proximity to the development including roadways, drinking water systems, medical facilities, police and fire protection, parks, and schools, and will not be significantly impacted. The proposed single family subdivision will maintain the architectural character present in the surrounding residential neighborhoods.

D. MAUI COUNTY ZONING

The subject parcel is currently zoned Interim District **(See: Figure 6, Maui County Zoning)** and as part of the 201H application process the Applicant has proposed to request exemption from the need for a Change in Zoning. The draft requested exemptions for the proposed project are provided in **(See: Appendix I, Draft 201H exemption list).**

V. SPECIAL MANAGEMENT AREA OBJECTIVES AND POLICIES

The subject project is not located within the Special Management Area (SMA). As such, the proposed improvements will not require an SMA Use Permit. As requested by the State of Hawaii, Office of Planning, and pursuant to Chapter 205A, Hawaii Revised Statutes, and the Rules and Regulations of the Planning Commission of the County of Maui, this section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Planning Commission.

A. RECREATIONAL RESOURCES

Objective: Provide coastal recreational resources accessible to the public.

Policies:

(A) Improve coordination and funding of coastal recreation 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 placement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or require reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

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

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

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

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

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

(vi) *Encourage 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, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.*

Analysis. The project site is mauka of Hana Highway, approximately ½ mile from the ocean. Therefore the project will not have a direct impact on the public's use or access to the shoreline area.

HISTORICAL/CULTURAL 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 archeological 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 structures.*

Analysis. The Applicant has prepared a Cultural Impact Assessment to study and document cultural practices which may affect the project site. It was determined that the proposed project would not have an adverse impact on any cultural activities or significant historic sites. In addition an Archaeological Inventory was completed and the State Department of Land and Natural Resources, State Historic Preservation Division recommended for no further work or preservation at the project site.

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 such 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

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

Analysis. As discussed in Section III of this report, the proposed single family subdivision will be constructed in a vacant slightly sloped open area and the buildings are limited to 30 feet in height and is not expected to impact public views towards Haleakala from the Hana Highway. As such, the proposed project is not anticipated to impact public view corridors, or the visual character of the site and its immediate environs.

COASTAL ECOSYSTEMS

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

Policies:

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

(b) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(c) 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

(d) *Promote water quantity and quality planning and management practices, which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses, which violate state water quality standards.*

Analysis. As noted previously, the proposed project site is adjacent to the Hana Highway, approximately ½ mile from the coast. Therefore, the proposed project is not anticipated to have a significant impact on the coastal ecosystem. Furthermore,

the incorporation of mitigation measures during construction as identified in Section III.D.3 of this report will minimize the potential for short-term adverse impacts.

ECONOMIC USES

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

Policies:

(a) Concentrate coastal dependent development in appropriate areas;

(b) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area;

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

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

(ii) Adverse environmental impacts are minimized; and

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

Analysis. The proposed single-family project is not a coastal development as the property is located approximately ½ mile from the shoreline and therefore not anticipated to impact coastal areas. The Maui Island Plan identifies the proposed project within an area that has been planned for growth and development in Hana and the Applicant will provide the supporting infrastructure and services required to service this growth.

COASTAL HAZARDS

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

Policies:

(a) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;

(b) Control development in areas subject to storm wave, tsunami, flood, erosion, subsidence, and point and non-point pollution hazards;
(c) Ensure that developments comply with requirements of the Federal Flood Insurance Program;
(d) Prevent coastal flooding from inland projects; and
(e) *Develop a coastal point and nonpoint source pollution control program.*

Analysis. As discussed in Section III of this report, the project site is located approximately ½ mile from the Ocean and is situated in Flood Zones A, AE, XS and X. Thus, hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution is not expected to be significant. The Applicant has retained a licensed civil engineer to develop a drainage plan to mitigate potential flooding conditions to downstream properties. (**See:** Appendix D, Preliminary Drainage Report)

MANAGING DEVELOPMENT

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

Policies:
(a) Use, implement, and enforce existing laws 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 of 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 process and review process.*

Analysis. The proposed single-family residential project will be conducted in accordance with applicable State and County requirements. Opportunity for review of the proposed action is provided through the County's 201H and the State's EA review process.

PUBLIC PARTICIPATION

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

Policies:

(a) Maintain a public advisory body to identify coastal management problems and to provide policy advise and assistance to the coastal zone management program.

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

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

Analysis. In conjunction with the submittal of the Draft EA and 201H application a number of governmental agencies will be consulted and copies of this application will be circulated to various agencies by the Department of Housing and Human Concerns. During the scheduled public hearings, the public will have an opportunity to review and comment on the proposed project. The EA and 201H processes provide an opportunity for public comment on the document and public testimony at public hearings.

BEACH PROTECTION

Objective: Protect beaches for public use and recreation.

Policies:

(a) *Locate new structures inland from the shoreline setback to conserve open space and to 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; and*

(c) *Minimize the construction of public erosion-protection structures seaward of the shoreline.*

Analysis. As noted previously, the project site is adjacent to the Hana Highway and is situated approximately ½ mile from the coast. Therefore, the proposed project is not anticipated to have a significant impact on the coastal ecosystem. The

construction of the proposed project on the subject property will not have a direct physical impact upon any coast.

MARINE RESOURCES

Objective: Implement the State's ocean resources management plan.

Policies:

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

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

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

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

(e) Promote research, study, and understanding of ocean processes, marine life, and other ocean development activities relate to and impact upon the ocean and coastal resources; and

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

Analysis. The proposed project does not involve the direct use or development of marine resources. In addition, with the incorporation of erosion and drainage control measures during construction and after construction as identified in the infrastructure section of this report, there should not be significant adverse impacts to nearshore waters from point and non-point sources of pollution. Therefore, the subject project will not produce any significant impacts on any coastal or marine resources.

VI. CHAPTER 343, HRS SIGNIFICANCE CRITERIA

Since the proposed project is a 201H affordable project and will require access to the Hana Highway, a State Highway, and the Applicant is partnering with non-profit organization "Habitat for Humanity" that will use government funding to help build the homes at an affordable price, this Draft Environmental Assessment (DEA) was prepared in accordance with Chapter 343, Hawaii Revised Statutes (HRS). In accordance with Title 11, Department of Health, chapter 200 and Subchapter 6, 11-200-12, Environmental Impact Statement Rules, and based on the detailed analysis contained within this document, the following conclusions are supported.

(a) *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.*

Haun & Associates, conducted an Archaeological Inventory Survey on the project site in. The assessment utilized a pedestrian surface survey and subsurface excavations to assess subsurface conditions. (**See: Appendix F-1 Archaeological Inventory Survey)** As part of the Archaeological Review process the SHPD provided a letter on March 31, 2014 indicating that the AIS report is accepted as final. (**See: Appendix F-2, SHPD letter dated March 31, 2014)**

(b) *Curtails the range of beneficial uses of the environment.*

The neighboring properties are in or planned for residential use, and the proposed single family residential development does not introduce a new use to the area. The project will not curtail the range of beneficial uses of the environment in the project vicinity.

(c) *Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.*

The proposed 100% single family residential project is being developed in compliance with the State of Hawaii's long-term environmental goals. As documented in this Draft EA report, adequate mitigation measures will be implemented to minimize the potential for negative impacts to the environment.

(d) *The proposed action will no substantially affect the economic or social welfare and activities of the community, County or State.*

In the short term, the proposed project will result in increased construction employment and business opportunities. As documented in this report, there will be no significant negative long-term impacts to the socio-economic environment.

Currently the mining and resource extraction work is providing employment for individuals in the Hana region and is also providing aggregate rock material for private and public projects in the Hana region at a reduced price because there is no need to haul the material from Kahului. In the long term, the proposed 100% affordable project will provide revenue in the form of real property taxes to the County of Maui.

(e). *The proposed action will not substantially affect public health.*

There are no special or unique aspects of the project that will have a direct impact on public health.

(f). *The proposed action will not result in substantial secondary impacts such as population changes or effects on public facilities.*

The proposed project will not lead to a substantial impact on population levels due to its relatively small scale. Additionally, as documented in this report, the project will not result in a significant negative impact on public facilities.

(g). *The proposed action will not involve substantial degradation of environmental quality.*

Mitigation measures will be implemented during the construction phase in order to minimize negative impacts on the environment, especially with regards to construction runoff. During the construction, mitigation measures will be incorporated to minimize impacts to nearshore water quality. **(See: Appendix D "Preliminary Drainage Report")**

Other environmental resources such as endangered species of flora and fauna, air and water quality and archaeological resources will not be significantly impacted by the project.

(h). *The proposed project will not produce cumulative impacts and does not have considerable effect upon the environment or involve a commitment for larger actions.*

The proposed single family subdivision does not involve a commitment for larger action on behalf of the applicant or any public agency. The subject property is located within the Maui Island Plan Rural Growth Boundary and appropriate location for new housing, and as such, is part of the planned future growth of that region.

As described in this report, the proposed 100% affordable project will not significantly impact public infrastructure and services including roadways, drainage facilities, water systems, sewers and educational facilities.

(i). *The proposed project will not affect a rare, threatened, or endangered species, or its habitat.*

The applicant has coordinated with U.S Fish and Wildlife and has agreed to limit tree cutting during pupping season in order to prevent impacts to the Hawaiian Hoary bat. **(See: Appendix B-2, Email correspondence with U.S. Fish and Wildlife)**

(j). *Detrimentally affects air or water quality or ambient noise levels.*

Short-term impacts upon air and water quality and ambient noise levels could occur during construction. These effects, however, will be minimized through the use of appropriate mitigation measures and Best Management Practices as described in this Draft EA and 201H application. Adverse long-term impacts to these environmental components are not anticipated.

(k) *The proposed action will not substantially affect or be subject to damage by being located in an environmentally sensitive area such as a flood plain, shoreline, tsunami zone, beach, erosion prone areas, estuary, fresh waters, geologically hazardous land, estuary, fresh water, or coastal waters.*

There are no ponds, wetlands, streams or important plant or animal habitats on the subject parcel nor are there any rare, threatened or endangered species of flora and fauna on the site. The parcel is located mauka of Hana Highway and is not anticipated to impact coastal waters.

The proposed project site is located in Zone X, an area determined to be outside the 0.2 percent annual chance flood plain (i.e., a low risk flood hazard area). The proposed project therefore should not be affected by flood hazard, or have adverse impacts upon its neighbors with regard to flood hazard potential.

(l) *Substantially affects scenic vistas and view planes identified in county or state plans or studies.*

No unique public scenic resources or adjacent views are anticipated to be impacted by the proposed development as identified in the *Maui Scenic Coastal Resources Study*, 1990. The proposed single family subdivision will be constructed in a vacant slightly sloped open area. The homes will be built in compliance with Maui County Code for residential districts, therefore the homes are limited to 30 feet in height and is not expected to impact public views towards Haleakala from the Hana Highway. As such, the proposed project is not anticipated to impact public view corridors, or the visual character of the site and its immediate environs.

(m) *Requires substantial energy consumption.*

The proposed project is a small scale single family home subdivision. Homes will energy efficient appliances, solar water heaters and buildings will be sited in order to take advantage of the trade winds, therefore the project is not anticipated to require substantial energy consumption.

VII. CONCLUSIONS

This consolidated Draft Environmental Assessment and 201H application has been prepared for the Department of Housing and Human Concerns for a 24 lot 100% affordable single family residential subdivision.

The proposed 100% affordable residential subdivision is not anticipated to result in significant environmental impacts to surrounding properties, and/or archaeological and historic resources on the site or in the immediate area. Public infrastructure and services are in close proximity to the development including roadways, drinking water systems, medical facilities, police and fire protection, parks, and schools, and will not be significantly impacted. The proposed single family subdivision will maintain the architectural character described in the Hana design guidelines. The single family subdivision will consist of single family homes setback from Hana Highway to maintain public views along the highway towards the summit of Haleakala.

Based on the foregoing analysis and conclusion, the proposed 100% single family subdivision will not result in significant impacts to the environment and is consistent with the requirements of HRS Chapter 343, and a Finding of No Significant Impact (FONSI) is warranted.

VIII. REFERENCES

1. County of Maui, Department of Planning, 2012. *Maui Island Plan,* Wailuku, Hawaii.

2. County of Maui, Department of Planning, 1996. *Hana Community Plan*, Wailuku, Hawaii.

3. County of Maui, Department of Planning. 2010. *The Countywide Policy Plan, County of Maui 2030 General Plan*. Wailuku, Hawaii.

4. Environmental Planning Associates. August 31, 1990. Maui Coastal Scenic Resources Study. Lahaina, Hawaii.

5. Federal Emergency Management Agency, *Flood Insurance Rate Map.* Community Panel No. 1500030190E, September 25, 2009.

6. State of Hawaii, Department of Education *http://www.hawaiipublicschools.org/DOE%20Forms/Impact%20Fees/Central_Maui_Analysis.pdf*

7. University of Hawai`i, Land Study Bureau, *Detailed Land Classification – Island of Maui,* May 1967.

8. U.S. Census Bureau, www.census.gov

9. U.S. Department of Agriculture, Soil Conservation Service in Cooperation with the University of Hawai`i, Agricultural Experiment Station, *Soil Survey of the Islands of Kauai, Oahu, Maui, Moloka`i, and Lana`i, State of Hawai`i*, 1972.

FIGURES

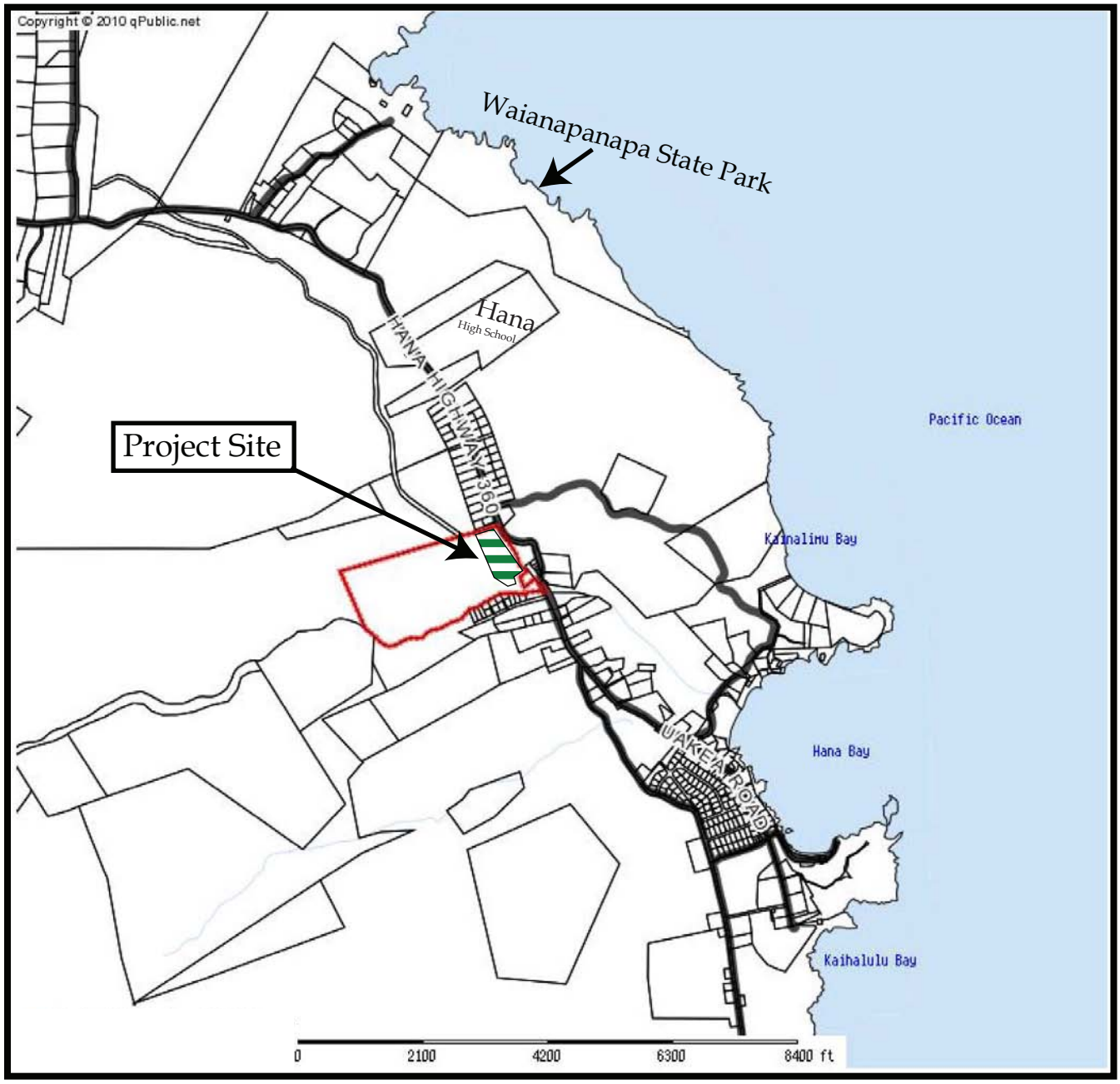


Figure 1

Not to Scale

Regional Location Map

Source: County of Maui

CHRIS HART & PARTNERS, INC.

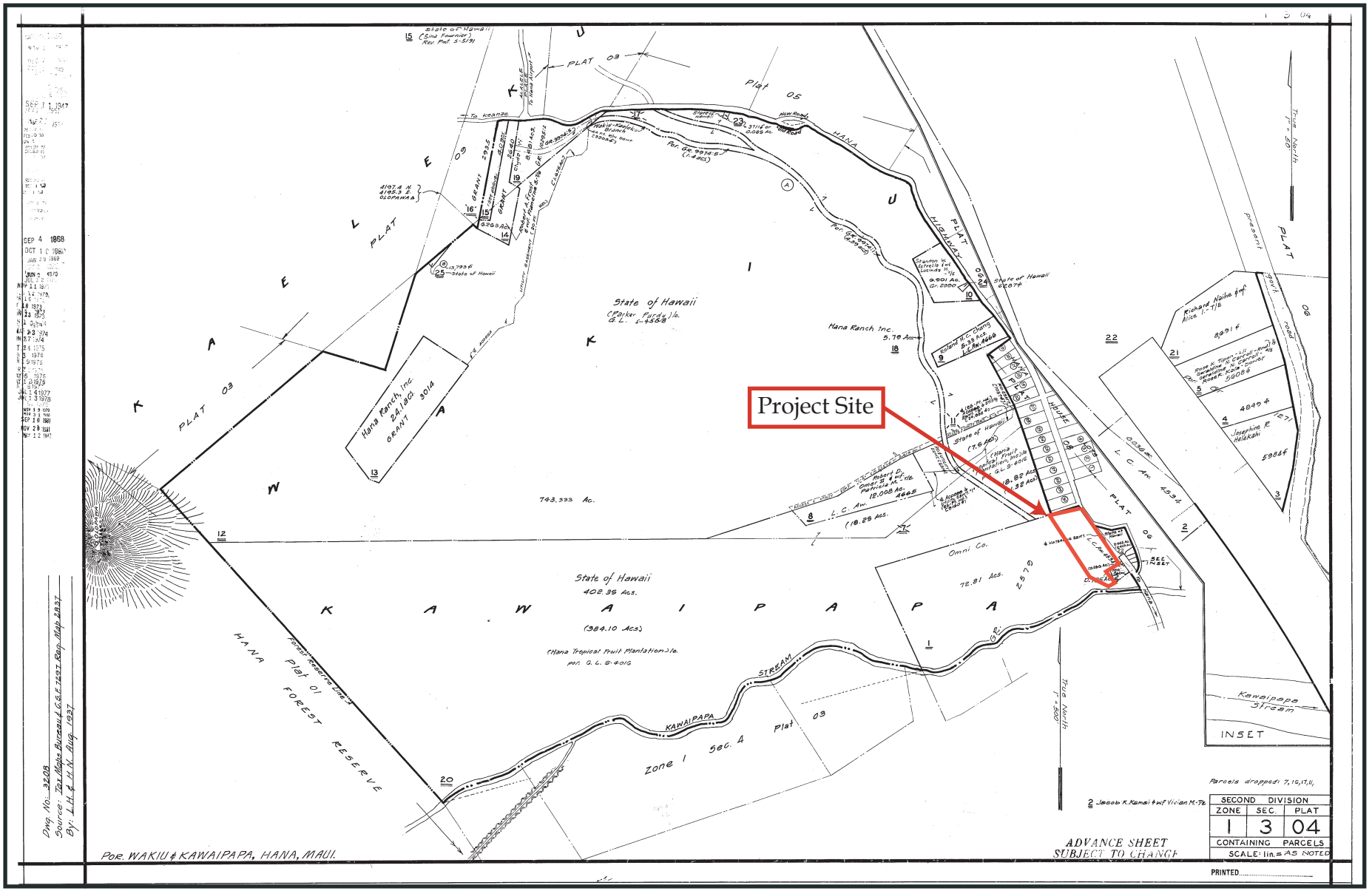


Figure 2

Not to Scale

Tax Map Key

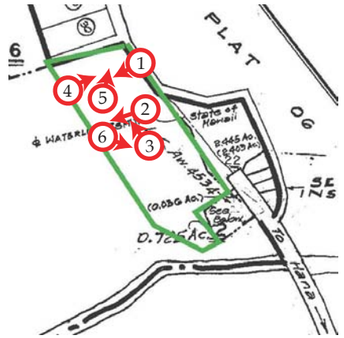
Source: Territory of Hawaii, Taxation Map Bureau

CHRIS HART & PARTNERS, INC.

1. Looking southwest up the existing project site driveway away from Hana Highway

2. Looking southwest from the approximate center of the project site

3. Looking northwest from the approximate center of the project site



4. Looking northeast down the existing project site driveway toward Hana Highway

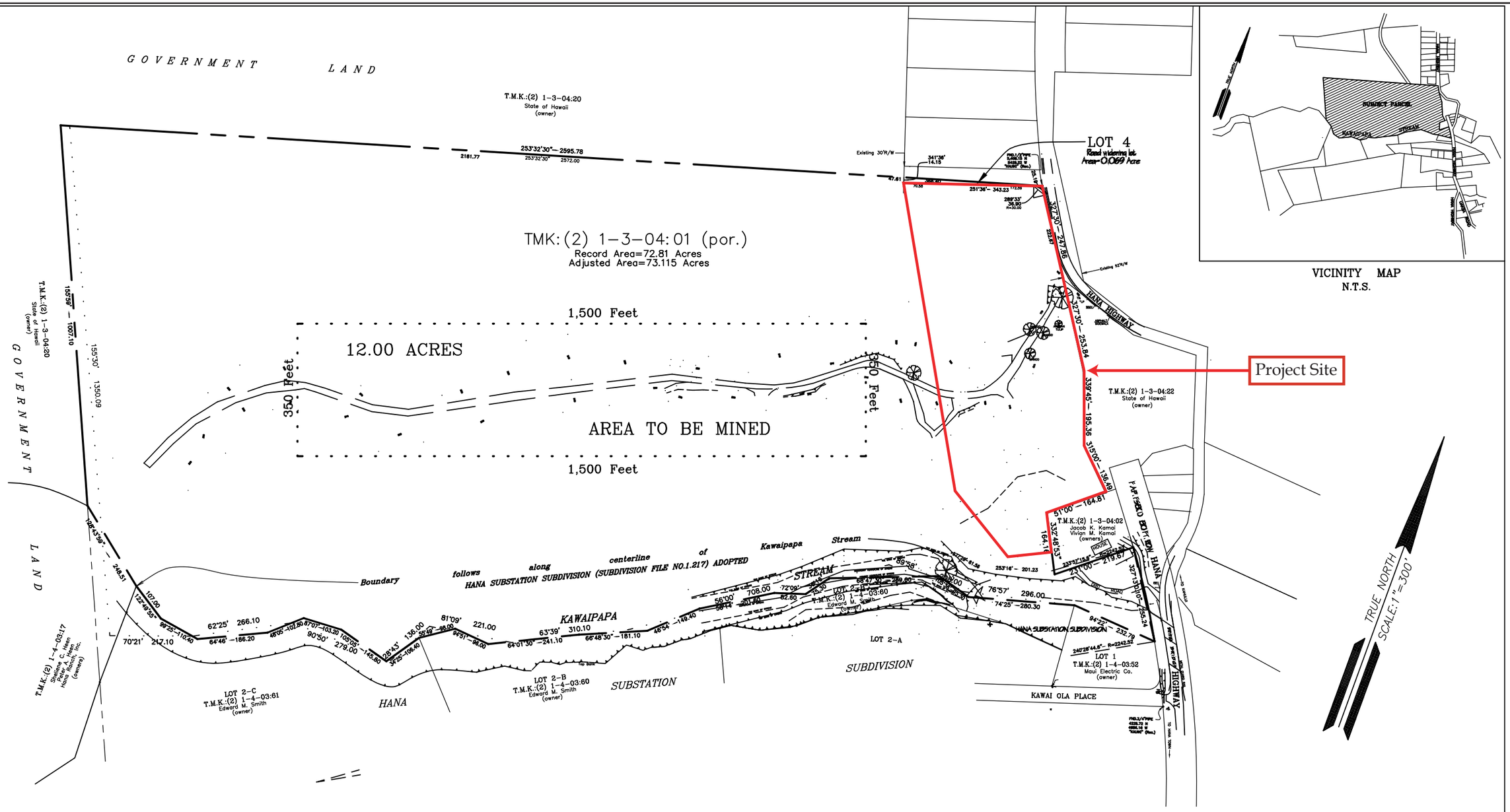
5. Looking north toward Hana Highway at the existing project site driveway

6. Looking east across the project site toward the Pacific Ocean

FIGURE 3

Site Photographs
Taken September 2014

CHRIS HART & PARTNERS, INC.



(TAX MAP KEY : (2) 1–3–004:001 (por.)

LIMITS OF ROCK EXCAVATION

KAWAIPAPA, HANA, MAUI, HAWAII

OWNERS:
THOMAS A. HOEFFKIN
NANCY M. HOEFFKIN
651 PAPIPI ROAD
KULA, MAUI, HAWAII 96790
APRIL 20, 2014

This work was prepared by me or under my direct supervision.
VALERA, INC.

Edgardo V. Valera
Licensed Professional Land Surveyor
State of Hawaii Certificate No. 5076
License Expiration Date : 4/30/10

EDGARDO V. VALERA
LICENSED PROFESSIONAL LAND SURVEYOR
No. 5076
HAWAII, U.S.A.

FIGURE 4a

Existing Site Conditions Map

CHRIS HART & PARTNERS, INC.

Detention Pond
9,000 Sq. Ft.

Detention Pond
6,500 Sq. Ft.

TRUE NORTH
SCALE: NTS

HANA HIGHWAY

T.M.K.: (2) 1-3-04: 22
State of Hawaii
(owner)

T.M.K.: (2) 1-3-04: 02
Jacob K. Kamai
Vivian M. Kamai
(owners)

LOT 2-B
T.M.K.: (2) 1-4-03: 60
Edward M. Smith
(owner)

LOT 2-A
T.M.K.: (2) 1-4-03: 21
John Medieros & wf. Cecilia A.
(owners)

LOT 1
T.M.K.: (2) 1-4-03: 52
Maui Electric Co.
(owner)

HANA SUBSTATION SUBDIVISION

KAWAI OLA PLACE

Kawaipapa Stream

SUBSTATION

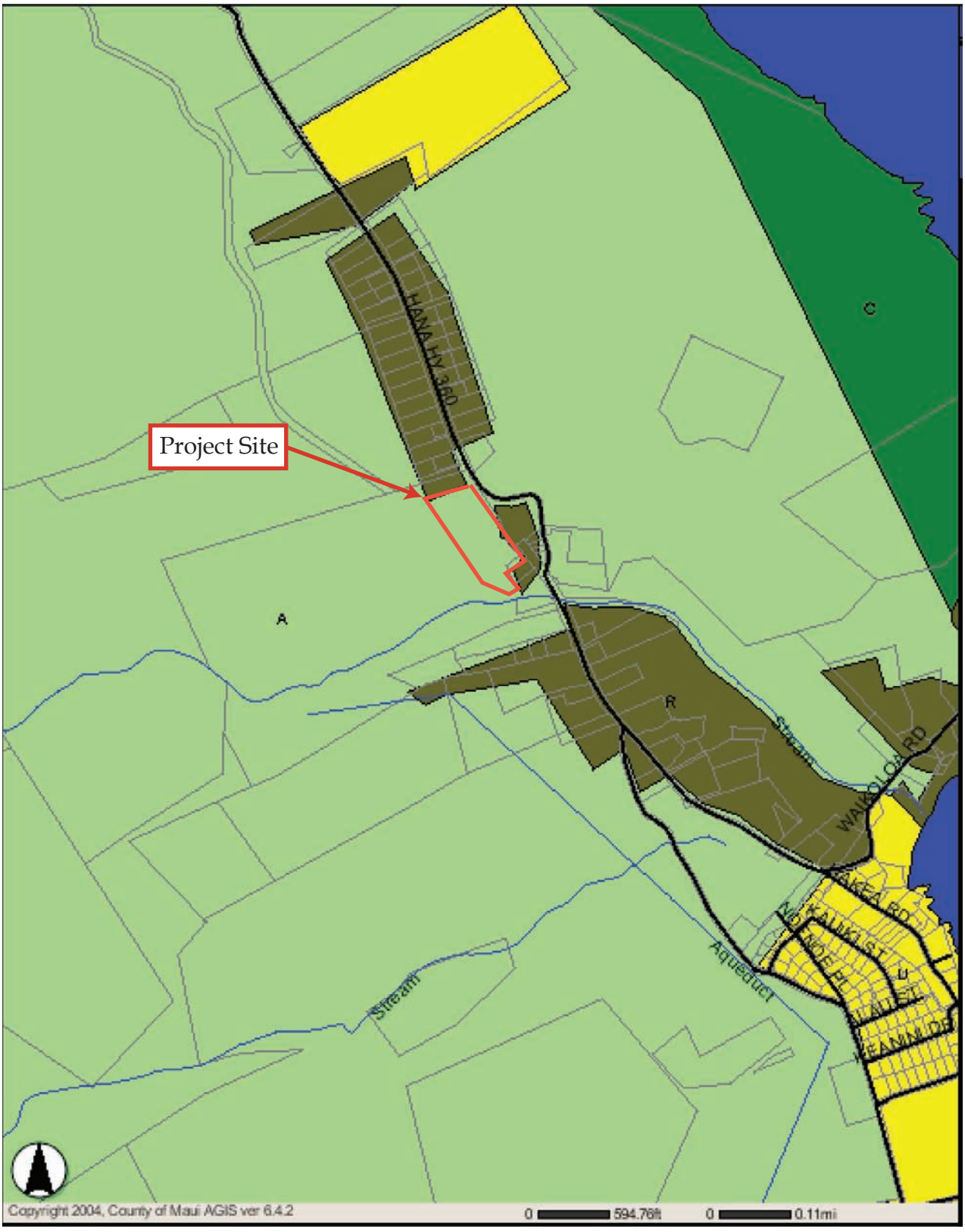
SUBDIVISION

HANA HIGHWAY

FIGURE 4b

Conceptual Site Plan

CHRIS HART & PARTNERS, INC.



Agricultural
Conservation
Rural
Urban

Figure 5

Not to Scale

State Land Use District Map

Source: Maui County Planning Department

CHRIS HART & PARTNERS, INC.

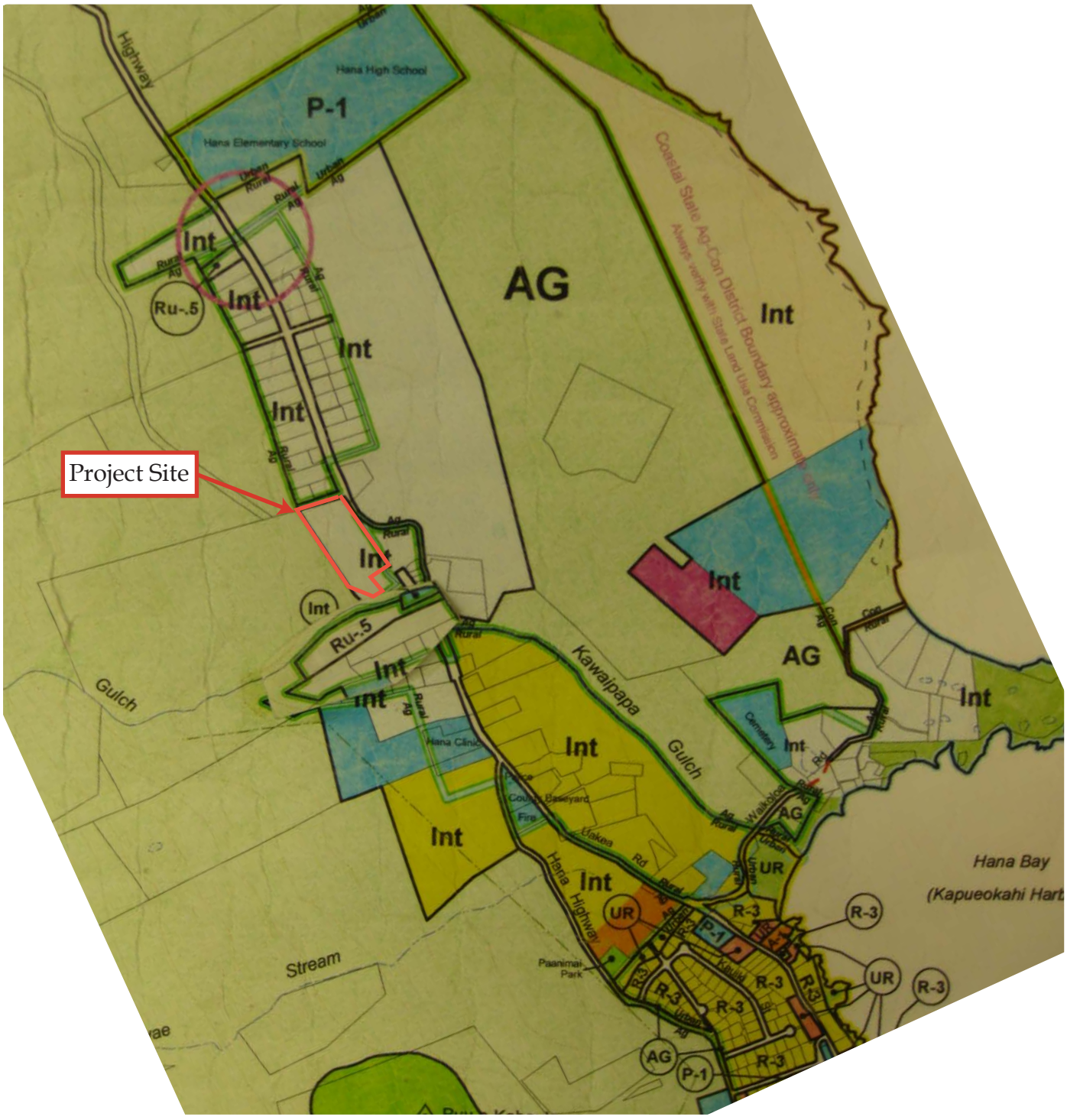


Figure 6

Not to Scale

Maui County Zoning Map

Source: County of Maui

CHRIS HART & PARTNERS, INC.

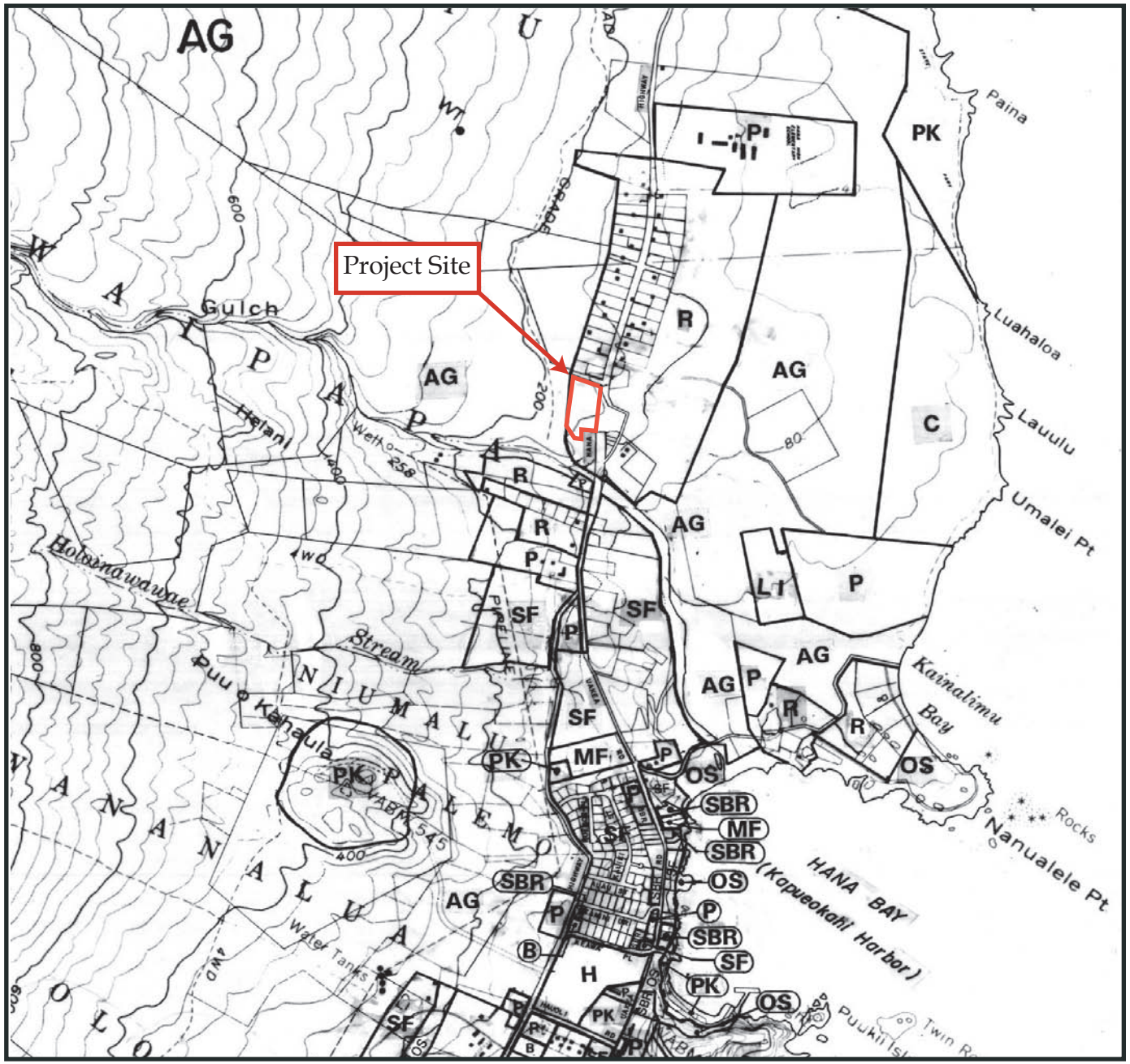


Figure 7

Not to Scale

Community Plan Map

Source: Maui County Planning Department

CHRIS HART & PARTNERS, INC.

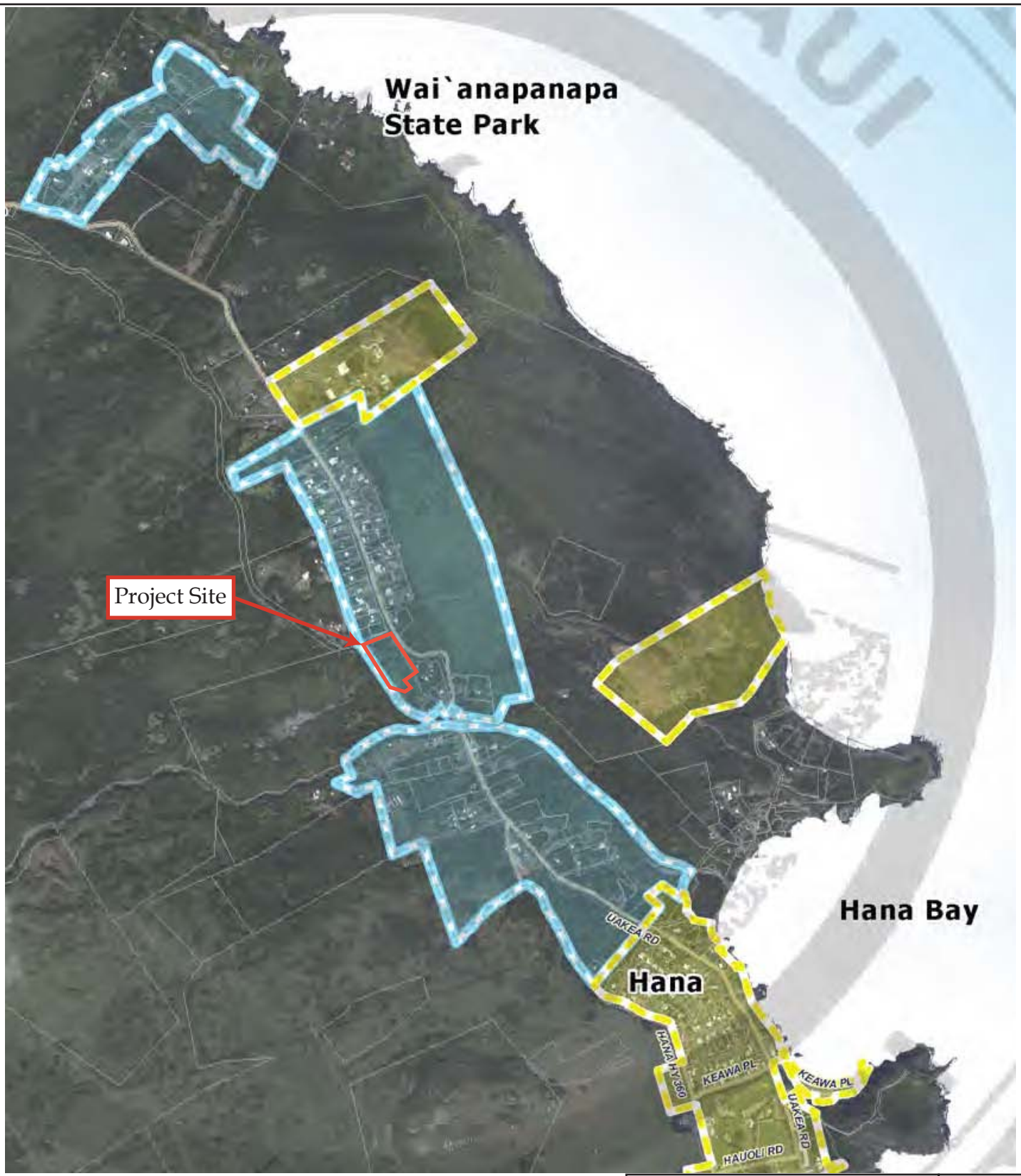


Figure 8

Not to Scale

Maui Island Plan Map

Source: Maui County Planning Department

CHRIS HART & PARTNERS, INC.

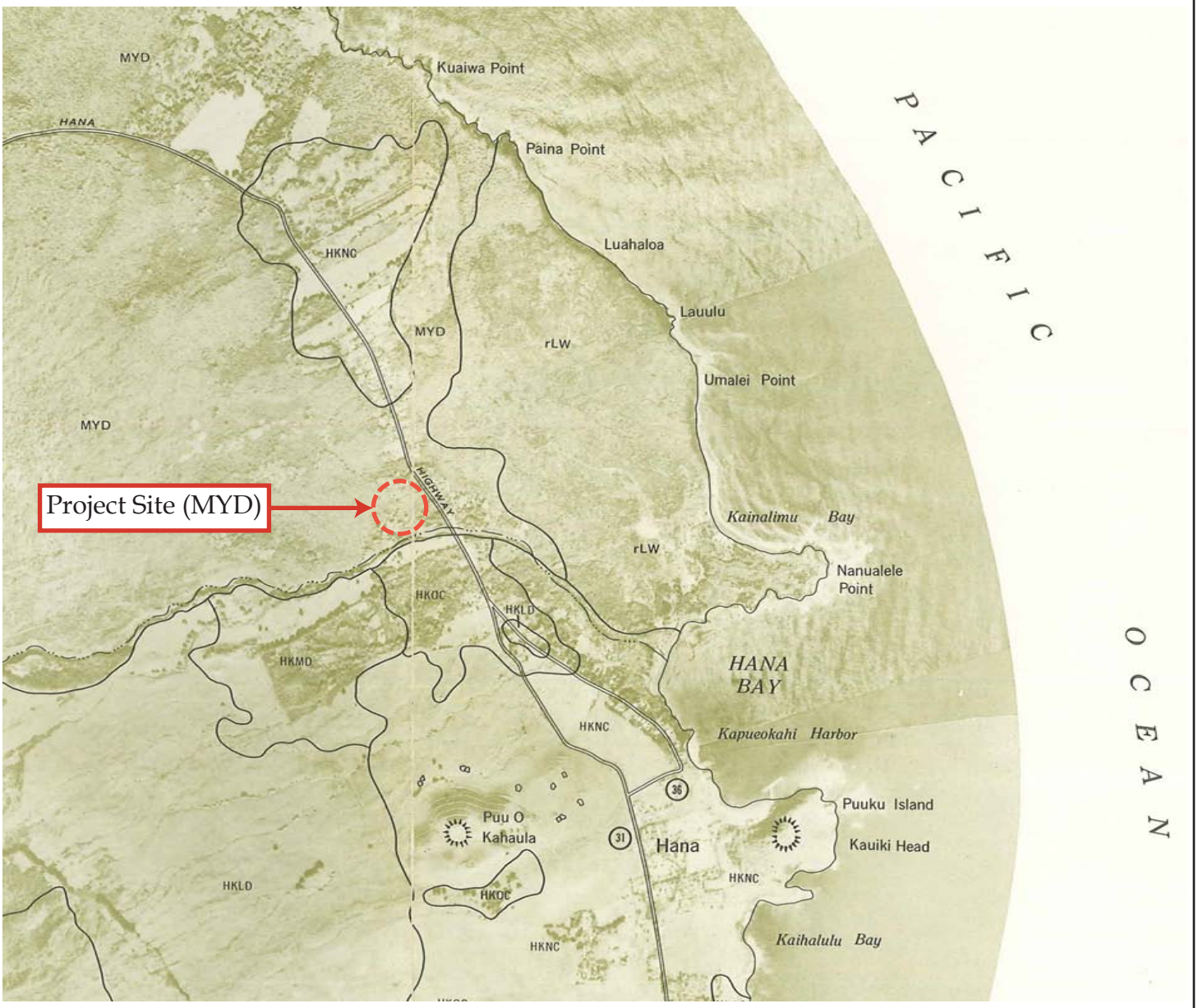


Figure 9

Not to Scale

Soils Classifications Map

Source: US Dept. of Agriculture Soil Conservation Service

CHRIS HART & PARTNERS, INC.

State of Hawaii

FLOOD HAZARD ASSESSMENT REPORT

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

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

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

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

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

OTHER FLOOD AREAS

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

PROPERTY INFORMATION

COUNTY:	MAUI
TMK NO:	(2) 1-3-004-001
PARCEL ADDRESS:	HANA HWY HANA, HI 96713
FIRM INDEX DATE:	SEPTEMBER 19, 2012
LETTER OF MAP CHANGE(S):	12-09-2563P
FEMA FIRM PANEL (S):	1500030670E
PANEL EFFECTIVE DATE:	SEPTEMBER 25, 2009

PARCEL DATA FROM:	JULY 2013
IMAGERY DATA FROM	MAY 2005

IMPORTANT PHONE NUMBERS

County NFIP Coordinator	
County of Maui	
Carolyn Cortez	(808) 270-7253
State NFIP Coordinator	
Carol Tyau-Beam, P.E., CFM	(808) 587-0267

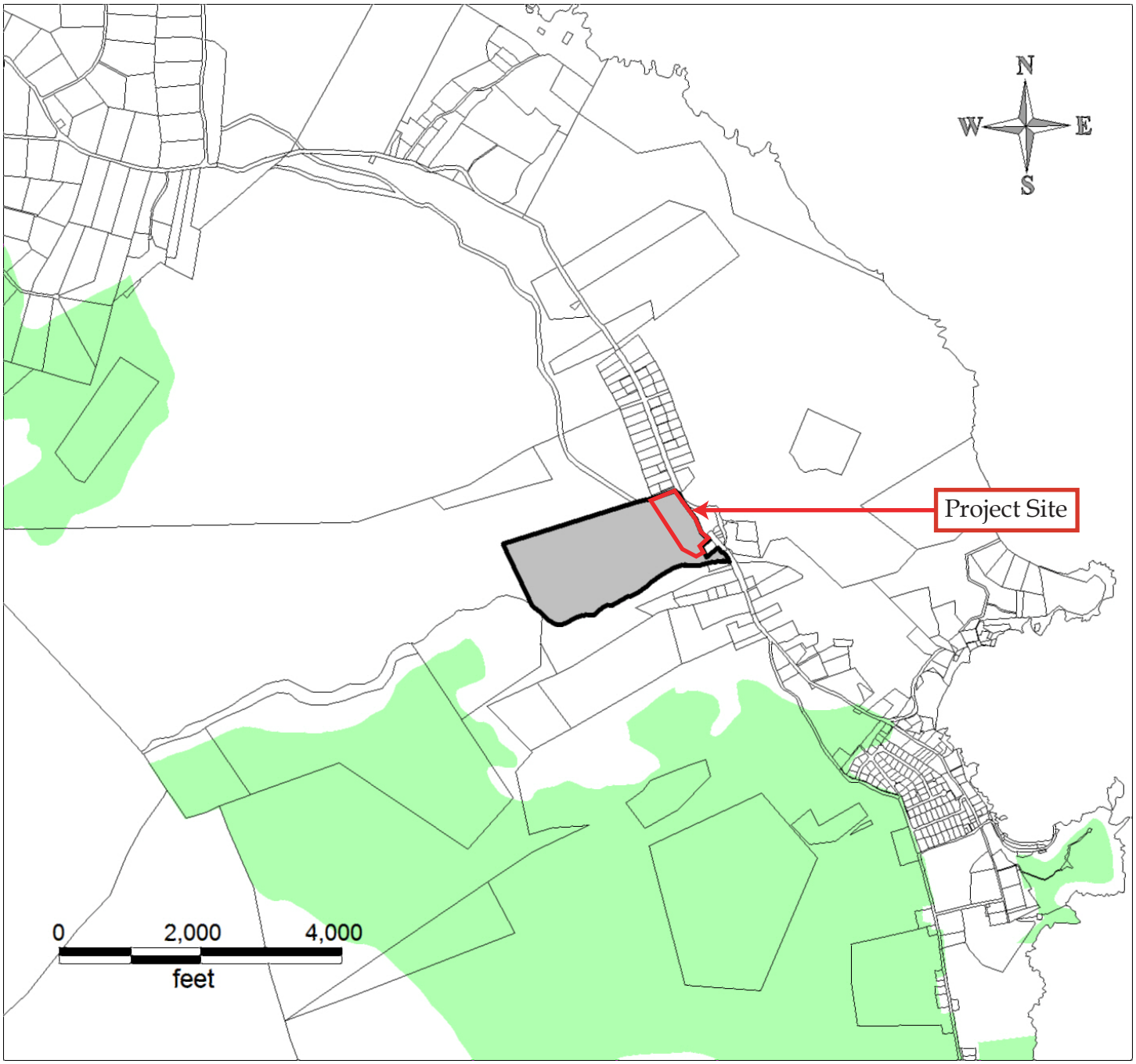
Figure 10

Not to Scale

Flood Hazard Assessment Map

Source: National Flood Insurance Program

CHRIS HART & PARTNERS, INC.



Agricultural Lands Important to the State of Hawaii
(ALISH)

- Prime Lands
- Unique Lands
- Other Lands

Figure 11

Not to Scale

ALISH Map

Source: State of Hawaii

CHRIS HART & PARTNERS, INC.

Figure 12

Not to Scale

Land Study Bureau Map

Source: Land Study Bureau

CHRIS HART & PARTNERS, INC.

FIGURE 13
ARCHITECTURAL RENDERINGS AND FLOOR PLANS

THE 'OHANA

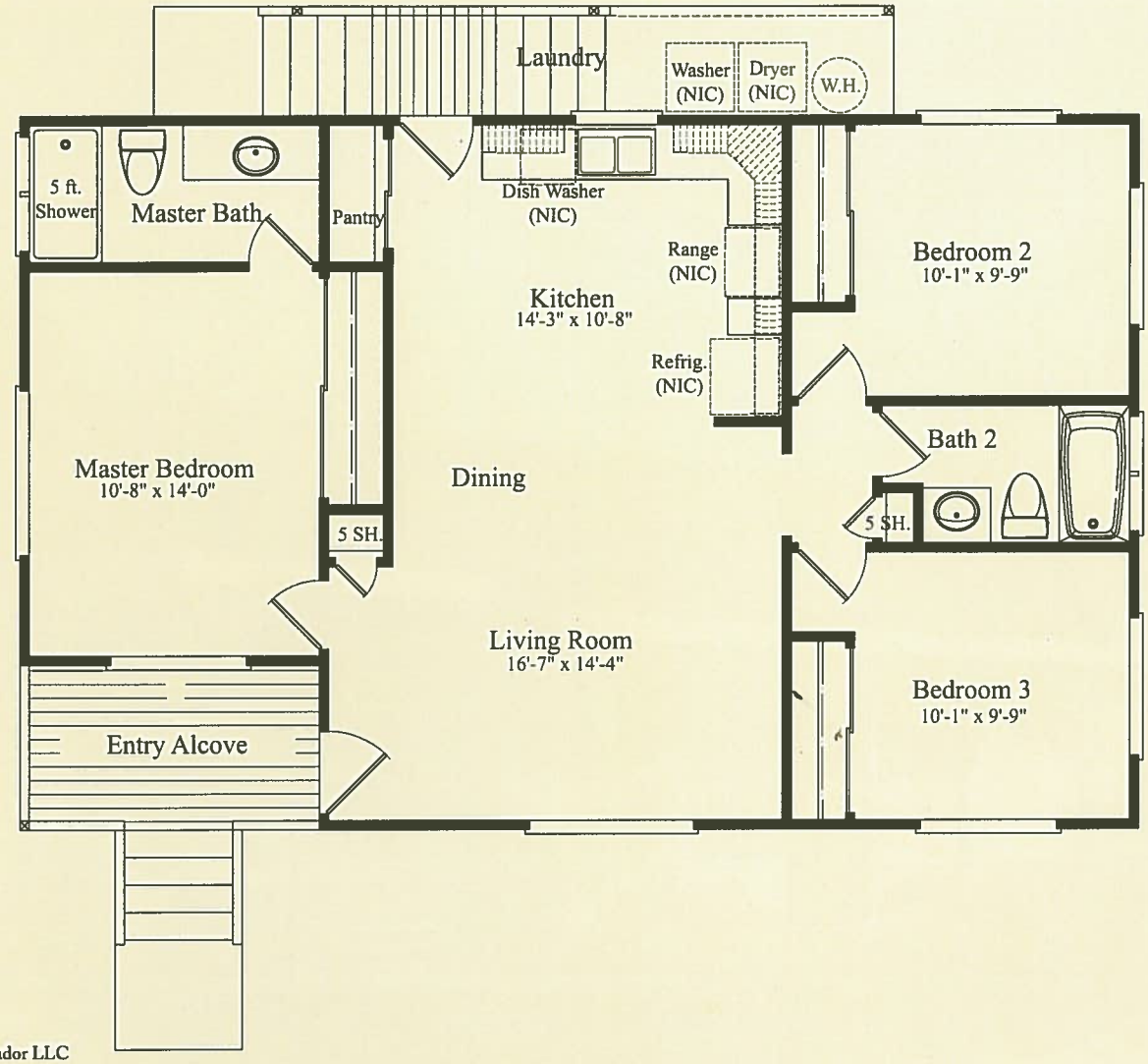
MODEL 1000

'OHANA

"The Family"

Island Homes Collection®

by HONSADOR



THE 'OHANA

3 BEDROOM, 2 BATH, APPROX. 1,000 SQFT.

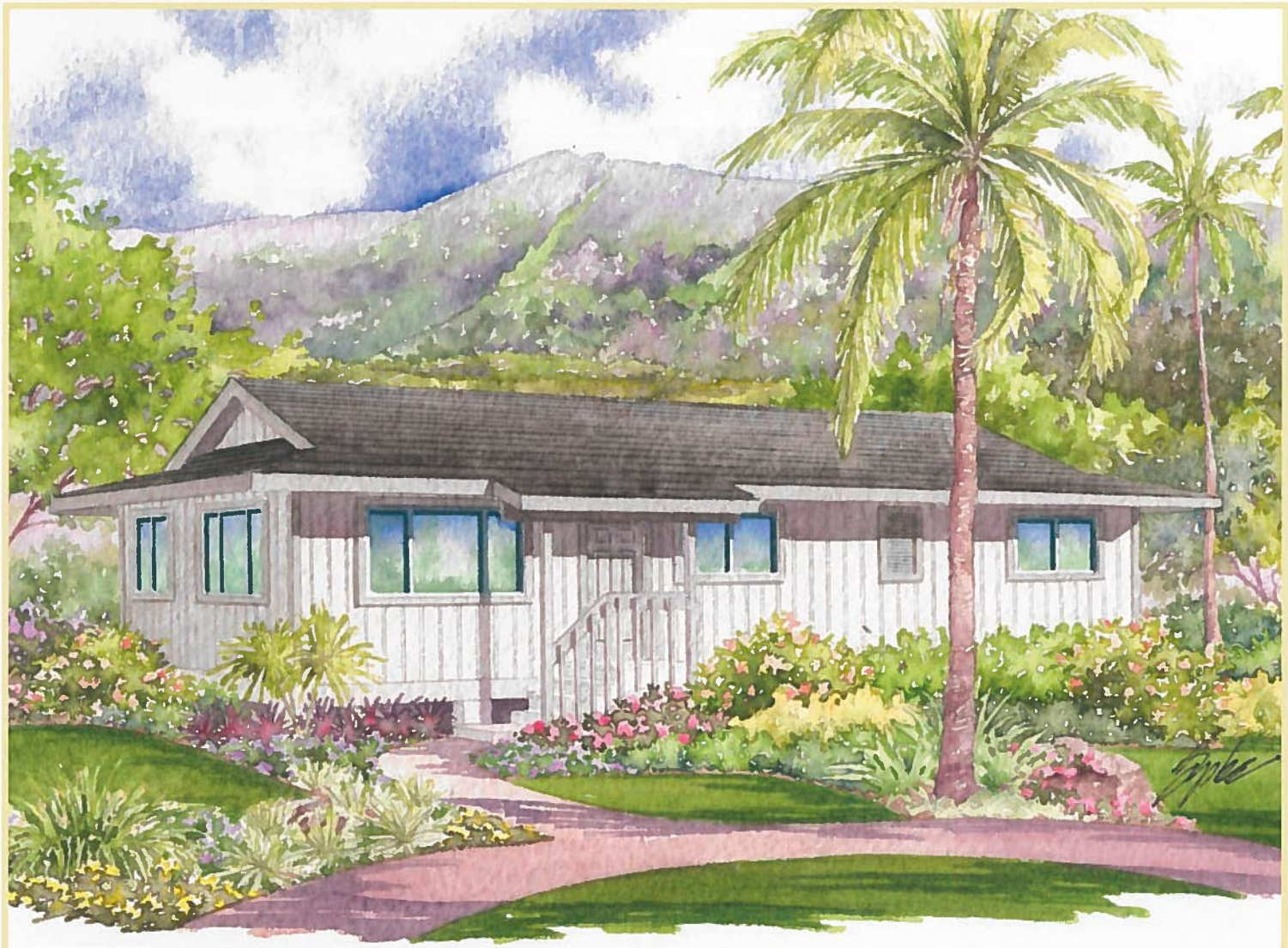
From the moment you step into this home you feel the 'Ohana spirit. The floor plan offers excellent interaction between family members as the Kitchen, Dining and Living Room areas are all within close proximity. This model has its own Master Bedroom and Bath suite which provides for quiet time away from a growing family. The remaining bedrooms are sized right and share a convenient bathroom. This model offers excellent opportunity for expansion into more bedrooms or living area. This home is about "Family".

MODEL 1000

'OHANA

"The Family"

To view more models visit us at www.honsador.com



THE MALIA*

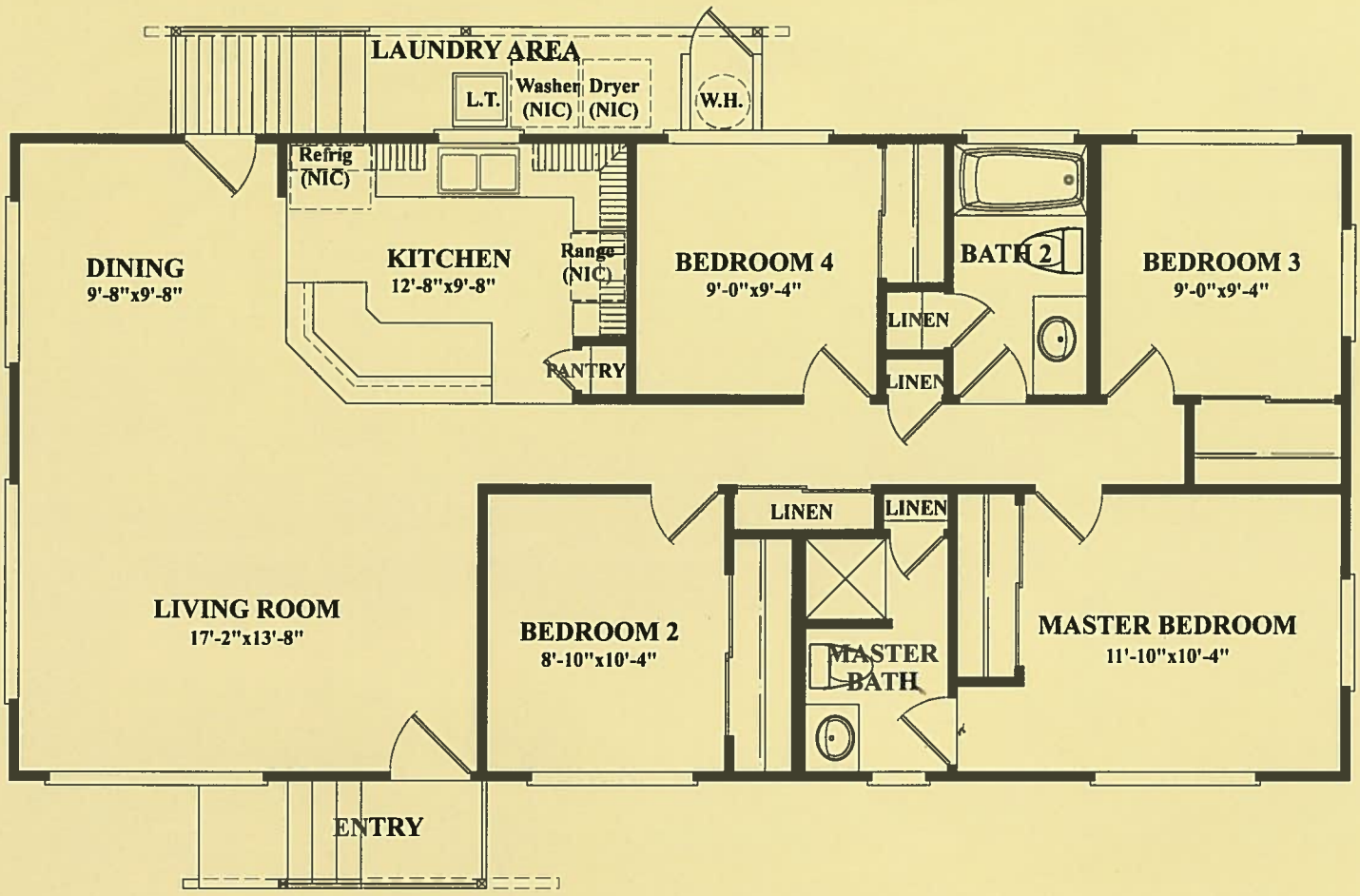
MODEL 1200 EFP

MALIA*

"Peaceful"

Island Homes Collection®
by HONSADOR

*ENHANCED FLOOR PLAN



THE MALIA*
Illustration ©2008 Honsador LLC

4 BEDROOM, 2 BATH, APPROXIMATELY 1200 SQFT.

We've added some zest to an already beautiful model by taking the kitchen layout and adding an "Island" for convenience and efficiency.
All the generous bedroom sizes and living spaces remain untouched. Those who choose the "Malia" come back to tell us how great it is.

*ENHANCED FLOOR PLAN

MODEL 1200 EFP

MALIA*

"Peaceful"

To view more models visit us at www.honsador.com

THE MALANAI

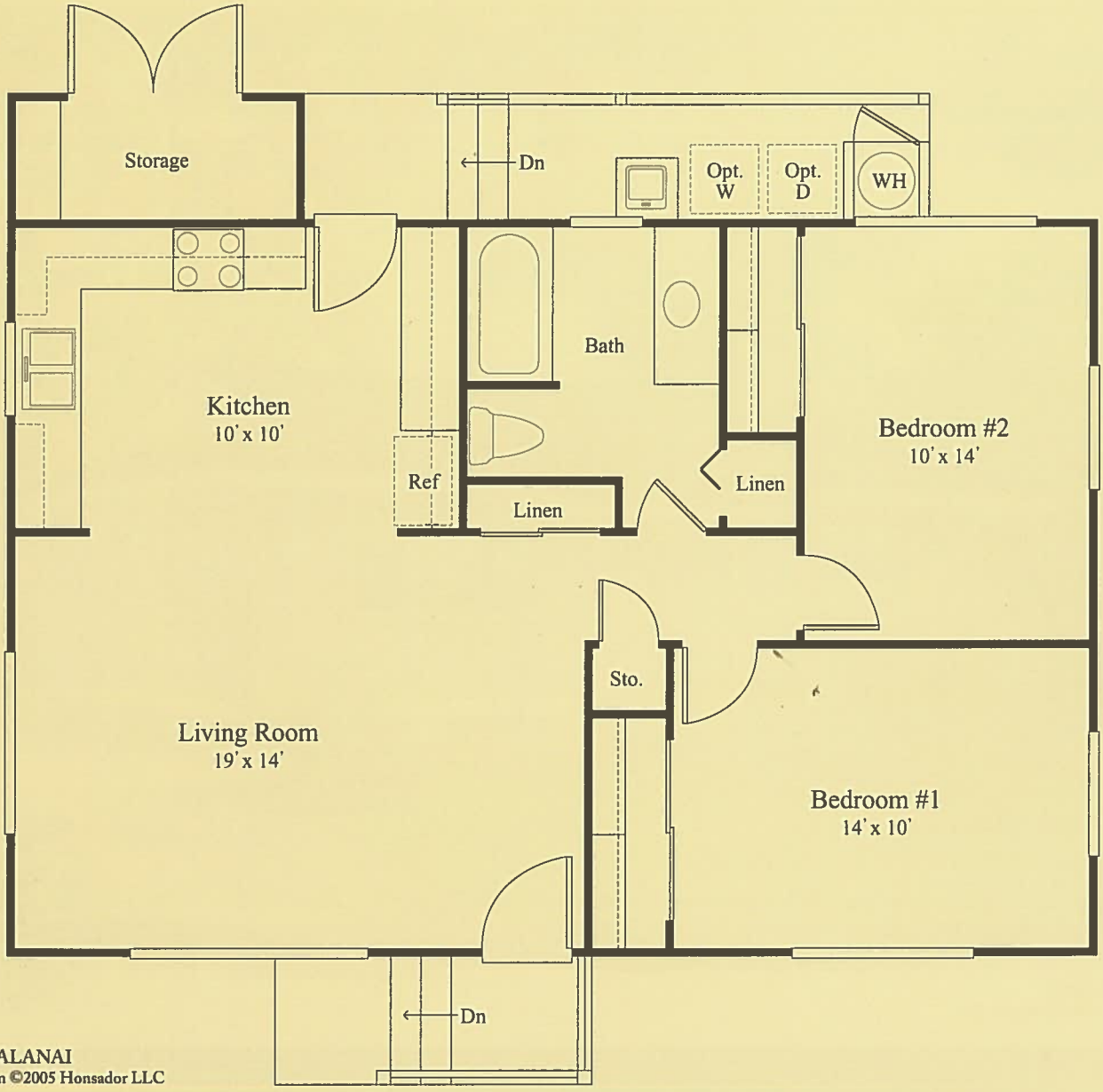
MODEL 864

MALANAI

"Gentle Breezes"

Island Homes Collection®

by HONSADOR



THE MALANAI

2 BEDROOM, 1 BATH, 864 SQFT.

Feel the "Gentle Breezes" from any room in this affordable model. Efficient use of floor space easily accommodates all of your present needs or those of a growing family. Large Kitchen and Bath areas make for easy living in cool cross ventilated spaces. The Malanai offers excellent value today and expandable options should the need arise.

MODEL 864

MALANAI

"Gentle Breezes"

To view more models visit us at www.honsador.com

APPENDICES

APPENDIX A
Early Consultation Letters

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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

Cc: Brett 15/062

August 29, 2014

Chris Hart & Partners, Inc.
Attention: Mr. Jordan E. Hart, President
115 N. Market Street
Wailuku, Hawaii 96793

Dear Mr. Hart:

SUBJECT: Hana 100% Affordable Single Family Residential Project

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments previously sent you on August 28, 2014, enclosed are comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Kevin E. Moore
Acting Land Administrator

Enclosure(s)
cc: Central Files

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. Kevin E. Moore, Acting Land Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
PO Box 621
Honolulu, HI 96809

Dear Mr. Moore:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 29, 2014 and distributing copies of our report to the different DLNR Divisions and for transmitting the different comment letters to our office. We have sent our response letters to the individual DLNR Divisions that provided us with comments.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

RECEIVED
LAND DIVISION
2014 AUG 29 AM 9:35

DEPT OF LAND & NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 5, 2014

2014 AUG -6 PM 3:16

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division
___Div. of Forestry & Wildlife
___Div. of State Parks
_X_ Commission on Water Resource Management
___Office of Conservation & Coastal Lands
_X_ Land Division – Maui District
_X_ Historic Preservation

FROM: Kevin E. Moore, Acting Land Administrator
SUBJECT: Hana 100% Affordable Single Family Residential Project
LOCATION: Hana, Island of Maui; TMK: (2) 1-3-004:001 (por.)
APPLICANT: Chris Hart and Partners, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by August 27 2014.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(√) Comments are attached.

Signed: Lenore N. Ohye
Print Name: Lenore N. Ohye, Acting Deputy Director
Date: August 28, 2014

cc: Central Files

FILE ID: RFD. 4023.6
DOC ID: 11725

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

August 28, 2014

REF: 4023.6

TO: Russell Tsuji, Administrator
Land Division

FROM: William M. Tam, Deputy Director
Commission on Water Resource Management

SUBJECT: Hana 100% Affordable Single Family Residential Project

FILE NO.:
TMK NO.: (2) 1-3-004:001 (por.)

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

Our comments related to water resources are checked off below.

☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

☒ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/.

☒ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

☒ 6. We recommend the use of alternative water sources, wherever practicable.

☐ 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program

☒ 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf

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

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/info_permits.htm.

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

☐ 11. A Well Construction Permit(s) is (are) required before any well construction work begins.

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

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

☐ 14. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

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

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

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

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

☐ OTHER:

If there are any questions, please contact Lenore Ohye at 587-0216.

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. William M. Tam, Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
PO Box 621
Honolulu, HI 96809

Dear Mr. Tam:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004:Portion of 001

Thank you for your letter of August 28, 2014, our responses to your numerated comments are provided below.

Comment 4. *We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http~://www.usubc.oru/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/.*

Response 4. The Applicant has reviewed the EPA website and will implement water efficient practices wherever possible to reduce the demand on water resources as a result of the proposed project.

Comment *5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.*

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

Response 5. The proposed project will comply with the County of Maui drainage requirements as a result of the development of the Property, including best management practices as necessary to minimize non-point source pollution.

Best Management Practices prepared in accordance with Maui County Code, Chapter 20.08 (*Soil Erosion and Sedimentation Control*) will be submitted to the Maui Department of Public Works for review and approval prior to the issuance of grubbing and grading permits. In addition, since site work for the project will exceed one acre, a National Pollutant Discharge Elimination System Permit will be obtained from the Hawaii Department of Health's Clean Water Branch for the discharge of storm water associated with construction activities.

Comment 6. We recommend the use of alternative water sources, wherever practicable.

Response 6. Alternative water sources will be considered in the Draft EA for use to the extent that they are available and practicable.

Comment 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://landscapehawaii.org/library/documents/lich irrigation conservation_bmps.pdf

Response 8. The proposed project will include a water and energy efficient landscaping irrigation system designed to conserve water.

Comment 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration(s) can be made to the bed and/or banks of a stream channel.

Response 15. The Applicant is not proposing stream channel alteration as part of the proposed project therefore we are not anticipating the need for a stream channel alteration permit.

Comment 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

Response 18. It is anticipated that the Maui County water system will provide drinking water for this project. As part of the Draft EA the Applicant will seek the Department's comments regarding any possible permits or petitions and any potential impacts to water resources.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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

CC: Brett 131062

August 28, 2014

Chris Hart & Partners, Inc.
Attention: Mr. Jordan E. Hart, President
115 N. Market Street
Wailuku, Hawaii 96793

Dear Mr. Hart:

SUBJECT: Hana 100% Affordable Single Family Residential Project

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR 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 call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Kevin E. Moore
Acting Land Administrator

Enclosure(s)
cc: Central Files

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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

August 5, 2014

MEMORANDUM

RECEIVED
LAND DIVISION
2014 AUG 21 PM 2:49
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

TO: From:

DLNR Agencies:
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
X Engineering Division
___Div. of Forestry & Wildlife
___Div. of State Parks
X Commission on Water Resource Management
___Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

~~FROM:~~ TO: Kevin E. Moore, Acting Land Administrator
SUBJECT: Hana 100% Affordable Single Family Residential Project
LOCATION: Hana, Island of Maui; TMK: (2) 1-3-004:001 (por.)
APPLICANT: Chris Hart and Partners, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by August 27 2014.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

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

Signed:
Print Name: Carty S. Chang, Chief Engineer
Date: 8/26/14

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/ Kevin E. Moore
Ref.: Early Consultation Letter for the Proposed 100% Affordable Single Family Residential Project, Hana
Maui.019

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) **Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone X. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X.**

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.

( ) Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.

( ) Mr. Carolyn Cortez at (808) 270-7253 of the County of Maui, Department of Planning.

( ) Mr. Stanford Iwamoto at (808) 241-4896 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

_____

( ) Other: _____

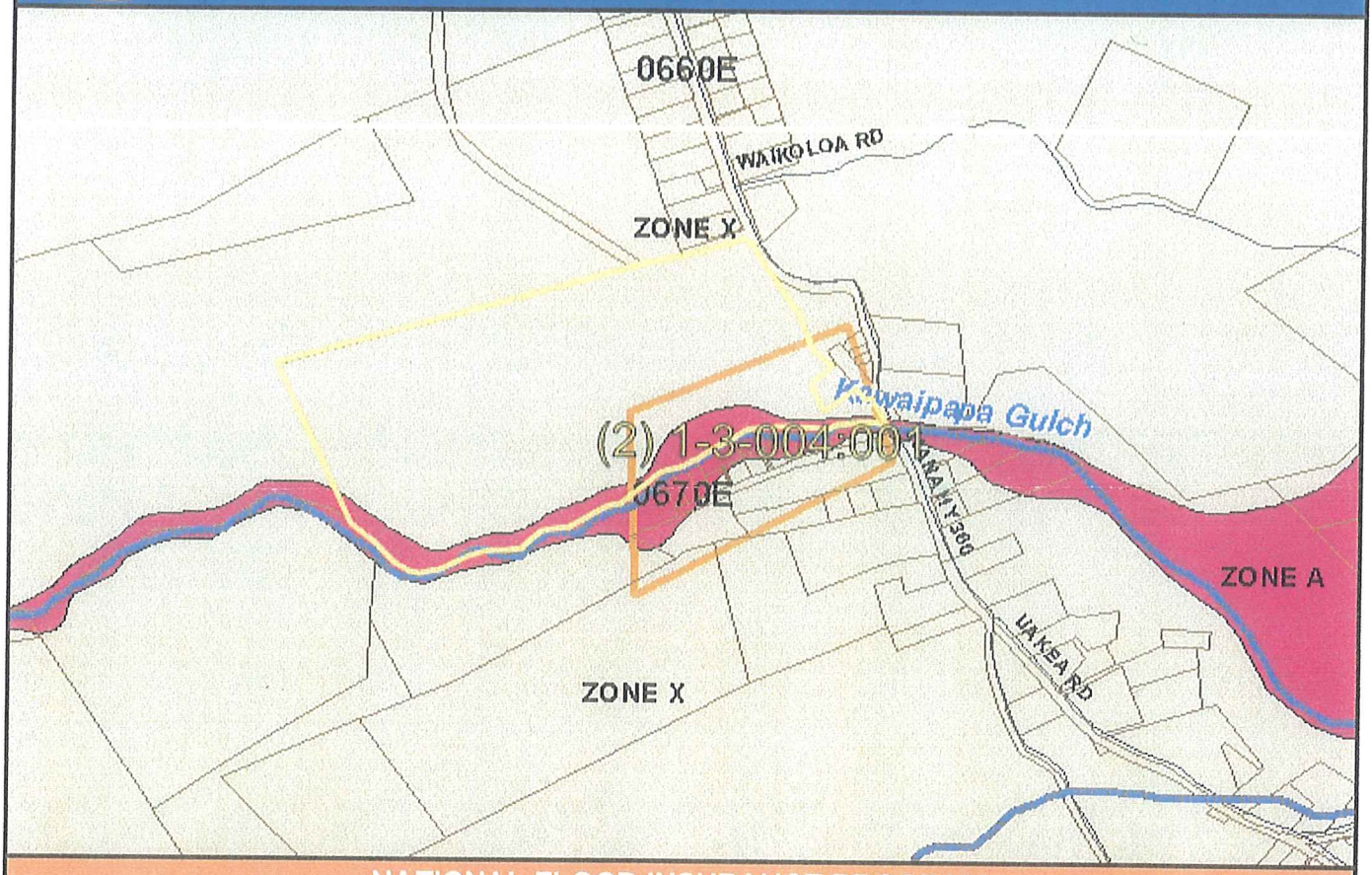
Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 8/20/14

State of Hawaii

FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

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

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

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

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

OTHER FLOOD AREAS

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

PROPERTY INFORMATION

COUNTY:	MAUI
TMK NO:	(2) 1-3-004-001
PARCEL ADDRESS:	HANA HWY HANA, HI 96713
FIRM INDEX DATE:	SEPTEMBER 19, 2012
LETTER OF MAP CHANGE(S):	12-09-2563P
FEMA FIRM PANEL(S):	1500030670E
PANEL EFFECTIVE DATE:	SEPTEMBER 25, 2009

PARCEL DATA FROM:	JULY 2013
IMAGERY DATA FROM:	MAY 2005

IMPORTANT PHONE NUMBERS

County NFIP Coordinator	
County of Maui	
Carolyn Cortez	(808) 270-7253
State NFIP Coordinator	
Carol Tyau-Beam, P.E., CFM	(808) 587-0267

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. Carty S. Chang, Chief Engineer
State of Hawaii
Department of Land and Natural Resources
Engineering Division
PO Box 621
Honolulu, HI 96809

Dear Mr. Chang:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 20, 2014, our responses to your numerated comments are provided below.

Comment 1. *Please take not that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone X. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X.*

Response 1. The Applicant acknowledges that the project site is located in Zone X and understands NFIP does not regulate developments within Zone X.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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

In reply, please refer to:
File:

14-172

August 5, 2014

Mr. Brett Davis
Christ Hart & Partners, Inc.
Email: bdavis@chpmaui.com

Dear Mr. Davis:

SUBJECT: Early Consultation Letter for the Proposed 100% Affordable Single Family Residential Project located on Hana Highway, Hana, Maui, Hawaii, TMK: (2) 1-3-004: portion of 001

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter dated July 29, 2014. Thank you for allowing us to review and comment on the subject document. The document was routed to the relevant Environmental Health divisions, branches, and offices. They will provide specific comments to you if necessary. EPO recommends that you review the standard comments at: http://health.hawaii.gov/epo/home/landuse-planning-review-program/. You are required to adhere to all applicable standard comments.

We encourage you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at: https://eha-cloud.doh.hawaii.gov

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

The EPO suggests that you examine the many sources available on strategies to support the sustainable and healthy design of communities and buildings, including the:
2014 National Climate Change Report – Highlights for Hawaii:
http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap29_FGDall.pdf;
U.S. Health and Human Services: www.hhs.gov/about/sustainability;
U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability;
U.S. Green Building Council's LEED program: www.usgbc.org/leed;
Smart Growth America: www.smartgrowthamerica.org;
International Well Building Standard: http://delosliving.com; and
Intergovernmental Panel on Climate Change (IPCC):
http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap29_FGDall.pdf

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

Mahalo,

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

c. Maui District Health Office, Clean Water Branch, Wastewater Branch

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

March 15, 2016

Ms. Laura Leialoha Phillips McIntyre, AICP
Environmental Planning Office Manager
State of Hawaii, Dept. of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, HI 96801-3378

Dear Ms. Leialoha Phillips McIntyre:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 5, 2014. We have provided the following responses to your numerated comments.

Comment 1. *The EPO recommends that you review the standard comments at: http://health.hawaii.gov/epo/home/landuse-planning-review-program/. You are required to adhere to all applicable standard comments.*

Response 1. The Applicant will adhere to applicable standard comments online and has shared them with the project team.

Comment 2. *We encourage you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at: https://eha-cloud.doh.hawaii.gov*

Response 2. Thank you for this information, the Applicant has shared this information with the project team.

Comment 3. *You may also wish to review the recently revised Water Quality Standards Maps that have been updated for all islands. The new Water Quality Standards Maps can be found at: http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/.*

Response 3. Thank you for this information, the Applicant will review the revised Water Quality Standards Map.

Comment 4. *The EPO suggests that you examine the many sources available on strategies to support the sustainable and healthy design of communities and buildings, including the: 2014 National Climate Change Report – Highlights for Hawaii: http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap29_FGDall.pdf; U.S. Health and Human Services: www.hhs.gov/about/sustainability; U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability; U.S. Green Building Council's LEED program: www.usgbc.org/leed; Smart Growth America: www.smartgrowthamerica.org; International Well Building Standard: http://delosliving.com; and Intergovernmental Panel on Climate Change (IPCC): http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap29_FGDall.pdf*

Response 4. The Applicant will utilize these resources and others to integrate smart planning techniques into the final design of the project.

Comment 5. *We request you share all of this information with others to increase community awareness on sustainable, innovative, inspirational, and healthy community design.*

Response 5. The information in your email has been furnished to the Applicant and the project team for their use during the planning and design phase of the project.

Thank you participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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

In reply, please refer to:
File:

14-704A CAB

August 29, 2014

RECEIVED
SEP -4 2014
DK
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

Mr. Jordan E. Hart
President
Land Planner
Chris Hart & Partners, Inc.
115 North Market Street
Wailuku, Hawaii 96793-1717

Dear Mr. Hart:

SUBJECT: **Early Consultation**
Proposed 100% Affordable Single-Family Residential Project
Hana Highway, Hana, Maui
TMK: (2) 1-3-004:portion 001

A significant potential for fugitive dust emissions exists during all phases of construction. The activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. We encourage the contractor to implement a dust control plan as described in your document in order to comply with the fugitive dust regulations.

The plan, which does not require approval by the Department of Health, may include the dust control measures identified in you document and may add other measures including the following:

a) Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
b) Providing an adequate water source at the site prior to start-up of construction activities;
c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
d) Minimizing dust from shoulders and access roads;
e) Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Controlling dust from debris being hauled away from the project site. Also, controlling dust from daily operations of material being processed, stockpiled, and hauled to and from the facility.

If you have any questions, please contact Mr. Barry Ching of the Clean Air Branch at (808) 586-4200.

Sincerely,

NOLAN S. HIRAI, P.E.
Manager, Clean Air Branch

BC:rg

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

March 15, 2016

Mr. Nolan S. Hirai, P.E., Manager
State of Hawaii, Dept. of Health
Clean Air Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Dear Mr. Nolan S. Hirai:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 29, 2014. We have provided the following response to your comment.

Comment: *A significant potential for fugitive dust emissions exists during all phases of construction. The activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. We encourage the contractor to implement a dust control plan as described in your document in order to comply with the fugitive dust regulations. The plan, which does not require approval by the Department of Health, may include the dust control measures identified in you document and may add other measures including the following:*

a) Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
b) Providing an adequate water source at the site prior to startup of construction activities;
c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
d) Minimizing dust from shoulders and access roads;
e) Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Controlling dust from debris being hauled away from the project site. Also, controlling dust from daily operations of material being processed, stockpiled, and hauled to and from the facility.

Response: The proposed project will require minimal excavation and fill material. As necessary, dust control measures that comply with the provisions of Chapter 11-60.1, HAR (*Pollution Control)* and Section 11-60.1-33, HAR (*Fugitive Dust)*, will be implemented during construction to minimize the effects of fugitive dust. Examples of such measures include but are not limited to the following:

- Ensure that an adequate source of water is available for dust control before the start of construction.
- Use dust fences, water sprinklers, and water wagons to prevent airborne dust from leaving the site.
- Temporarily cover exposed areas with plywood or plastic sheeting material.
- Phase site work to limit the exposure of bare areas and leave existing vegetation in place for as long as possible prior to clearing.
- Place soil stockpiles away from adjacent properties and cover the stockpiles with plastic sheeting or similar material when not in use.
- Limit the areas of disturbance and hydromulch or grass finished areas on a timely basis.
- Water loose soil until damp and spray water during grading to control airborne dust.
- Use dust control measures during weekends, after hours and prior to daily start-up of construction activities.

From a long-term perspective, the proposed 100% affordable single family project is not anticipated to generate adverse air quality impacts after build out.

Thank you participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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

In reply, please refer to:
EMD/CWB

08016PJF.14

August 8, 2014

Mr. Jordan E. Hart
President
Chris Hart & Partners, Inc.
115 N. Market Street,
Wailuku, Island of Maui, Hawaii 96793-1717

CC: Brett

131062

Dear Mr. Hart:

SUBJECT: Comments on Draft Environmental Assessment (DEA) for the Proposed 100% Affordable Single Family Residential Project Hana, Island of Maui, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated July 29, 2014, requesting comments on the subject document. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. Your applicant may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/10/CWB_Oct22.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. National Pollutant Discharge Elimination System (NPDES) permit coverage is required for pollutant discharges into State surface waters and for certain situations involving storm water (HAR, Chapter 11-55).

   a. Discharges into Class 2 or Class A State waters can be covered under an

NPDES general permit only if all of the NPDES general permit requirements are met. Please see the DOH-CWB website (http://health.hawaii.gov/cwb/) for the NPDES general permits and instructions to request coverage.

b. All other discharges into State surface waters and discharges into Class 1 or Class AA State waters require an NPDES individual permit. To request NPDES individual permit coverage, please see the DOH-CWB forms website located at: http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/forms/.

c. NPDES permit coverage for storm water associated with construction activities is required if your project will result in the disturbance of one (1) acre or more of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. NPDES permit coverage is required before the start of the construction activities.

   Land disturbance includes, but is not limited to clearing, grading, grubbing, uprooting of vegetation, demolition (even if leaving foundation slab), staging, stockpiling, excavation into pavement areas which go down to the base course, and storage areas (including areas on the roadway to park equipment if these areas are blocked off from public usage, grassed areas, or bare ground).

3. If the project involves work in, over, or under waters of the United States, it is highly recommend that your applicant contact the Army Corp of Engineers, Regulatory Branch (Tel: 438-9258) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

Darryl Lum for AW

ALEC WONG, P.E., CHIEF
Clean Water Branch

JF:bk

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 21, 2015

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

Dear Mr. Wong:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 08, 2014. We have provided the following responses to your numerated comments.

Comment 1. *Any project and its potential impacts to State waters must meet the following criteria:*

a. Antidegradation policy (HAR, Section 11-54-1 .I), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

b. Designated uses (HAR, Section 11 -54-3), as determined by the classification of the receiving State waters.

c. Water quality criteria (HAR, Sections 1 1-54-4 through 1 1-54-8).

Response 1. The proposed project will comply with the applicable provisions of Chapter 11-54, Hawaii Administrative Rules (HAR) entitled Water Quality Standards and Chapter 11-55, HAR titled Water Pollution Control.

The proposed project will also be developed in accordance with the standards set forth by:

a. Section 11-54-1.1, HAR (General Policy of Water Quality Anti-degradation).

b. Section 11-54-3, HAR (Classification of Water Uses).

c. The water quality criteria set forth in Sections 11-54-4 through 11-54-8, HAR.

Comment *2. National Pollutant Discharge Elimination System (NPDES) permit coverage is required for pollutant discharges into State surface waters and for certain situations involving storm water (HAR, Chapter 11-55).*

a. Discharges into Class 2 or Class A State waters can be covered under an NPDES general permit only if all of the NPDES general permit requirements are met. Please see the DOH-CWB website (http://healthhawaii.gov/cwb/) for the NPDES general permits and instructions to request coverage.

b. All other discharges into State surface waters and discharges into Class 1 or Class, AA State waters require an NPDES individual permit. To request NPDES individual permit coverage, please see the DOH-CWB forms website located at: http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/forms/.

c. NPDES permit coverage for storm water associated with construction activities is required if your project will result in the disturbance of one (1) acre or more of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. NPDES permit coverage is required before the start of the construction activities.

Land disturbance includes, but is not limited to clearing, grading, grubbing, uprooting of vegetation, demolition (even if leaving foundation slab), staging, stockpiling, excavation into pavement areas which go down to the base course, and storage areas (including areas on the roadway to park equipment if these areas are blocked off from public usage, grassed areas, or bare ground).

Response 2. The Applicant acknowledges that a National Pollutant Discharge Elimination System (NPDES) is required for discharges into Class A or Class 2 State waters.

a. Prior to the commencement of construction, an application for an NPDES permit will be submitted to the Clean Water Branch (CWB) for review and approval.

b. No dewatering activities are anticipated at this time. However, if such work is required, an application for a NPDES permit for dewatering activities will be submitted to the CWB for review and approval.

c. If necessary, an application for an NPDES permit for hydro-testing water effluent will be submitted to the CWB for review and approval.

Comment 3. *If your project involves work in, over, or under waters of the United States, it is highly recommend that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 438-9258) regarding their permitting requirements.*

Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401 (a)(l), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may ***result*** *in any discharge into the navigable waters ..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(l2), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.*

Response 3. The U.S. Army Corps of Engineers will be provided with a copy of the Draft EA as part of the consultation process for the preparation of the Final EA.

Comment 4. *Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.*

Response 4. Notwithstanding other permit requirements, the Applicant understands that all project-related discharges must comply with the State's Water Quality Standards as set forth in Chapter 11-54, HAR.

Thank you participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU HI 96793

August 21, 2014

Mr.Brett Davis
Chris Hart & Partners, Inc.
115 N. Market St.
Wailuku, Hawai`i 96793

Dear Mr. Davis:

Subject: **Early Consultation Letter for Proposed 100% Affordable Single Family Residential Project on Hana Hwy**
Hana Highway, Hana, HI
TMK: (2) 1-3-004:portion of 001

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

1. National Pollutant Discharge Elimination System (NPDES) permit coverage maybe required for this project. The Clean Water Branch should be contacted at 808 586-4309.
2. Provide lot sizes for the proposed 24 single Family subdivision for review. If you have any questions, please call Roland Tejano, Wastewater Engineer at 808 984-8232.

It is strongly recommended that the Standard Comments found at the Department's website: http://health.hawaii.gov/epo/home/landuse-planning-review-program/ be reviewed and any comments specifically applicable to this project should be adhered to.

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

Sincerely,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c: EPO

RECEIVED
AUG 25 2014
CHRIS HART & PARTNERS, INC
Landscape Architecture and Planning
cc: Brett
13/062

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 21, 2015

Ms. Patti Kitkowski, District Environmental Health Program Chief
State of Hawaii
Department of Health, Maui District
54 High Street
Wailuku, HI 96793

Dear Ms. Kitkowski:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 21, 2014, the following responses to your numerated comments are provided.

Comment 1. *National Pollutant Discharge Elimination System (NPDES) permit coverage maybe required for this project. The Clean Water Branch should be contacted at 808 586-4309.*

Response 1. The Applicant is aware that a NPDES permit is required and will work with the Clean Water Branch to obtain permit coverage for construction-related activities.

Comment 2. *Provide lot size for the proposed 24 single Family subdivision for review. If you have any questions, please call Roland Tejano, Wastewater Engineer at 808-984-8232.*

Response 2. The Applicant will provide a map with lot sizes in the Draft EA.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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

In reply, please refer to:
File:

LUD – 2 1 3 004 001 Early Cons Hana
Affrdbl Sngl Fmly Res-ID1835

August 8, 2014

Mr. Jordan E. Hart, President
Chris Hart & Partners, Inc.
115 North Market Street
Wailuku, Hawaii 96793-1717

Dear Mr. Hart:

Subject: Early Consultation Letter for the Proposed 100% Affordable Single Family Residential Project located on Hana Highway, Hana, Maui, Hawaii 96793
Hana Affordable Single Family Residential Project (2) 1-3-004: portion of 001
24 Single Family house and Lots on 8.5 acres of land

Thank you for allowing us the opportunity to provide comments on the above subject project. We have the following information to offer.

Please be informed that the proposed wastewater systems for the subdivision/ development may have to include design considerations to address any effects associated with the construction of and/or discharges from the wastewater systems to any public trust, Native Hawaiian resources, or the exercise of traditional cultural practices. In addition, all wastewater plans must conform to applicable provisions of the Hawaii Administrative Rules, Chapter 11-62, "Wastewater Systems."

Should you have any questions, please contact Mr. Mark Tomomitsu of our branch at (808) 586-4294.

Sincerely,

SINA PRUDER, P.E., CHIEF
Wastewater Branch

LM/MST:lmj

c: Ms. Laura McIntyre, DOH-Environmental Planning Office (Ref. EPO 14-172)
Mr. Roland Tejano, DOH-WWB's Maui Staff
Mr. Kurt Wollenhaupt, County of Maui, Department of Planning

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. Sina Pruder, P.E., Chief
State of Hawaii,
Department of Health, Wastewater Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Dear Mr. Pruder:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 08, 2014. We have provided the following responses to your comments.

Comment 1. *Please be informed that the proposed wastewater systems for the subdivision/ development may have to include design considerations to address any effects associated with the construction of and/or discharges from the wastewater systems to any public trust, Native Hawaiian resources, or the exercise of traditional cultural practices. In addition, all wastewater plans must conform to applicable provisions of the Hawaii Administrative Rules, Chapter 11-62, "Wastewater Systems."*

Response 1. The proposed project will comply with any the applicable provisions of Chapter 11-62, Hawaii Administrative Rules (HAR) entitled Wastewater Systems. The proposed wastewater systems address any effects associated with the construction of and/or discharge from these systems to any public trust, Native Hawaiian resources, or the exercise of traditional cultural practices.

Thank you participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 21, 2015

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

Dear Ms. Pruder:

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 08, 2014. We have provided the following responses to your comments.

Comment 1. *Please be informed that the proposed wastewater systems for the subdivision/ development may have to include design considerations to address any effects associated with the construction of and/or discharges from the wastewater systems to any public trust, Native Hawaiian resources, or the exercise of traditional cultural practices. In addition, all wastewater plans must conform to applicable provisions of the Hawaii Administrative Rules, Chapter 11-62, "Wastewater Systems."*

Response 1. The proposed project will comply with any the applicable provisions of Chapter 11-62, Hawaii Administrative Rules (HAR) entitled Wastewater Systems. The proposed wastewater systems address any effects associated with the construction of and/or discharge from these systems to any public trust, Native Hawaiian resources, or the exercise of traditional cultural practices.

Thank you participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

NEIL ABERCROMBIE
GOVERNOR

FORD N. FUCHIGAMI
INTERIM DIRECTOR

Deputy Directors
RANDY GRUNE
AUDREY HIDANO
ROSS M. HIGASHI
JADINE URASAKI

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

IN REPLY REFER TO:
HWY-PS 2.7892

August 28, 2014

CC: Brett 13/062

Mr. Jordan E. Hart
President
Chris Hart & Partners, Inc.
115 North Market Street
Wailuku, Hawaii 96793-1717

Dear Mr. Hart:

Subject: Early Consultation for Draft Environmental Assessment (EA) – Proposed 100% Affordable Single-Family Residential Project, Hana Highway, Hana, Maui
TMK: (2) 1-3-004:Portion of 001

Thank you for consulting with us regarding the subject project which proposes to develop 24 single-family residential dwelling units on approximately 8.5 acres of land. We have the following comments:

1. The EA should discuss and evaluate project impacts on Hana Highway.

2. Prepare a Traffic Impact Report for our review and acceptance that addresses/identifies measures to mitigate all project generated traffic as well as community concerns.

3. Prior to the planning/development of the project, the applicant/developer must discuss acceptable access requirements to Hana Highway with the Highways Division.

4. Inconvenience to the motoring public, bicyclists, joggers, park users, etc. during construction should be discussed/evaluated.

5. Submit construction plans for all work to be done within the Hana Highway right-of-way.

If you have any questions, please contact Gary Ashikawa, Systems Planning Engineer, Highways Division, Planning Branch at (808) 587-6336. Please reference file review number 2014-147 in all contacts and correspondence regarding these comments.

Very truly yours,

FORD N. FUCHIGAMI
Interim Director of Transportation

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. Ford N. Fuchigami, Interim Director of Transportation
State of Hawaii,
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Dear Mr. Fuchigami,

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 28, 2014. The following responses to your numerated comments are provided:

Comment 1. *The EA should discuss and evaluate project impacts on Hana Highway.*

Response 1. The EA will include a Traffic Impact Assessment Report that will discuss and evaluate the project impacts on Hana Highway.

Comment 2. *Prepare a Traffic Impact Report for our review and acceptance that address/identifies measures to mitigate all project generated traffic as well as community concerns.*

Response 2. The Applicant's consultant will prepare and submit a Traffic Impact Assessment Report for the Department's review and acceptance that will address/identify measures to mitigate all project generated traffic as well as community concerns.

Comment 3. *Prior to the planning/development of the project, the applicant/developer must discuss acceptable access requirements to Hana Highway with the Highways Division.*

Response 3. The Applicant will discuss acceptable access requirements to Hana Highway with the Highways Division prior to submittal of the Draft EA.

Comment 4. *Inconvenience to the motoring public, bicyclists, joggers, park users, etc. during construction should be discussed/evaluated.*

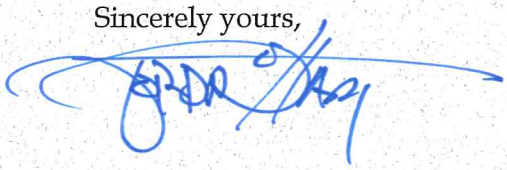
Response 4. The Applicant will evaluate and address any inconveniences that might arise during construction to the motoring public, bicyclists, joggers, park users, etc. in the Draft EA.

Comment 5. *Submit construction plans for all work to be done within the Hana Highway right-of-way.*

Response 5. During construction review and approval the Applicant will submit construction plans for work to be done within the Hana Highway right-of-way.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or e-mail Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,



Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manger
Phillip Rowell, Transportation Consultant
Project File 13-062

OFFICE OF PLANNING
STATE OF HAWAII

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

NEIL ABERCROMBIE
GOVERNOR

LEO R. ASUNCION
ACTING DIRECTOR
OFFICE OF PLANNING

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

Ref. No. P-14483

August 26, 2014

Mr. Jordan Hart, President
Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, Hawaii 96793-1717

Dear Mr. Hart:

Subject: Early Consultation for a Draft Environmental Assessment (Draft EA) for the Proposed 100% Affordable Single Family Residential Project, Hana, Maui; TMK: (2) 1-3-004: por. 001

Thank you for the opportunity to provide early consultation comments on the proposed development of a single family residential project in Hana, Maui. We have reviewed the documents sent to us by letter dated July 29, 2014, and have the following comments to offer:

1. The Office of Planning (OP) provides technical assistance to State and county agencies in administering the statewide planning system in Hawaii Revised Statutes (HRS) Chapter 226, the Hawaii State Plan. The Hawaii State Plan provides goals, objectives, priorities, and priority guidelines for growth, development, and the allocation of resources in the State. The State Plan has very diverse policies and objectives that include the economy, agriculture, the visitor industry, federal expenditures, the physical environment, facility systems, and socio-cultural advancement.

   This project may have an impact on a number of these objectives, policies, and priority guidelines including: HRS § 226-19 Socio-Cultural Advancement – Housing, and § 226-106 – Affordable Housing, and § 226-108 - Sustainability. The Draft EA should include an analysis of the Hawaii State Plan, HRS Chapter 226, in a list of relationships to policies and objectives as they pertain to this project.

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

3. The proposed project lies within the Special Management Area (SMA) delineated by the County of Maui. Please consult with the Maui County Department of Planning on the procedures and requirements for addressing SMA regulations.

4. Because of the project area's proximity to the coastal area, this project may have nonpoint pollution impacts on coastal waters. Please review the Hawaii Watershed Guidance, which provides a summary and links to management measures that may be implemented to minimize coastal nonpoint pollution impacts. Specifically please examine page 120 (management measure for new development). The Watershed Guidance can be viewed or downloaded from the Office of Planning website at http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI Watershed Guidance Final.pdf.

5. Due to this project's relative proximity to the Pacific Ocean, the many streams and wetlands in the area, and the very rainy weather patterns of East Maui, please consider utilizing OP's *Stormwater Impact Assessment* to identify and evaluate information on hydrology, stressors, sensitivity of aquatic and riparian resources, and management measures to control runoff occurrences. In particular, please examine Low-Impact Development Concepts. These concepts include decentralized micro-scale controls that infiltrate, filter, store, reuse, evaporate, and detain runoff close to its source.

   This guidance document will assist in integrating stormwater impact assessment within your review process. The purpose of this document is to provide guidance on assessing stormwater impacts in the planning phase of project development. The goal is to provide a suggested framework and various tools for integrating stormwater impacts assessment. Please review the Low-Impact Development Concepts listed on pages 14-16 of the *Stormwater Impact Assessment* guidance. This can be found at http://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_imapct/final_stormwater_impact_assessments_guidance.pdf.

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

Sincerely,

Leo R. Asuncion
Acting Director

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. Leo Asuncion, Jr., AICP, Acting Director
State of Hawaii, DBEDT
Office of Planning
PO. Box 2359
Honolulu, Hawaii 96804-2359

Dear Mr. Asuncion,

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 26, 2014. In responding to your comments we would like to note the following.

Comment 1: *The Office of Planning (OP) provides technical assistance to State and county agencies in administering the statewide planning system in Hawaii Revised Statutes (HRS) Chapter 226, the Hawaii State Plan. The Hawaii State Plan provides goals, objectives, priorities, and priority guidelines for growth, development, and the allocation of resources in the State. The State Plan has very diverse policies and objectives that include the economy, agriculture, the visitor industry, federal expenditures, the physical environment, facility systems, and socio-cultural advancement.*

This project may have an impact on a number of these objectives, policies, and priority guidelines including: HRS 226-19 Socio-Cultural Advancement - Housing, and 226-106 - Affordable Housing, and 226-108 - Sustainability. The Draft EA should include an analysis of the Hawaii State Plan, HRS Chapter 226, in a list of relationships to policies and objectives as they pertain to this project.

Response 1: The Draft EA will include an analysis of the Hawaii State Plan, HRS Chapter 226 policies and objectives as they pertain to the proposed project.

Comment 2: *OP is the lead agency for the Hawaii Coastal Zone Management (CZM) Program. The coastal zone management area is defined as "all lands of the State and the area extending*

seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" see HRS 205A-I (definition of "coastal zone management area"). The Draft EA should include a discussion of the proposed project's ability to meet all of the objectives and policies set forth in HRS 205A-2. These objectives and policies include: recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, public participation, and marine resources. The Draft EA should include the Coastal Zone Management Act, HRS Chapter 205A, in a list of relationships to land use plans, policies, and controls.

Response 2: The Draft EA will include an analysis of the projects ability to meet the objectives and polices set forth in HRS Chapter 205A.

Comment 3: *The proposed project lies within the Special Management Area (SMA) delineated by the County of Maui. Please consult with the Maui County Department of Planning on the procedures and requirements for addressing SMA regulations.*

Response 3: Based on County of Maui records the project site appears to be mauka of, and outside the SMA as delineated by the County of Maui. The applicant will consult with the County of Maui in regards to the SMA requirements and the Draft EA will address any necessary requirements for the SMA regulations.

Comment 4: *Because of the project area's proximity to the coastal area, this project may have nonpoint pollution impacts on coastal waters. Please review the Hawaii Watershed Guidance, which provides a summary and links to management measures that may be implemented to minimize coastal nonpoint pollution impacts. Specifically please examine page 120 (management measure for new development). The Watershed Guidance can be viewed or downloaded from the Office of Planning website at http:/files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI_ Watershed_Guidance_Final.pdf.*

Response 4: The project site is approximately ¾ miles from the shoreline and the Draft EA will include an analysis if the proposed project will have any nonpoint pollution impacts on coastal waters. This will include a review of the Hawaii Watershed Guidance.

Comment 5: *Due to this project's relative proximity to the Pacific Ocean, the many streams and wetlands in the area, and the very rainy weather patterns of East Maui, please consider utilizing OP's Stormwater Impact Assessment to identify and evaluate information on hydrology, stressors, sensitivity of aquatic and riparian resources, and management measures to control runoff occurrences. In particular, please examine Low-Impact Development Concepts. These*

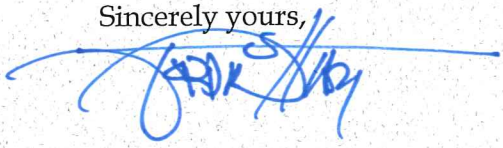
concepts include decentralized micro-scale controls that infiltrate, filter, store, reuse, evaporate, and detain runoff close to its source.

This guidance document will assist in integrating stormwater impact assessment within your review process. The purpose of this document is to provide guidance on assessing stormwater impacts in the planning phase of project development. The goal is to provide a suggested framework and various tools for integrating stormwater impacts assessment. Please review the Low-Impact Development Concepts listed on pages 14-1 6 of the Stormwater Impact Assessment guidance. This can be found at http://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_imapct/final_stormwater_impact_assessments_guidance.pdf.

Response 5: The Applicant will review the OP's Stormwater Impact Assessment and the Low-Impact Development Concepts. The Draft EA will identify potential opportunities to implement these concepts into the proposed project.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or e-mail Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,



Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

ALAN M. ARAKAWA
Mayor
JO-ANN T. RIDAO
Director
JAN SHISHIDO
Deputy Director

2200 MAIN STREET • SUITE 546 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165
MAILING ADDRESS: 200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • EMAIL: director.hhc@mauicounty.gov

August 11, 2014

Mr. Jordan E. Hart, President
Chris Hart & Partners, Inc.
115 North Market Street
Wailuku, HI 96793-1717

Dear Mr. Hart:

SUBJECT: Early Consultation Letter for the Proposed 100% Affordable Single Family Residential Project located on Hana Highway, Hana, Maui, Hawaii. TMK's (2) 1-3-004: portion of 001

Thank you for the opportunity to review the Early Consultation letter for the above subject project. Based on our review, we would like to offer the following comments:

1. The proposed subject project will be exempt from Chapter 2.96, Hawaii Revised Statute on the basis that it is an affordable housing project with more than the residential workforce housing units (Section 2.96.030.B.6).

2. Developer will be required to execute an affordable housing agreement with the County prior to final subdivision or building approval, whichever is applicable and occurs first.

Please call Mr. Wayde Oshiro of our Housing Division at (808) 270-7355 if you have any questions.

Sincerely,

JO-ANN T. RIDAO
Director of Housing and Human Concerns

cc: Housing Division

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 21, 2015

Ms. Carol Reimann, Director
County of Maui
Department of Housing and Human Concerns
200 South High Street
Wailuku, HI 96793

Dear Ms. Reimann,

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for the Department's letter of August 11, 2014. The responses to your comments are as follows.

Comment 1. *The proposed subject project will be exempt from Chapter 2.96, Hawaii Revised Statute on the basis that it is an affordable housing project with more than the residential workforce housing units (Section 2.96.030.B.6).*

Response 1. The Applicant acknowledges that the proposed project will be exempt from Chapter 2.96, Maui County Code.

Comment 2. *Developer will be required to execute an affordable housing agreement with the County prior to final subdivision or building approval, whichever is applicable and occurs first.*

Response 2. The Applicant will execute an affordable housing agreement with the County and understands this will have to be completed prior to any final subdivision or building approvals.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC:
Gabe Hoeffken, Project Manager
Project File 13-062

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

ALAN M. ARAKAWA
Mayor

BRIANNE L. SAVAGE
Interim Director

(808) 270-7230
FAX (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

August 20, 2014

Mr. Jordan E. Hart, President
Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, Hawaii 96793

Dear Mr. Hart:

SUBJECT: PROPOSED 100% AFFORDABLE SINGLE FAMILY RESIDENTIAL PROJECT, HANA HIGHWAY, HANA, MAUI
TMK: (2) 1-3-004: portion of 001

Thank you for the opportunity to review and provide early comment on the subject action.

As the project is proposed to be 100% affordable, the exemption from Section 18.16.320, Maui County Code, will be provided once the Maui County Council has approved the 201H Application.

Please feel free to contact Robert Halvorson, Chief of Planning & Development, at 270-7931 should you have any questions.

Sincerely,

Brianne Savage

BRIANNE L. SAVAGE
Interim Director of Parks & Recreation

c: Robert Halvorson, Chief of Planning and Development
Brett Davis, Chris Hart & Partners, Inc.

BLS:RH:do

RECEIVED
AUG 25 2014
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

CC: Brett
13/062

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. Kaala Buenconsejo, Director
County of Maui
Department of Parks & Recreation
700 Hali'a Nakoa Street, Unit 2
Wailuku, HI 96793

Dear Mr. Buenconsejo,

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 20, 2014. The responses to your comments are as follows.

***Comment 1**. As the project is proposed to be 100% affordable, the exemption from Section 18.16.320, Maui County Code, will be provided once the Maui County Council has approved the 201H Application.*

Response 1. The Applicant confirms that the proposed project is 100% affordable and therefore may be exempted from Section 18.16.320, Maui County Code by Maui County Council approval of a 201H Application.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or e-mail Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

August 28, 2014

Mr. Jordan E. Hart
Chris Hart and Partners
115 North Market Street
Wailuku, Hawaii 96793

Dear Mr. Hart:

SUBJECT: REQUEST FOR COMMENTS (RFC) ON THE PROPOSED HANA AFFORDABLE HOUSING PROJECT, HANA, ISLAND OF MAUI, HAWAII; TMK: (2) 1-3-004:001 (PORTION) (RFC 2014/0072)

The Department of Planning (Department) is in receipt of your Request for Comments as of August 1, 2014, wherein you request pre-consultation comments for the subject project as it will require a Special Management Area (SMA) permit and an Environmental Assessment (EA).

The Department understands that your project consists of a twenty-four (24) unit one hundred percent (100%) affordable single family residential project on 8.5 acres mauka of Hana Highway between Hana High School and Hana Town.

The proposed project is on a portion of an existing parcel which has split-zoning, the majority of which is zoned Agricultural. Approximately 8.5 acres is in the Interim Zone.

If the applicant were not applying for 201-H approval, the Department would have the following comments:

State Land Use

The state land use designation for this property is Agriculture, which does not allow development as proposed. A state land use district boundary amendment from Agriculture to Rural or Urban may be required for this project.

Maui Island Plan

The location of the proposed project is in the Rural Growth Boundary of the Maui Island Plan. It is outside the Hana Affordable Residential Growth Area (MIP Page 8-68).

Community Plan

The Hana Community Plan designation for this parcel is Agriculture. This project will require a Community Plan Amendment to change the designation to Single-Family.

County Zoning

You will need to satisfy yourself and the Planning Commission that the proposed project is entirely within the Interim Zone, as such a project is not allowed in agricultural zoning districts. Otherwise a Zone Change will be required.

The Interim Zone allows, in Chapter 19.02.030 of the Maui County Code: *"One-family dwellings; provided, that no such dwelling shall be constructed on any lot having an area of less than six thousand square feet and that the minimum frontage for such lots shall be not less than sixty feet; provided, further, that this area requirement shall not apply to the building of a single-family dwelling on a lot less than six thousand square feet in area where the boundaries of such lot were established prior to the effective date of the ordinance codified in this article; provided, also, that if more than one such dwelling is to be constructed on any lot, there must be six thousand square feet for each dwelling and that the minimum lot frontage for such lots shall be not less than sixty feet. There may be the usual necessary accessory buildings in connection with any such dwelling, including a private garage of such size as may be necessary for the occupants of the dwelling, as well as buildings used for accessory dwellings."*

We look forward to reviewing the Draft EA and the proposed 201-H Exemption list.

Thank you for the opportunity to comment on this matter. If additional clarification is required, please contact Staff Planner Keith Scott via email at keith.scott@mauicounty.gov or by phone at (808) 463-3867.

Sincerely,

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

for WILLIAM SPENCE
Planning Director

xc: John S. Rapacz, Planning Program Administrator (PDF)
Keith C. Scott, Staff Planner (PDF)
Development Services Administration
Project File
General File

WRS:CIY:KCS:njm
K:\WP_DOCS\PLANNING\RFC\2014\0072_HanaAffordableHousing\Comment_HanaAffordableHousing.doc

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. William R. Spence, Director
County of Maui
Department of Planning
One Main Plaza Building
2200 Main Street, Suite 315
Wailuku, HI 96793

Attention: Mr. Clayton Yoshida

Dear Mr. Spence,

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 28, 2014. The responses to your comments are as follows.

The Applicant confirms that the project is 100% affordable/workforce housing and will be applying for a 201H approval. As such, the project will be requesting exemption from the State Land Use, Maui Island Plan, Community Plan, and County Zoning restrictions outlined in your letter that would otherwise need to be addressed.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

ALAN M. ARAKAWA
Mayor

DAVID C. GOODE
Director

ROWENA M. DAGDAG-ANDAYA
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM NO. 434
WAILUKU, MAUI, HAWAII 96793

GLEN A. UENO, P.E., P.L.S.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

August 14, 2014

CC: Bret
13/062

Mr. Jordan E. Hart, President
CHRIS HART & PARTNERS, INC.
115 North Market Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Hart:

SUBJECT: EARLY CONSULTATION FOR PROPOSED 100% AFFORDABLE SINGLE FAMILY RESIDENTIAL PROJECT LOCATED ON HANA HIGHWAY, HANA, MAUI, HAWAII TMK: (2) 1-3-004:PORTION OF 001

We reviewed your early consultation request and have the following comments:

Comments from the Highways Division:

1. It appears that this project will need to be accessed off of Hana Highway, a State of Hawaii Department of Transportation Highways Division road. That access will need to comply with their requirements.

2. Looking at Pictometry, there appears to be some aggregate mining activity occurring mauka of this site, but within the property. Unable to determine whether there are any drainage impacts from that mining activity. This should be reviewed and addressed.

3. If the internal roadway is to be dedicated to the County, it should meet County standards as determined by our Engineering Division.

4. Any proposed traffic signs shall be of High Intensity Prismatic sheeting or better and placed on aluminum sign blanks. Sign posts can be of either u-channel or square tubing perforated supports. If in an area of high wind, we would recommend using square

perforated tubing sign posts. Traffic markings can be of either hot or cold thermoplastic material.

5. Any landscaping proposed to be planted along the road frontages shall have root barriers installed to prevent future uplifting of the right of way by roots.

6. We note that the County landfill is located makai of this property. Any drainage from this project should not be allowed to impact the County landfill.

Please call Rowena M. Dagdag-Andaya at 270-7845 if you have any questions regarding this letter.

Sincerely,

DAVID C. GOODE
Director of Public Works

DCG:RMDA:da
xc: Highways Division
Engineering Division
S:\DSA\Engr\CZM\Draft Comments\13004001_prop_100%_affordable_single_fam_res_ec.wpd

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning
September 21, 2015

Mr. David C. Goode, Director
County of Maui
Department of Public Works
One Main Plaza Building
200 South High Street, Suite 434
Wailuku, HI 96793

Dear Mr. Goode,

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 14, 2014. The responses to your comments are as follows.

Comment 1. *It appears that this project will need to be accessed off of Hana Highway, a State of Hawaii Department of Transportation Highways Division road. That access will need to comply with their requirements.*

Response 1. The State of Hawaii Department of Transportation (SDOT) Highways Division will be a reviewing agency for the Environmental Assessment. The Applicant will comply with SDOT requirements.

Comment 2. *Looking at the Pictometry, there appears to be some aggregated mining activity occurring mauka of this site, but within the property. Unable to determine whether there area any drainage impacts from that mining activity. This should be reviewed and addressed.*

Response 2. The Department is correct, there is active mining occurring mauka of the project site. The Draft Environmental Assessment will analyze potential drainage impacts from mining activities. (**Note:** SUP2 2014/0002 for mining and resource extraction was filed January 7, 2014 and approved on July 29, 2015)

Comment 3. *If the internal roadway is to be dedicated to the County, it should meet County standards as determined by our Engineering Division.*

Response 3. At this time the Applicant is analyzing the internal roadway system and will provide more complete information in the Draft EA.

Comment 4. *Any proposed traffic signs shall be of High Intensity Prismatic sheeting or better ad placed on aluminum sign blanks. Sign posts can be of either u-channel or square tubing perforated supports. If in an area of high wind, we would recommend using square perforated tubing sign posts. Traffic markings can be of either hot or cold thermoplastic material.*

Response 4. Any required signage will be of High Intensity Prismatic sheeting or better on aluminum sign blanks with wither u-channel or square perforated tubing supports. Traffic markings will be of either hot or cold thermoplastic material.

Comment 5. *Any landscaping proposed to be planted along the road frontages shall have root barriers installed to prevent future uplifting of the right of way by roots.*

Response 5. Project landscaping along road frontages will include root barriers.

Comment 6. *We note that the County landfill is located makai of this property. Any drainage from this project should not be allowed to impact the County landfill.*

Response 6. It is anticipated that drainage from this project will not impact the County landfill. A Preliminary Engineering Report is being prepared to address existing drainage patterns and provide mitigation measures as needed.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

ALAN M. ARAKAWA
Mayor

DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

cc: Brett
13/002

August 19, 2014

Mr. Jordan E. Hart, President
Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, Hawaii 96793-1717

SUBJECT: EARLY CONSULTATION FOR PROPOSED 100% AFFORDABLE SINGLE FAMILY RESIDENTIAL PROJECT, HANA
TMKs: 1-3-004: PORTION OF 001

Dear Mr. Hart,

Thank you for consulting with us on preparation of an Environmental Assessment (EA) and Special Management Area (SMA) Use Permit.

A 5/8 inch meter serves parcel 1-3-004:001. A 12-inch water line fronts the property along Hana Highway. System improvements will be determined in the subdivision process. The proposed development is subject to the County's availability policy, codified in Chapter 14.12 of the Maui County Code.

Should you have any questions on system improvements, please contact our engineering division at (808)270-7835. For any water resources questions, please contact staff planner Eva Blumenstein at (808) 463-3102 or eva.blumenstein@co.maui.hi.us.

Sincerely,

David Taylor, Director
emb

c: engineering

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

September 18, 2015

Mr. David Taylor, Director
County of Maui, Department of Water Supply
200 South High Street
Wailuku, HI 96793

Dear Mr. Taylor,

RE: Comments on the Early Consultation (EC) for proposed 100% affordable single family residential project, Hana, Hawaii;
TMK: (2) 1-3-004: portion of 001

Thank you for your letter of August 19, 2014. The responses to your comments are as follows.

***Comment 1**. A 5/8 inch meter serves parcel 1-3-004:001. A 12-inch water line fronts the property along Hana Highway. System improvements will be determined in the subdivision process. The proposed development is subject to the County's availability policy, codified in Chapter 14.12 of the Maui County Code.*

Response 1. The Applicant acknowledges that there is a 5/8 inch water meter serving the parcel and that a 12-inch water line fronts the property. The Applicant also understands that system improvements will be determined in the subdivision process and that the development is subject to the County's availability policy.

Thank you for participating in the environmental review process. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 or email Brett at bdavis@chpmaui.com should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC: Gabe Hoeffken, Project Manager
Project File 13-062

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

APPENDIX B-1
Botanical and Fauna Report

BOTANICAL AND FAUNA SURVEY

FOR THE

HĀNA AFFORDABLE HOUSING PROJECT

KAWAIPAPA SUBDIVISION

HĀNA, MAUI, HAWAII

by

ROBERT W. HOBDY
ENVIRONMENTAL CONSULTANT
Kokomo, Maui
March 2014

Prepared for:
Tom's Backhoe & Excavation Co., Inc.

BOTANICAL AND FAUNA SURVEY
HĀNA AFFORDABLE HOUSING PROJECT
KAWAIPAPA SUBDIVISION
HĀNA, MAUI

INTRODUCTION

The Hāna Affordable Housing Project lies on 6.7 acres of undeveloped land in the rural community of Hāna on the eastern tip of Maui TMK (2) 1-3-04:01 (por.). The project area lies to the west of Kawaipapa Stream above Hāna Highway (see Figure 1). This report is an assessment of the biological resources on the property that was initiated by the owner in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The entire project area lies on an ʻāʻā lava flow with pockets of cinder and organic soils characterized as Malama extremely stony muck, 3 – 25% slopes (MYD) (Foote et al, 1972). Terrain is uneven with lava outcrops. Vegetation consists of dense jungle with large trees, shrubs, vines and ferns, interspersed with grassy openings. Elevations range between 130 feet and 190 feet above sea level. Annual rainfall averages about 70 inches with a fairly even distribution throughout the year (Armstrong, 1983).

BIOLOGICAL HISTORY

The Hāna area was once densely populated with Hawaiians practicing extensive dryland agriculture, fishing and harvesting of available forest resources. This use extended from the ocean to about 800 feet elevation, with forest resource gathering extending well above this on the slopes of Haleakala. While the human imprint was extensive, the land use practices were sustainable and native vegetation was prevalent.

During the mid-1800's much of the area was converted to sugar production, but the rough and uneven terrain of the lava flows within the project area prevented such use and it remained in forest. During the past century this forest was gradually overrun by non-native plant species which have changed its character and species makeup. Today, native plant species are few in number and are scattered within the project area.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Hāna Affordable Housing Project – Kawaipapa Subdivision which was conducted in March 2014. The objectives of the survey were to:

1. Document what plant and animal species occur on the property or may likely occur in the existing habitat.
2. Document the status and abundance of each species.
3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are Federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.
4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used following a route to ensure complete coverage of the area. Areas most likely to harbor native or rare plants such as gulches or rocky outcroppings were more intensively examined. Notes were made on plant species, distribution and abundance as well as on terrain and substrate.

DESCRIPTION OF THE VEGETATION

The vegetation on this project area is a diverse array of tropical forest and shrubland species. Many plant species are well represented without any one species being overwhelmingly dominant. A total of 98 plant species were recorded during three site visits. Of these, eight species were common: Hilo grass (*Paspalum conjugatum*), mango (*Mangifera indica*), maile hohono (*Ageratum conyzoides*), false daisy (*Eclipta prostrata*), African tulip tree (*Spathodea campanulata*), little bell (*Ipomoea triloba*), glycine (*Neonotonia wightii*) and gunpowder tree (*Trema orientalis*). The remaining 90 species were of uncommon or rare occurrence.

Seven species of native Hawaiian plants were recorded. These included: hala (*Pandanus tectorius*), koali awahia (*Ipomoea indica*), kauna′oa pehu (*Cassytha filiformis*), popolo (*Solanum americanum*), ka'e'e (*Mucuna gigantea*), 'uhaloa (*Waltheria indica*) and kakalaioa (*Caesalpinia bonduc*). All of these are common indigenous Hawaiian species that are also found naturally in many other places in the Pacific.

Five species were food or fiber plants that were brought to Hawaii by the Polynesian during the course of their migrations: niu (*Cocos nucifera*), ki (*Cordyline fruticosa*), kukui (*Aleurites moluccana*), noni (*Morinda citrifolia*) and ulu (*Artocarpus altilis*).

Eighty six plant species were non-native ornamental escapes or common weeds.

DISCUSSION AND RECOMMENDATIONS

The vegetation throughout the project area is comprised mainly of non-native species with a few common indigenous species scattered about. No Federally listed Threatened or Endangered species (USFWS, 2014) were found on the property nor were any found that are candidates for such status. No special habitats were found here either. No wetlands as defined by the U.S.Army Corps of Engineers occur on the property with its well-drained ′ā′ā lava substrate.

Because of the above existing conditions there is little of botanical concern with regard to the property, and the proposed project is not expected to have a significant negative impact on the botanical resources in this part of Maui. No recommendations regarding the flora on this property are deemed necessary or appropriate.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within three groups: Ferns, Monocots and Dicots. Taxonomy and nomenclature of the Ferns are in accordance with Palmer (2005). Taxonomy and nomenclature of the flowering plants (Monocots and Dicots) are in accordance with Wagner et al. (1999) and Staples & Herbst (2005).

For each species, the following information is provided:

1. Scientific name with author citation
2. Common English or Hawaiian name.
3. Bio-geographical status. The following symbols are used:
   endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.
   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
   Polynesian = all those plants brought to Hawaii by the Polynesians during the course of their migrations.
   non-native = all those plants brought to the islands intentionally or accidentally after western contact.
4. Abundance of each species within the project area:
   abundant = forming a major part of the vegetation within the project area.
   common = widely scattered throughout the area or locally abundant within a portion of it.
   uncommon = scattered sparsely throughout the area or occurring in a few small patches.
   rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
FERNS			
NEPHROLEPIDACEAE (Sword Fern Family)			
Nephrolepis brownii (Desv.) Hovencamp & Miyamoto	Asian sword fern	non-native	uncommon
POLYPODIACEAE (Polypody Fern Family)			
Phymatosorus grossus (Langsd. & Fisch.) Brownlie	*laua'e*	non-native	uncommon
PTERIDACEAE (Brake Fern Family)			
Pteris vittata L.	ladder brake	non-native	rare
THELYPTERIDACEAE (Marsh Fern Family)			
Christella parasitica (L.) H. Lev.	----------	non-native	rare
MONOCOTS			
ARACEAE (Aroid Family)			
Epipremnum pinnatum (L.) Engler	taro vine	non-native	uncommon
ARECACEAE (Palm Family)			
Cocos nucifera L.	*niu*	Polynesian	rare
Ptychosperma elegans (R.Br.) Blume	solitaire palm	non-native	rare
ASPARAGACEAE (Asparagus Family)			
Cordyline fruitcosa (L.) A. Chev.	*ki, ti*	Polynesian	rare
CANNACEAE (Canna Family)			
Canna indica L.	Indian-shot	non-native	rare
COMMELINACEAE (Dayflower Family)			
Commelina diffusa N.L. Burm.	*honohono*	non-native	uncommon
CYPERACEAE (Sedge Family)			
Kyllinga brevifolia Rottb.	kilio'opu	non-native	uncommon
Kyllinga nemoralis L. (J.R. Forster & G. Forster) Dandy	*kilio'opu*	non-native	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MUSACEAE (Banana Family)			
Musa acuminata x *balbisiana* Colla	banana	non-native	rare
PANDANACEAE (Screwpine Family)			
Pandanus tectorius S. Parkinson ex Z	hala	indigenous	uncommon
POACEAE (Grass Family)			
Axonopus compressus (Sw.) P. Beauv.	broad-leaved carpetgrass	non-native	uncommon
Cenchrus echinatus L.	common sandbur	non-native	rare
Cenchrus purpureus (Schumach) Morrone	Napier grass	non-native	rare
Digitaria ciliaris (Retz.) koeler	Henry's crabgrass	non-native	rare
Digitaria fuscescens (K. Presl) Henr.	Creeping crabgrass	non-native	rare
Digitaria setigera Roth	kukae pua'a	non-native	uncommon
Eleusine indica (L.) Gaertn.	wiregrass	non-native	uncommon
Eragrostis amabilis (L.) Wight & Arnott	Japanese lovegrass	non-native	uncommon
Megathyrsus maximus (Jacq.) Simon & Jacobs	Guinea grass	non-native	rare
Oplismenus hirtellus (L.) P. Beauv.	basketgrass	non-native	rare
Paspalum conjugatum Bergius	Hilo grass	non-native	common
Paspalum scrobiculatum L.	ricegrass	non-native	rare
Sporobolus indicus (L.) R. Br.	Indian dropseed	non-native	rare
Urochloa mutica (Forssk.) T.Q. Nguyen	California grass	non-native	uncommon
Zoysia matrella (L.) Merrill	Zoysia grass	non-native	rare
DICOTS			
ACANTHACEAE (Acanthus Family)			
Odontonema cuspidatum (Nees) Kuntz	fire spike	non-native	rare
AMARANTHACEAE (Amaranth Family)			
Amaranthus spinosus L.	spiny amaranth	non-native	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
ANACARDIACEAE (Mango Family)			
Mangifera indica L.	mango	non-native	common
APOCYNACEAE (Dogbane Family)			
Asclepias physocarpa (E. Mey.) Schlecter	baloon plant	non-native	uncommon
Hoya australis J. Trail	wax flower	non-native	rare
ARALIACEAE (Ginseng Family)			
Schefflera actinophylla (Endl.) Harms	octopus tree	non-native	rare
ASTERACEAE (Sunflower Family)			
Ageratum conyzoides L.	*maile hohono*	non-native	common
Conyza bonariensis (L.) Cronq.	hairy horseweed	non-native	rare
Conyza canadensis (L.) Cronq.	horseweed	non-native	rare
Crassocephalum crepidioides (Benth.) S. Moore	red flower ragleaf	non-native	rare
Eclipta prostrata (L.) L.	false daisy	non-native	common
Emilia fosbergii Nicolson	red *pualele*	non-native	rare
Emilia sonchifolia (L.) DC.	violet *pualele*	non-native	
Erechtites valerianifolia (Wolf) DC.	fireweed	non-native	rare
Hypochaeris radicata L.	gosmore	non-native	rare
Synedrella nodiflora (l.) Gaertn.	nodeweed	non-native	rare
Youngia japonica (L.) DC.	Oriental hawskbeard	non-native	uncommon
BEGONIACEAE (Begonia Family)			
Begonia vitifolia Schott	grape leaf begonia	non-native	rare
BIGNONIACEAE (Bignonia Family)			
Spathodea campanulata P. Beauv.	African tulip-tree	non-native	common
CANNABACEAE (Hemp Family)			
Trema orientalis (L.) Blume	gunpowder tree	non-native	common

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
CARICACEAE (Papaya Family)			
Carica papaya L.	papaya	non-native	rare
CARYOPHYLLACEAE (Pink Family)			
Drymaria cordata (L.) Willd.	*pipili*	non-native	rare
COMBRETACEAE (Indian Almond Family)			
Terminalia catappa L.	Indian almond	non-native	uncommon
CONVOLVULACEAE (Morning Glory Family)			
Ipomoea alba L.	moon flower	non-native	uncommon
Ipomoea indica (J. Burm.) Merr.	*koali awahia*	indigenous	rare
Ipomoea triloba L.	little bell	non-native	common
CUCURBITACEAE (Gourd Family)			
Momordica charantia L.	bitter melon	non-native	uncommon
EUPHORBIACEAE (Spurge Family)			
*Aleurites moluccan*a (L.) Willd	*kukui*	Polynesian	uncommon
Euphorbia heterophylla L.	*kaliko*	non-native	uncommon
Euphorbia hirta L.	hairy spurge	non-native	rare
Euphorbia hypericifolia L.	graceful spurge	non-native	rare
Manihot glaziovii Moll. Arg.	Ceara rubber tree	non-native	rare
Ricinus communis L.	Castor bean	non-native	uncommon
FABACEAE (Pea Family)			
Caesalpinia bonduc (L.) Roxb.	*kakalaioa*	indigenous	rare
Canavalia cathartica Thouars	*maunaloa*	non-native	uncommon
Chamaecrista nictitans (L.) Moench	partridge pea	non-native	uncommon
Crotalaria incana L.	fuzzy rattlepod	non-native	rare
Crotalaria pallida Aiton	smooth rattlepod	non-native	uncommon
Desmodium heterophyllum (Willd.) DC.	variable-leaved tick trefoil	non-native	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Desmodium intortum (Mill.) Urb.	greenleaf tick trefoil	non-native	uncommon
Desmodium sandwicense E. Mey.	*pua pilipili*	non-native	rare
Desmodium tortuosum (Sw.) DC.	Florida beggarweed	non-native	rare
Desmodium triflorum (L.) DC.	three-flower beggarweed	non-native	rare
Falcataria moluccana (Miq.) Barneby & Grimes	albizia	non-native	rare
Indigofera suffruticosa Mill.	*inikō*	non-native	uncommon
Leucaena leucocephala (Lam.) de Wit	*koa haole*	non-native	rare
*Mimosa pudi*ca L.	sensitive plant	non-native	rare
Mucuna gigantea (Willd.) DC.	*ka'e'e*	indigenous	rare
Neontonia wightii (Wight & Arnott) Lackey	glycine	non-native	common
LAURACEAE (Laurel Family)			
Cassytha filiformis L.	*kauna'oa pehu*	indigenous	rare
LYTHRACEAE (Loosestrife Family)			
Cuphea carthagenensis (Jacq.) Macbr.	tarweed	non-native	rare
MALVACEAE (Mallow Family)			
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	non-native	rare
Sida rhombifolia L.	Cuban jute	non-native	rare
Waltheria indica L.	*'uhaloa*	indigenous	rare
MORACEAE (Mulberry Family)			
Artocarpus altilis S. Parkinson ex Z	*ulu*, breadfruit	Polynesian	rare
MYRSINACEAE (Myrsine Family)			
Ardisia elliptica Thunberg	shoebutton ardisia	non-native	uncommon
MYRTACEAE (Myrtle Family)			
Psidium guajava L.	common guava	non-native	uncommon
Syzygium cumini (L.) Skeels	Java plum	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
PHYLLANTHACEAE (Phyllanthus Family)			
Phyllanthus debilis klein ex Willd.	niruri	non-native	uncommon
POLYGALACEAE (Milkwort Family)			
Polygala paniculata L.	root beer milkwort	non-native	uncommon
ROSACEAE (Rose Family)			
Rubus rosifolius Sm.	thimbleberry	non-native	rare
RUBIACEAE (Coffee Family)			
Morinda citrifolia L.	*noni*	Polynesian	rare
Oldenlandia corymbosa L.	----------	non-native	rare
SAPINDACEAE (Soapberry Family)			
Filicium decipiens (Wight & Arnott) Thwaites	fern tree	non-native	rare
SCROPHULARIACEAE (Snapdragon Family)			
Buddleja asiatica Lour.	dog tail	non-native	uncommon
SOLANACEAE (Nightshade Family)			
Solanum americanum Mill.	*popolo*	indigenous	uncommon
Solanum lycopersicum L.	cherry tomato	non-native	rare
VERBENACEAE (Verbena Family)			
Clerodendrum chinense (Osb-Kos.) Mabb.	*pikake hohono*	non-native	rare
Stachytarpheta cayennensis (Rich.) Vahl	nettle-leaved vervain	non-native	uncommon

FAUNA SURVEY REPORT

SURVEY METHOD

A walk-through fauna survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and location as well as observations of trails, tracks, scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

RESULTS

Just three species of mammals were observed in the project area during three site visits. Taxonomy and nomenclature follow Tomich (1986).

ʻōpeʹapeʹa or Hawaiian hoary bat (*Lasiurus cinereus semotus*) – A few of these endemic and Endangered bats were detected during the evening survey.

Domestic dog (*Canis familiaris*) - Dogs from adjacent properties have access to this property.

Mongoose (*Herpestes auropunctatus*) – A mongoose was seen in a forest opening.

While not seen during the survey rats (*Rattus rattus*), mice (*Mus domesticus*) and cats (*Felis catus*) would be expected to occupy this property. Rats and mice feed on herbaceous vegetation, fruits and seeds and cats would hunt for these rodents and birds.

A special effort was made to look for any occurrence of the native Hawaiian hoary bat by making an evening survey of the area. An estimated 2 to 3 bats were detected repeatedly over a ten minute period using a Batbox IIID unit set to a frequenct of 27,000 Hertz. The habitat and insect prey were optimal for bat activity.

BIRDS

Birdlife was moderate in both species and diversity on this property. Eight species of non-native birds were seen during three visits to the property. Taxonomy and nomenclature follow American Ornithologists' Union (2012). Common in the project area were zebra dove (*Geopelia striata*), spotted dove (*Steptopelia chinensis*) and northern cardinal (*Cardinalis cardinalis*).

Other birds could be expected to be seen on the property such as the migratory Pacific golden-plover (*Pluvialis fulva*) which is a frequent winter visitor and the house sparrow (*Passer domesticus*). No native forest birds occur anywhere in the vicinity of this property. They are presently restricted to the middle and upper elevation forests where suitable habitat exists and mosquito-borne diseases are absent.

INSECTS

Insect life was fairly diverse in the project area with a total of 18 species being recorded within seven insect orders. Taxonomy and nomenclature follow Nishida et al (1992).

One species was abundant throughout the project area, the beet webworm moth (*Spoladea recurvalis*). Also common were the common garden spider (*Argiope appensa*), Asian spiny-backed spider (*Gasteracantha mammosa*), common fruit fly (*Drosophila melanogaster*), dung fly (*Musca sorbens*), tiger mosquito (*Culex albopictus*), southern house mosquito (*Culex quinquefasciatus*), long tail blue butterfly (*Lampides boeticus*), monarch butterfly (*Danaus plexippus*), cabbage butterfly (*Pieris rapae*) and the small rice grasshopper (*Oxya japonica*).

Just two native insect species were recorded, the globe skimmer dragonfly (*Pantala flavescens*) and an unidentified species of noctuid moth (*Lophoplusia* sp.). Lophoplusia includes four endemic species known from forests on all the larger islands, but about which little is known. The globe skimmer dragonfly, however, is found throughout the tropics and subtropics worldwide and is common.

CONCLUSION AND RECOMMENDATIONS

The mammal, bird and insect species documented during the survey were predominantly non-native species that are of no particular conservation concern. One mammal and two insects, however, were native to Hawaii and are here discussed. Of special interest is the ʻōpeʻapeʻa or Hawaiian hoary bat which is listed as an Endangered species. This bat is known from all the larger Hawaiian Islands but little is known of population numbers because these solitary mammals are highly mobile and move about with the seasons and in response to spikes in populations of flying insects upon which they feed. Two or three bats were detected during the evening within the project area, indicating at least their temporary use of the area. ʻŌpeʻapeʻa has been found in forested habitat in scattered localities in windward East Maui in recent years. This report needs to be submitted to the U.S. Fish & Wildlife Service so they can provide guidance on practices that will ensure that these bats are not harmed.

The Lophoplusia moth is likely one of the four known endemic species in Hawaii, each of which is known from more than one island. None of these are Endangered species or candidates for such status. Two individuals were observed during the survey. No recommendations are offered regarding these moths.

The globe skimmer dragonfly is common in Hawaii as well as throughout the tropics worldwide and is of no conservation concern.

The habitat in the project area is not suitable for any other Endangered forest birds or seabirds, and no Endangered insects or their host plants were found. No further recommendations are offered regarding fauna species on this project area.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within three groups: Mammals, Birds and Insects. For each species the follow information is provided.

1. Common name
2. Scientific name.
3. Bio-geographical status. The following symbols are used:
   endemic = native only to Hawaii; not naturally occurring anywhere else in the world.
   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
   non-native = all those animals brought to Hawaii intentionally
   or accidentally after western contact.
   migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.

4. Abudnance of each species within the project area:
   abundant = many flocks or individuals seen throughout the area at all times of day.
   common = a few flocks or well scattered individuals throughout the area.
   uncommon = only one flock or several individuals seen within the project area.
   rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MAMMALS			
Lasiurus cinereus semotus Allen	'ōpe'ape'a	endemic	uncommon
Herpestes auropunctatus Hodgson	mongoose	non-native	rare
Canis familiaris L.	domestic dog	non-native	rare
BIRDS			
Geopelia striata L.	zebra dove	non-native	common
Streptopelia chinensis Scopoli	spotted dove	non-native	common
Cardinalis cardinalis L.	northern cardinal	non-native	common
Acridotheres tristis L.	common myna	non-native	uncommon
Zosterops japonicus Temminck & Schlegel	Japanese white-eye	non-native	uncommon
Carpodacus mexicanus Muller	house finch	non-native	uncommon
Lonchura punctulata L.	nutmeg mannikin	non-native	uncommon
Gallus gallus L.	chicken	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
INSECTS			
Order ARANAE - true spiders			
ARANEIDAE (Orb Weaver Family)			
Argiope appensa Walkenaer	common garden spider	non-native	common
Gasteracantha mammosa Koch	Asian spiny-backed spider	non-native	common
Order COLEOPTERA - beetles			
COCCINELLIDAE (Lady Beetle Family)			
Coccinella septempunctata brucki Mulsant	seven spot lady beetle	non-native	rare
Order DIPTERA - flies			
CULICIDAE (Mosquito Family)			
Culex albopictus skuse	tiger mosquito	non-native	common
Culex quinquefasciatus Say	southern house mosquito	non-native	common
DROSOPHILIDAE (Fruit Fly Family)			
Drosophila melanogaster Meigen	fruit fly	non-native	common
MUSCIDAE (House Fly Family)			
Musca sorbens Wiedemann	dung fly	non-native	common
SYRPHIDAE (Hover Family)			
Simosyrphus grandicornis Maquart	Australian hoverfly	non-native	rare
Order HYMENOPTERA - bees, wasps			
APIDAE (Honey Bee Family)			
Apis mellifera L.	honey bee	non-native	uncommon
Xylocopa sonorina Smith	Sonoran carpenter bee	non-native	uncommon
Order LEPIDOPTERA - butterflies, moths			
CRAMBIDAE (Grass Moth Family)			
Spoladea recurvalis Fabricius	beet webworm moth	non-native	abundant
LYCAENIDAE (Gossamer-winged Butterfly Family)			
*Lampides boeticu*s L.	long tail blue butterfly	non-native	common
NOCTUIDAE (Owlet Moth Family)			
Lophoplusia (undetermined species)	----------	endemic	rare
NYMPHALIDAE (Brush-footed Butterfly Family)			
Danaus plexippus L.	monarch butterfly	non-native	common
PAPILIONIDAE (Swallowtail Butterfly Family)			
Papilio xuthus L.	Asian swallowtail	non-native	rare
PIERIDAE (White & Sulphur Butterfly Family)			
Pieris rapae L.	cabbage butterfly	non-native	common

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Order ODONATA - dragonflies, damselflies			
LIBELLULIDAE (Skimmer Dragonfly Family)			
Pantala flavescens Fabricius	globe skimmer	indigenous	rare
Order ORTHOPTERA - grasshoppers, crickets			
ACRIDAE (Grasshopper Family)			
Oxya japonica Thunberg	small rice grasshopper	non-native	common

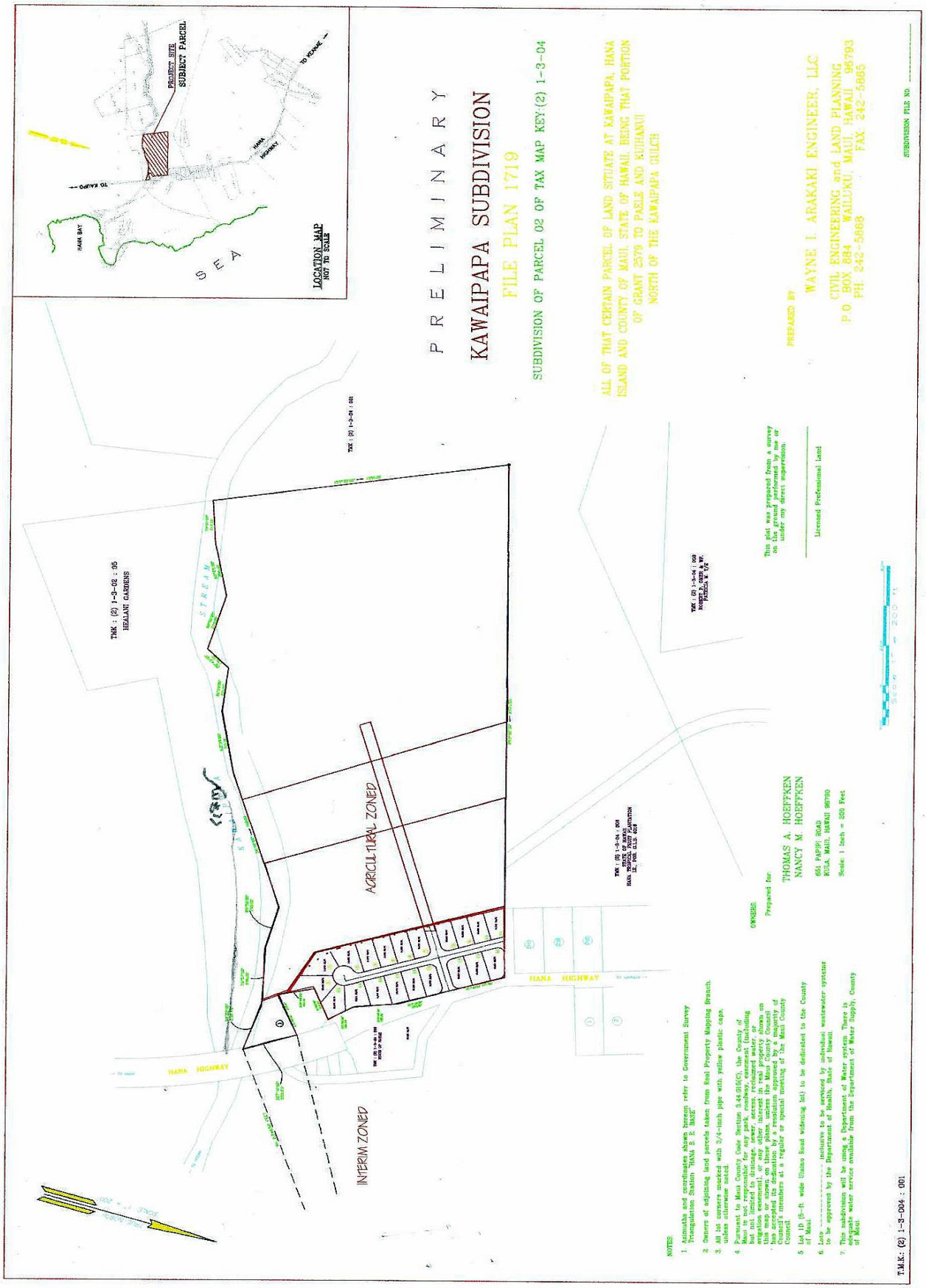


Figure 1- Project Area showing the proposed parcels of the subdivision on the lower boundary.

Figure 2 – Upper part of the project area showing a clearing and some dense jungle.

Figure 3 – Project Area showing the character of the land and the jungle

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APPENDIX B-2

EMAIL CORRESPONDENCE WITH U.S. FISH AND WILDLIFE

Brett Davis

From: Ian Bordenave <ian_bordenave@fws.gov>
Sent: Thursday, August 14, 2014 10:22 AM
To: Brett Davis
Subject: RE: Hana Affordable Housing Development

Hi Brett,

Our guidance for avoiding the Hawaiian hoary bat is pretty simple; we ask that trees greater than 15 feet in height not be cut or trimmed between June 1 and September 15 during the hoary bat pupping season. Non-volant baby bats may be harmed or killed if the roost trees that they are in are cut down, or if human activity inadvertently knocks them from branches or trunks that they are clinging to. We also ask that barbed wire not be used as part of the proposed project as Hawaiian hoary bats can become entangled, and die as a result.

Ian Bordenave
Biologist
U.S. Fish and Wildlife Service
Maui Nui Field Station
Milepost 6 Mokulele Highway
Kihei, HI. 96793
Phone: (808) 270-1432
E-Mail: ian_bordenave@fws.gov

From: Brett Davis [mailto:BDavis@chpmaui.com]
Sent: Thursday, August 14, 2014 9:54 AM
To: Ian Bordenave
Subject: Hana Affordable Housing Development

Good morning Ian, attached is a Botanical and Fauna Survey completed by Bob Hobdy for an affordable housing project in Hana.

The Hawaiian Hoary Bat was detected and Bob has recommended discussion with USFWS.

Thank you for your review,

-Brett

APPENDIX C
Preliminary Engineering Report

PRELIMINARY ENGINEERING REPORT

FOR

HANA AFFORDABLE HOUSING PROJECT

Hana, Maui, Hawaii

T.M.K. : (II) 1-3-004: 001

Prepared For:

GTH Land Company
651 Papipi Road
Kula, Maui, Hawaii

Prepared By:

Wayne I. Arakaki
P.O. Box 884
Wailuku, Maui, Hawaii 96793

October 2015 (revised)

April 20, 2014

A. INTRODUCTION

B. EXISTING INFRASTRUCTURE

1. ROADWAYS

2. DRAINAGE

3. WASTEWATER

4. WATER

5. ELECTRIC, TELEPHONE & CABLE TV

C. PROPOSED INFRASTRUCTURE IMPROVEMENTS

1. ROADWAYS

2. DRAINAGE

3. WASTEWATER

4. WATER

5. ELECTRIC, TELEPHONE & CABLE TV

Preliminary Engineering Report
Hana Affordable Housing Project
TMK:(II) 1-3-004: 001

A. INTRODUCTION

This report is to provide information on the existing and proposed infrastructure which will provide service for the "Hana Affordable Housing Project". The existing infrastructure is limited for agricultural use of the property.

The project site is located in Hana, along Hana Highway. Next to Kawaipapa Stream (non flowing) which borders the South side of the property. The site encompass an area of approximately 72.81 acres. Most of the property is unused and overgrown with vegetation. Self Help Housing project (14 lots) is located across Kawaipapa Stream. This is a similar type of development project being proposed.

The project will contain 24 residential lots with a minimum area of 10,000 sq.ft.. The average width being 70 feet with a length of 145 feet.

The proposed improvements will consist of paved roadways, grassed swales, driveways and graded building pads. All utilities will be overhead for electrical, telephone and cable TV. The water system will be designed and constructed to the County of Maui requirements. The waste water system, will be designed and approved by the Department of Health, State of Hawaii. An on-site drainage system will be installed, to take care of runoff due to development. There is no off-site runoff, since Kawaipapa Stream borders the upper portion of the project site.

B. EXISTING INFRASTRUCTURE

1. ROADWAYS

Hana Highway runs along the East boundary of the project site. It is a two lane undivided County road, which runs in the North to South direction into Hana Town. The speed limit is at 30 miles per hour (mph) fronting the project site. There is no other access to the project site other than Hana Highway. The

average pavement width is 20 feet, which is maintained by the State of Hawaii, Department of Transportation.

Hana Highway is the only major roadway in Hana that provides access to Public Schools, Airport, Fire and Police Stations and Hana Town.

2. DRAINAGE

The project site which is on a higher ground than Hana Highway. There is no runoff being generated at the proposed intersection of this project. On the East and South boundary, is “Kawaipapa Stream”. Any off-site runoff flows into Kawaipapa Stream which then flows downstream to the ocean. There are no signs of erosion due to storm waters on the project site. The existing ground is made up of mostly cinder and rock. Most of the runoff percolates into the ground before any substantial flooding is generated
.

The project site (portion of) is currently vacant and not in use. The existing ground slopes in a North to South direction from an elevation of (+) 180 +\- feet M.S.L. to (+) 160 +\-feet M.S.L. with an average slope of approximately 4 %.

According to the “Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, (April 1972)” prepared by the United States Department of Agriculture, the soil associated with the subject parcel is comprised entirely of the Malama extremely stony much, 3-25% slope (MYD). Permeability is very rapid. Runoff is very slow, and the erosion hazard rate is no more than slight.

This soil developed from volcanic ash, gently sloping elevations to moderately steep. The annual rainfall amounts to 80 to 150 inches which is well distributed throughout the year. This soil are used for pasture and home sites. There is a high concentration of natural vegetation which consists of California grass, guava, Kaimi clover, koa and sedges.

The estimated onsite runoff for a 50 year, 1 hour storm from the project site (6.7 acres) portion of is about 15.38 cubic feet per second.

3. WASTEWATER

There is no Public waste water system in Hana. All waste water systems are considered to be “Individual Waste Water System” (IWS) or septic systems. The IWS is under the jurisdiction of the Department of Health, State of Hawaii. Please note that there is a “potable water well”, located near the approximate location of the project site which is beyond 1,000 feet from the project. There are no additional restrictions from the Department of Health, based on the Hana Water Company water well location.

4. WATER

There is an existing 12” waterline along Hana Highway, which will be connected and extended with an 8” waterline to the proposed project site. The 12” waterline is connected to a 0.5 million gallon water storage tank, with a top elevation of 325.00 feet above M.S.L.. A water well and pump is located in the same area, which provides the source of potable water.

The Department of Water Supply (DWS), the existing water tanks and source will provide the necessary water service for the project site. The source for this project is the water well that is located next to the existing storage water tank. Based on the elevations of the water tank and project site, there should be approximately 70 psi of water pressure. The minimum water pressure would be at 40 psi.

5. ELECTRIC, TELEPHONE & CABLE TV

There are existing overhead electrical, telephone and cable transmission system lines located along Hana Highway, fronting the project site. There is no electrical power overhead or underground currently servicing the project site. Please note, that all of the Hana community is serviced by overhead utility lines.

The Maui Electric Substation is located near the project site. There should be adequate power for this project. Telephone service will be from Hawaiian Telcom and Cable TV from Oceanic Cable Service.

C. PROPOSED INFRASTRUCTURE IMPROVEMENTS

1. ROADWAYS

The proposed project site road will be connected to Hana Highway. The right of way width will be forty four feet wide with twenty feet of pavement. There will be no curbs, gutters or sidewalks. The road shoulders will be grassed. The cul-de-sacs will have an edge of pavement radius of 43 feet a right-of-way radius of 50 feet.

2. DRAINAGE

A preliminary drainage report has been completed for review and comment. There is no off-site runoff that flows through the property. Kawaipapa Stream which borders the property is located at the top of the parcel and to the side. This runoff flows into Kawaipapa Stream and to the ocean. Runoff that is generated on the project site will be retained on-site.

Detention ponds will be constructed to retain runoff, from development. The detention ponds will be designed for a 50 year one hour storm. The runoff storage will be computed based on increase runoff due to development.

Development, will increase the amount of runoff because of imperviousness of paved roadways, driveways and new dwellings. Runoff that will be generated will be retain on-site. New grassed lawns and road shoulders will absorb runoff. Currently, the site has heavy vegetation, but most of the ground is exposed and does not retain runoff. There is little to no topsoil and runoff just percolates into the ground. Grassing of the area, will help retain runoff and create a more stable ground.

3. WASTEWATER

Lots in the proposed affordable housing project will each have an Individual Waste Water System (IWS). This will consist of a 1250 gallon IAPMO certified septic tank and a leaching field. The capacity for each IWS will be five bedrooms or bedroom like rooms. The IWS will be maintained by the various land owners and not by the State or County. Please note that cesspools will not be allowed for sewage disposal.

A professional Engineer will generate the IWS report. This will be reviewed and approved by the Department of Health. A licensed Contractor will need to install the system. A final inspection will be done and As-Builts will be submitted to the Department of Health for final certification.

4. WATER

There is adequate water for the Hana Community. There is an existing 12" waterline which is located along Hana Highway, fronting the project site. This project will tap into this waterline with an 8" ductile pipe which will be install along the proposed subdivision roads. Fire hydrants will be installed at required locations. This will be reviewed and approved by the Department of Water Supply and the Fire Department.

The domestic water demand for the project is anticipated to be approximately 28,800 gallons per day. It is assumed that each lot will have a main house and cottage, after fully developed. Each dwelling will consume approximately 600 gallons per day**.** In accordance with the Department of Water Supply standards, the fire flow demand for a residential development is 1,000 gallons per minute for a 2 hour duration. All new fire hydrants will be installed with a maximum spacing of 350 feet. This would meet the Fire Department's present requirements.

The waterline within the project site will all be 8 inch ductile iron. All water service laterals will follow the 2002 DWS standards. Utility service easements that are required by DWS, for future use, will be provided by the land owner.

5. ELECTRIC, TELEPHONE, & CABLE TV

The proposed electrical, telephone, and cable TV distribution systems will be installed above ground. The main electrical line will be connected from overhead lines. There is a Maui Electric Substation which is located across Kawaipapa Stream. Power is available for this project.

Street lights will be installed at the intersection of Hana Highway and the subdivision road. Another street light will be installed at the end of the Cul-de-sac. This will be determined by a private Electrical Engineer. Electrical construction plans will be reviewed by Maui Electric Company, Hawaiian Telcom and Oceanic Cable for approval.

APPENDIX D
Preliminary Drainage Report

PRELIMINARY

DRAINAGE REPORT

for

Hana Affordable Housing

TMK: (II)1-3-004: 001

PREPARED FOR:

GTH Land Company

651 Papipi Road
Kula, Maui HI 96793

PREPARED BY:

WAYNE I. ARAKAKI ENGINEER, LLC

P.O. BOX 884
WAILUKU, HAWAII 96793

April 2014
October 2015 (revised)

CONTENTS

HYDROLOGIC CALCULATIONS

I. INTRODUCTION

This examination and plan have been prepared to evaluate both the existing onsite and offsite drainage conditions and the proposed subdivision effects on runoff.

II. PROJECT LOCATION

A. LOCATION

The proposed Hana Affordable Housing is located in Hana, on the Island of Maui. It is situated on the West side of Hana Highway and next to Kawaipapa Gulch. Please see attached location map. The existing property encompasses an area of approximately 72.81 acres. The project site will be a portion of this property, with an area of approximately 6.7 acres.

B. PROPOSED PROJECT

The proposed Hana Affordable Housing Project will consist of 24 residential lots (10,000 sq.ft. min. area). A forty-four feet wide road (ROW) will provide access to the subdivision. The road pavement will be twenty feet wide. Detention basins will be located upstream from the project site with runoff to the on-site drainage system. There is no off-site runoff to the project site. Since Kawaipapa Stream borders the upper portion of the property. Please note that this is the existing condition.

EXISTING CONDITIONS

A. TOPOGRAPHY AND SOIL CONDITIONS

According to the "*Soil Survey of Island of Kauai, Oahu, Maui, Molokai and Lanai*, *State of Hawaii, (1972)"* prepared by the United States Department of Agriculture, the soil associated with the subject parcel is comprised entirely of the Malama extremely stony muck, 3-25% slope (MYD). Premeability is very rapid. Runoff is very slow, and the erosion hazard rate is no more than slight.

There is a high concentration of natural vegetation which consists of California grass, guava, Kaimi clover, koa and sedges.. The ground slopes from an elevation of 160 feet +/- to an elevation of 180
feet +/-. The average slope is approximately 4%. The runoff sheet flows in a North to South direction into Kawaipapa Gulch.

DRAINAGE

Presently, approximately 18.36 cfs of onsite surface runoff is being generated by the project site (see calculations). This onsite surface runoff sheet flows off the project site into Kawaipapa Gulch. We will provide flood storage for the increased runoff that is being created with the new paved subdivision road.

C. FLOOD AND TSUNAMI ZONE

According to the Flood Insurance Rate Map (FIRM), effective September 19, 2012, prepared by the Federal Emergency Management Agency, Federal Insurance Administration, the project site is located in designated Zone "X". Please see attached flood map. Zone "X" areas are explained as being areas of minimal flooding. Please note the Flood limits on the F

IV. DRAINAGE PLAN

A. GENERAL

According to our calculations, approximately 15.238 cfs of onsite surface runoff will be generated by the project site. Please see the attached drainage calculations. This is an increase of 2.883 cfs.

The 100 year flood inundation limits along Kawaipapa Gulch is being along the top of gulch. There is no runoff from Kawaipapa Stream to the project site.

B. HYDROLOGIC CALCULATIONS

The hydrologic calculations are based on the "Drainage Master Plan for the County of Maui", prepared by R.M. Towill Corporation, October 1971.

Rational Formula Used: Q = CIA

Where Q = Rate of flow

C = Runoff coefficient

I = Rainfall intensity for a duration equal to the time of concentration (in./hr.)

A = Area (acres)

Coefficient

Infiltration	Medium	0.07
Relief	Rolling	0.03
Vegetal Cover	Good	0.03
Development Type	Agricultural	0.15
	Total “C”	0.28

Intensity Duration 1 hour Rainfall Curves

i = 8.2 inch/ hour

Area 6.7 acres

Based on ’Q’ = CiA or 0.28 (8.2) 6.7

‘Q’ = 15.38 cfs

The 18.36 cfs is the amount of runoff that is being generated with the existing conditions.

Future Runoff - Developed conditions.

Coefficient

Infiltration	Medium	0.07
Relief	Flat	0.00
Vegetal Cover	High	0.00
Development Type	Residential	0.40
	Total “C”	0.47

Intensity Duration 1 hour Rainfall Curves

i = 7.4 inch/ hour

Area 6.7 acres

Based on ‘Q’ = CiA or 0.47 (7.4) 6.7

‘Q’ = 23.30 cfs

CONCLUSION

Our calculations indicate that there will be a net increase of approximately 7.92 cfs of surface runoff generated due to the development of the 24 lot subdivision. This increase of runoff will be absorbed by on-site detention ponds. Runoff will be conveyed to the detention ponds that will be located above the project site, held in storage until it percolates into the ground. Which will recharge ground water.

We have computed the 100 year flood limits which are shown on the subdivision map, previously approved, by the County of Maui.

The following are proposed improvements for this subdivision.

A. Forty-four feet wide right of way road, with 20 feet of pavement.
B. 8" waterline extension with fire hazards.
C. Overhead electrical power, telephone and cable TV.
D. On-site drainage System.

It is our professional opinion that the proposed development will not adversely affect the adjoining and downstream properties.

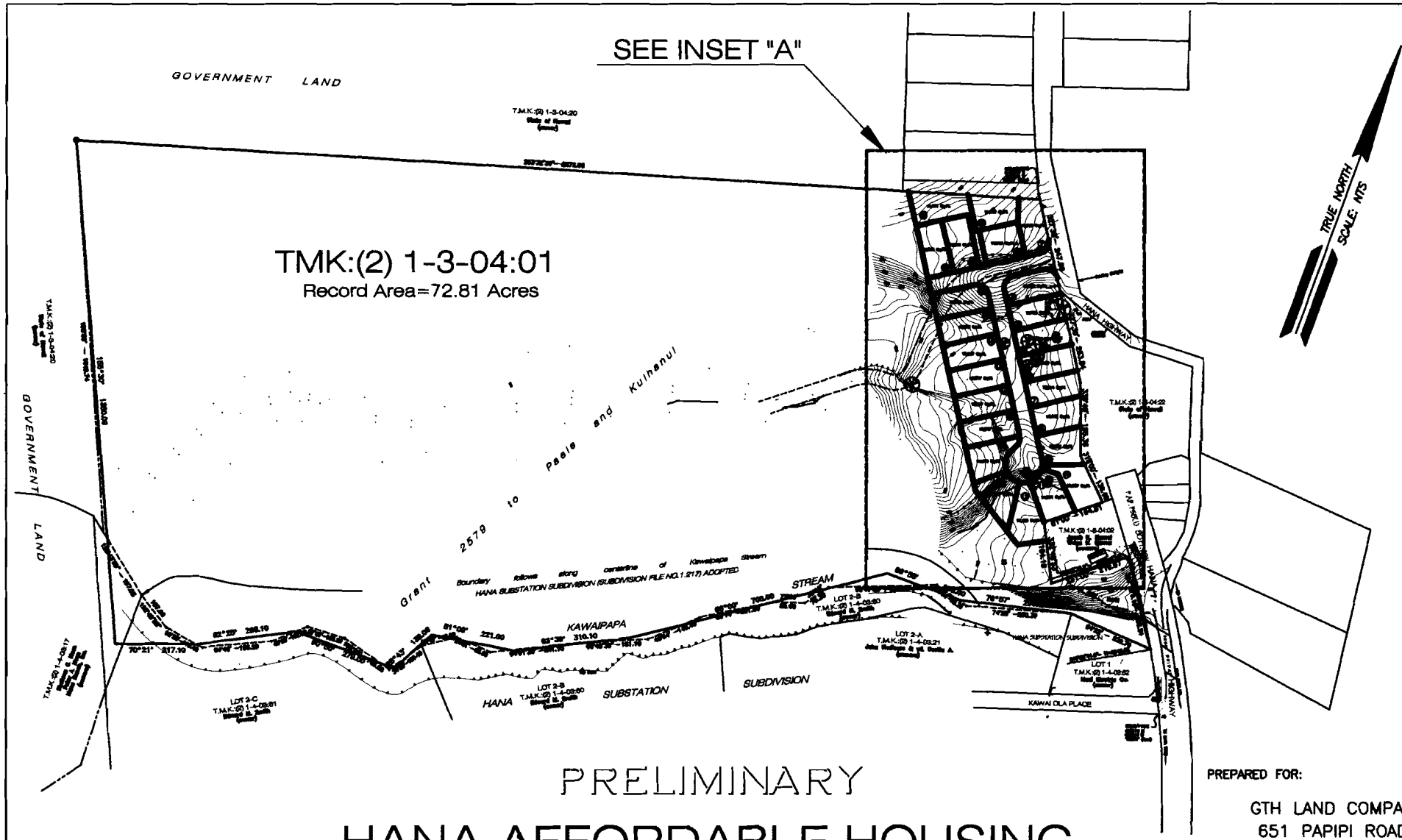
House sites:

The area that will be graded for the house sites will provide additional drainage controls. The new dwellings will increase the runoff for each lot. To absorb this increase of runoff the following improvements will be made:

1. Grading work will lessen the slopes for each property. Where the retention area for runoff will increase.

2. Existing trees will be removed and the exposed ground will be grassed, to increase the absorption rate of runoff.

3. The Kawaipapa Stream will convey the off-site runoff to the ocean. The future house sites will not be affected. Base on field inspection, there is no erosion damages due to previous flooding.



PRELIMINARY

HANA AFFORDABLE HOUSING

SUBDIVISION OF PORTION OF GRANT 2579 TO PAELE AND KUIHANUI

(TAX MAP KEY : (2) 1-3-04:01)

KAWAIPAPA, HANA, MAUI, HAWAII

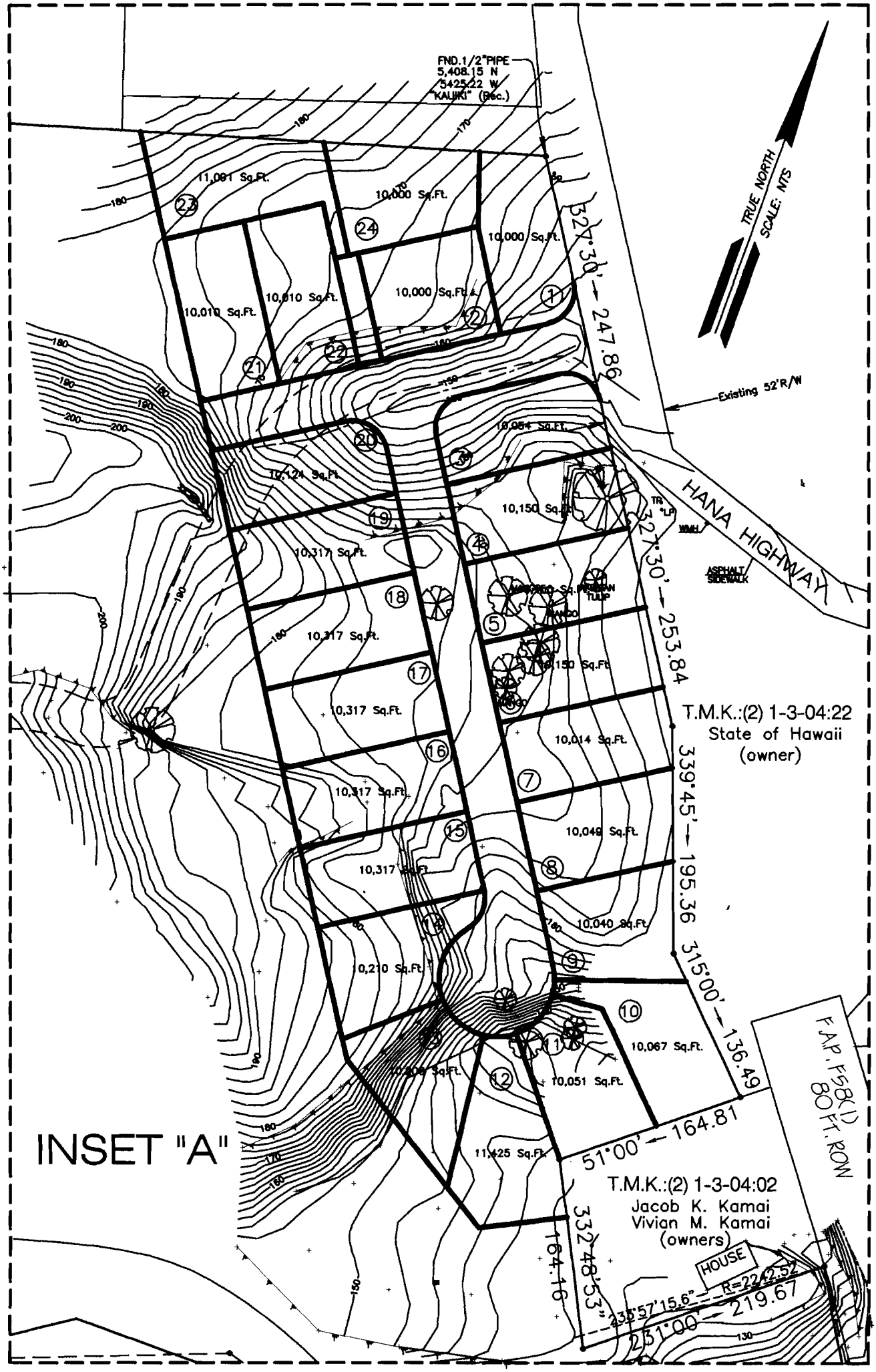
PREPARED FOR:

GTH LAND COMPANY
651 PAPIPI ROAD
KULA, MAUI, HAWAII 96790

Scale 1" = 150 ft

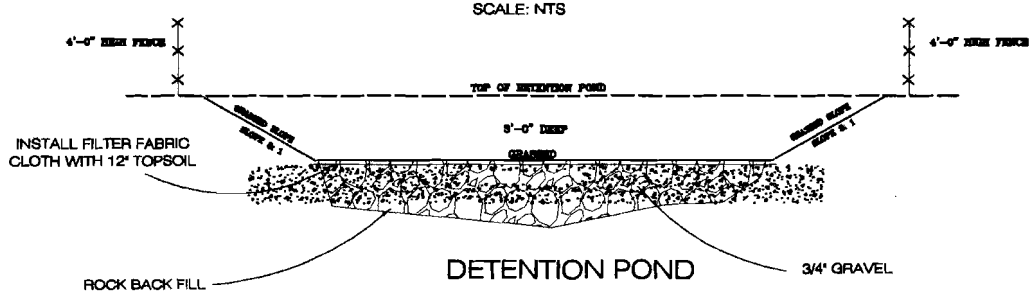
Subdivision File No. _____

6298


FND.1/2"PIPE
5,408.15 N
5425.22 W
"KALIKI" (Bsc.)
TRUE NORTH
SCALE: NTS
Existing 52'R/W
HANA HIGHWAY
ASPHALT SIDEWALK
327°30' 247.86
327°30' 253.84
339°45' 195.36
315°00' 136.49
51°00' 164.81
332°48'53" 164.16
235°57'15.6" R=2242.52 219.67
231°00
F.A.P. F58(1) 80 Ft. ROW
HOUSE
11,091 Sq.Ft.
10,000 Sq.Ft.
10,000 Sq.Ft.
10,010 Sq.Ft.
10,010 Sq.Ft.
10,000 Sq.Ft.
10,124 Sq.Ft.
10,054 Sq.Ft.
10,150 Sq.Ft.
10,317 Sq.Ft.
10,317 Sq.Ft.
10,317 Sq.Ft.
10,317 Sq.Ft.
10,317 Sq.Ft.
10,210 Sq.Ft.
10,014 Sq.Ft.
10,049 Sq.Ft.
10,040 Sq.Ft.
10,067 Sq.Ft.
10,051 Sq.Ft.
11,425 Sq.Ft.
T.M.K.:(2) 1-3-04:22
State of Hawaii
(owner)
T.M.K.:(2) 1-3-04:02
Jacob K. Kamai
Vivian M. Kamai
(owners)
INSET "A"

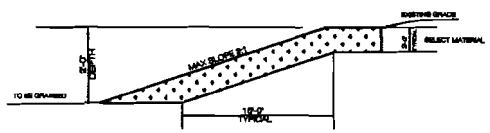
DETENTION POND DETAILS

SCALE: NTS

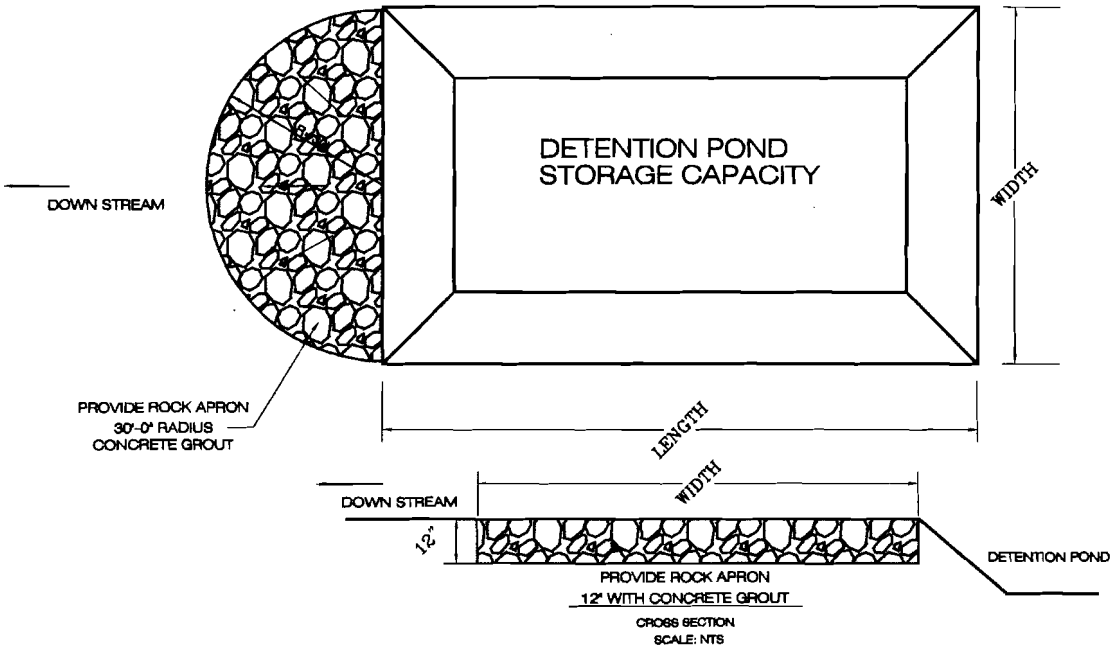


DETENTION POND

NOTE: DETENTION PONDS WILL BE MAINTAINED BY THE LAND OWNER AND WILL NOT BE CHANGED WITH OUT COUNTY APPROVAL



TYPICAL GRASSED SLOPE DETAIL
MAX: 3:1 SLOPE
SCALE: NTS

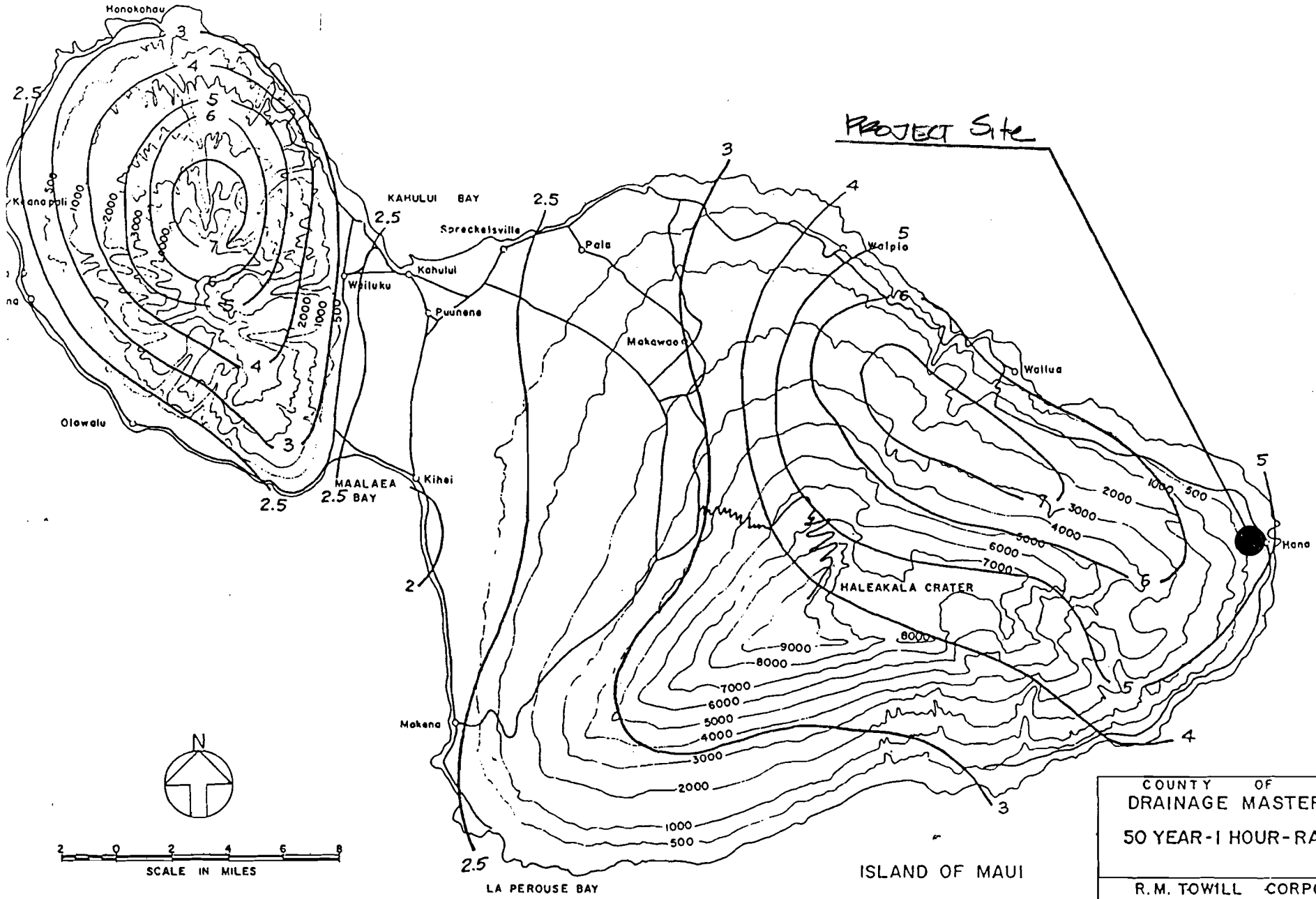


CROSS SECTION
SCALE: NTS

INSTALL SILTING FENCE AT DOWNSTREAM SITE OF GRADING AREAS, TO PREVENT EROSION.

STORAGE CAPACITY

BASED ON INCREASE OF RUNOFF DUE TO DEVELOPMENT



COUNTY OF MAUI
DRAINAGE MASTER PLAN
50 YEAR-1 HOUR-RAINFALL

R.M. TOWILL CORPORATION
CIVIL ENGINEERS - SURVEYORS

PLATE 7

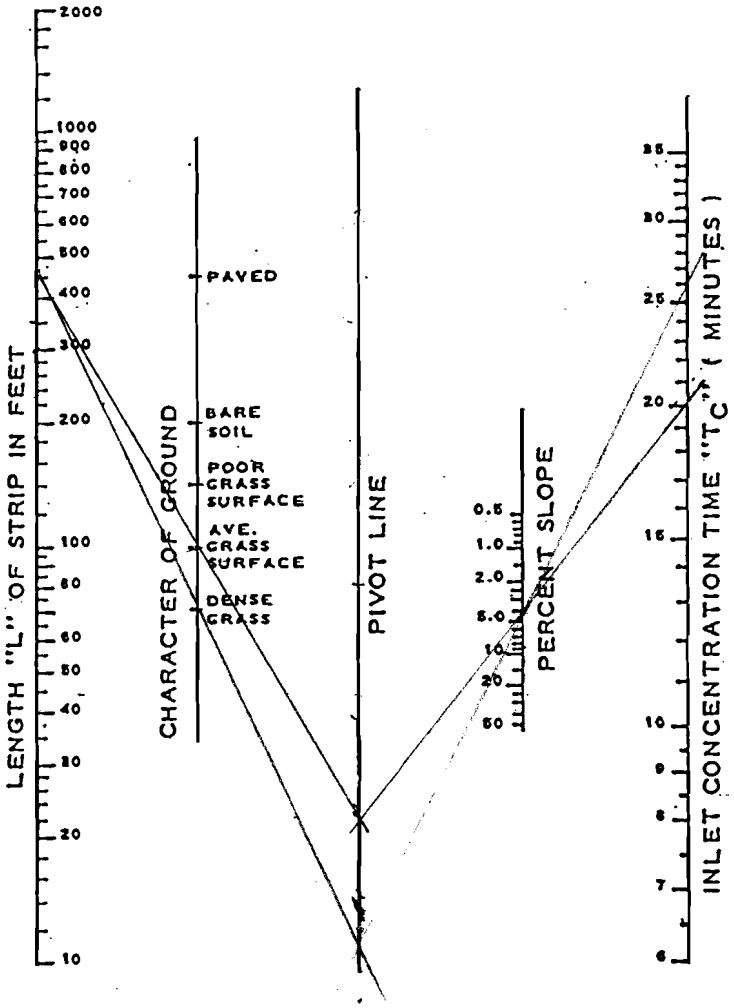
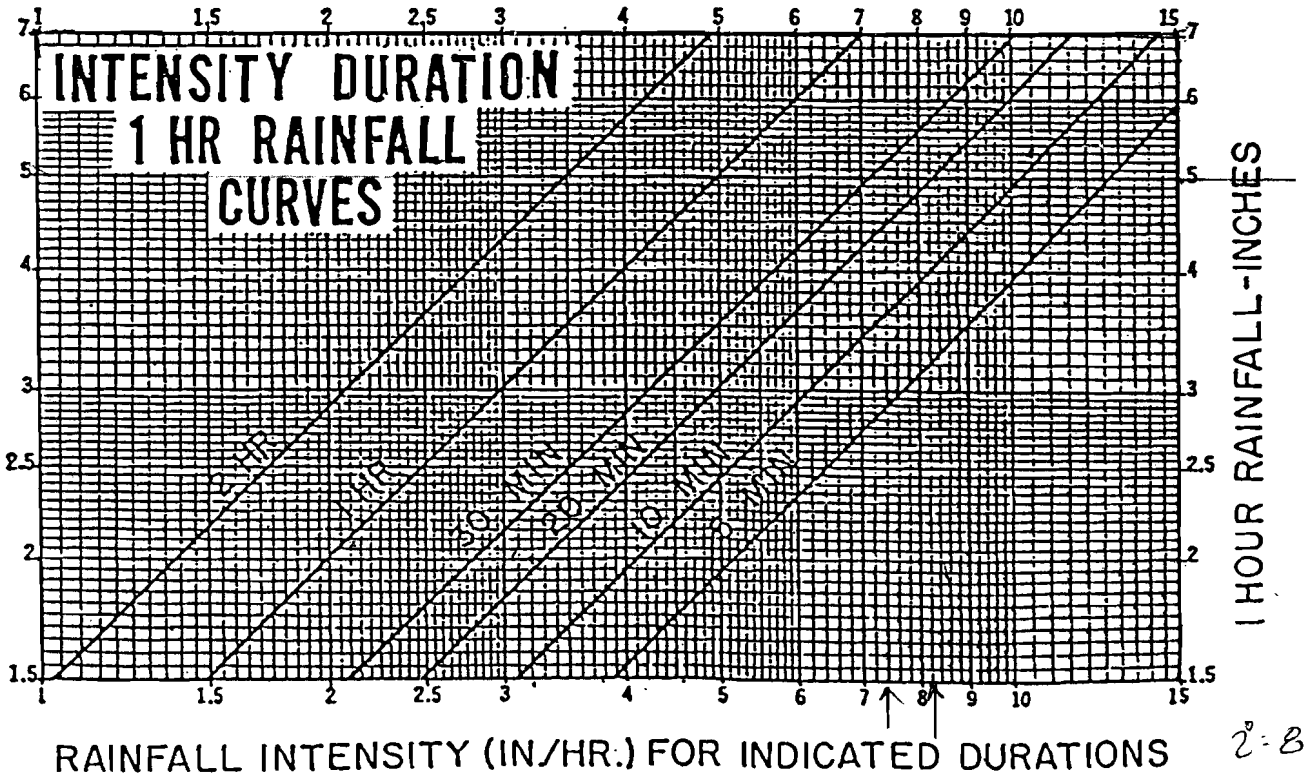


Plate 1

Overland Flow Chart

Plate 2



2.8.2

APPENDIX E
Traffic Impact Assessment Report

Phillip Rowell and Associates
47-273 'D' Hui Iwa Street Kaneohe, Hawaii 96744 Phone: (808) 239-8206 FAX: (808) 239-4175 Email:prowell@hawii.rr.com

November 25, 2015

Mr. Gabe Hoeffken
c/o Chris Hart & Partners, Inc.
115 North Market Street
Wailuku, Maui, Hawaii
96793-1706

Attn: Brett Davis

Re: Traffic Impact Assessment Report
Hana Affordable Housing Project

Dear Brett:

Phillip Rowell and Associates have completed the following Traffic Impact Assessment Report (TIAR) for the proposed Hana Affordable Housing Project in the Hana area of Maui. The report is presented in the following format:

A. Project location and Description
B. Purpose of Study
C. Study Approach
D. Description of Existing Roadways and Intersections
E. Existing Peak Hour Traffic Volumes
F. Public Transportation
G. Level-of-Service Concept
H. 2020 Background Traffic Projections
I. Project Trip Generation
J. Background Plus Project Projections
K. Traffic Impact Assessment
L. Mitigation
M. Summary and Recommendations

A. Project location and Description

The proposed action is the construction of 24 affordable single-family housing units, with the possibility of building one ohana unit per lot. Construction of 14 agricultural lots with one ohana unit per lot has been proposed as a separate project and a construction timeline for that project has not been established. The site is currently vacant but there is a quarry operation allowed by a Special Use Permit. It is our understanding that the quarry operation will generate approximately three (3) trips per day and that these truck trips will be scheduled to enter and exit the project during the off-peak traffic hours (9:00 AM to 3:00 PM).

A preliminary subdivision plan of the proposed affordable lots and agricultural lots is provided as Attachment A. Access to and egress from the project will be provided by a new driveway along the west side of Hana Highway.

B. Purpose of Study

The purpose of this traffic assessment is to confirm that any traffic operational problems in the immediate vicinity of the project are identified, assessed and mitigated as needed to provide acceptable access and egress levels-of-service for the project.

C. Study Approach

1. A trip generation analysis was performed to determine the scope of the traffic analysis required. This analysis estimated that the proposed affordable housing project and the future agricultural subdivision combined could generate approximately 73 trips during the morning peak hour and approximately 103 trips during the afternoon peak hour. The affordable housing project could generate approximately 42 trips during the morning peak hour and 60 trips during the afternoon peak hour. This implies that the scope of work should be limited to an "access location and design review."

2. A field reconnaissance was performed to confirm existing roadway cross-sections, intersection lane configurations, traffic control devices, bus stop locations and surrounding land uses.

3. Existing weekday morning and afternoon peak hour traffic volumes along Hana Highway in the vicinity of the project were estimated from manual traffic counts of an adjacent intersection. Public schools were in session during this count.

4. Future traffic projections without project generated traffic at the study intersections were estimated.

5. Peak hour traffic volumes that the proposed project will generate were estimated using procedures described in the *Trip Generation Handbook* [1] and data provided in *Trip Generation Manual*.[2] Project generated trips were distributed and assigned to the appropriate movements at the study intersections. Future traffic projections at the study intersections with project generated traffic were then estimated.

6. A level-of-service analysis of the intersection of Hana Highway at the Project Driveway was performed using the methodology described in the *Highway Capacity Manual* (HCM). The purpose of this analysis was to confirm that the intersection will operate at an acceptable level-of-service and that there were no traffic operating deficiencies.

D. Description of Existing Roadways

Access to and from the project site is provided by Hana Highway. Hana Highway is a two-lane, two-way roadway. Adjacent development is rural.

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[1] Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., , p. 7-12

[2] Institute of Transportation Engineers, *Trip Generation Manual, 9th Edition*, Washington, D.C., 2012

E. Existing Peak Hour Traffic Volumes

Current weekday peak hour traffic volumes at the study intersections were obtained from manual traffic counts at the intersection of Hana Highway at Waikoloa Road, which is the closest existing intersection of the proposed project driveway.

The counts were performed between 7:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM. on Tuesday, May 26, 2015. Public schools were in session. The AM and PM peak hour counts are summarized on Attachment B. The traffic counts include mopeds, motorcycles, buses, trucks and other large vehicles. The traffic counts estimated that the morning peak hour volume is 255 vehicles per hour and that the afternoon peak hour volume is 325 vehicles per hour. The directional split is approximately 50% northbound and 50% southbound.

F. Public Transportation

A review of Maui Bus routes determined that at the time this report is being written, there is no bus service along Hana Highway in the vicinity of the proposed project.

G. Level-of-Service Concept

Signalized Intersections

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LOS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 1. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-Service D is typically considered acceptable for peak hour conditions in urban areas.[3]

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

[3] Institute of Transportation Engineers, *Traffic Access and Impact Studies for Site Development, A Recommended Practice*, Washington, D.C., 1991, p.39.

Table 1
Level-of-Service Definitions for Signalized Intersections[1]

Level of Service	Interpretation	Volume-to-Capacity Ratio[2]	Stopped Delay (Seconds)
A, B	Uncongested operations; all vehicles clear in a single cycle.	0.000-0.700	<10.0
C	Light congestion; occasional backups on critical approaches.	0.701-0.800	10.1-20.0
D	Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801-0.900	20.1-35.0
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901-1.000	35.1-80.0
F	Total breakdown with stop-and-go operation.	>1.001	>80.0

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

Unsignalized Intersections

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from A to F. However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and 2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is therefore based on delay of each turning movement. Table 2 summarizes the definitions for level-of-service and the corresponding delay.

Table 2
Level-of-Service Definitions for Unsignalized Intersections[1]

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	>10
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	See note (2) below	>50.1

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

H. 2020 Background Traffic Projections

Horizon Year

The horizon year is the date for which future background traffic projections were estimated. These projections include traffic generated by other known projects within and adjacent to the study area and background traffic growth, for which a future year must be selected.

For projects that will generate less than 500 peak hour trips, the suggested horizon year is the "anticipated opening year, assuming full build out and occupancy."[4] It is anticipated that the proposed project will be completed and occupied before 2020. Therefore, 2020 is used as the horizon year for this TIAR.

Background Traffic Growth

Future traffic growth consists of two components. The first is ambient background growth that is a result of regional growth and cannot be attributed to a specific project. This growth factor also considers traffic associated with minor, or small, projects for which no traffic data are available.

The *Maui Long Range Transportation Plan*[5] concluded that traffic on Maui will increase an average of 1.6% per year from 1990 to 2020. This growth rate was used to estimate the background growth between 2015 and 2020, which is the design year selected for this project. The growth factor was calculated using the following formula:

$$F = (1 + i)^n$$

where F = Growth Factor
i = Average annual growth rate, or 0.016
n = Growth period, or 5 years

I. This growth factor was applied to the northbound and southbound through movements along Hana Highway.

Other Known Development Projects

The second component in estimating background traffic volumes is traffic generated by other known development projects in the area. These other known development projects are projects in the immediate vicinity of the study project that would significantly impact traffic in the study area and at the study intersections. These projects are typically projects that are under construction or have been approved for construction, but often include adjacent vacant parcels that have a high probability of being developed within the design period. Other known projects may be development projects or roadway improvements.

No other known projects in the area were identified.

---

[4] Institute of Transportation Engineers, *Transportation and Land Development*, Washington, D.C., 2002, page 3-13

[5] Kaku Associates, *Maui Long Range Land Transportation Plan*, October 1996

Background growth assignments were added to 2015 peak hour traffic volumes discussed previously. The resulting 2020 background peak hour traffic projections are summarized on Attachment B.

J. Project Trip Generation

Future traffic volumes that will be generated by the proposed project were estimated using the methodology described in the *Trip Generation Handbook*[6] and data provided in the *Trip Generation Manual*[7]. This method uses trip generation equations or rates to estimate the number of trips that the project will generate during the peak hours of the project and along the adjacent street.

The proposed action is the construction of 24 single-family affordable dwelling units and 14 agricultural lots. It is understood that each agricultural lot will contain one single-family dwelling unit and may contain one ohana unit

The site is currently vacant.

Trip Generation provides rates and equations to estimate the number of peak hour trips generated by single-family detached dwelling units during the peak hours of the adjacent street and the peak hours of the generator, which may or may not coincide. The AM peak hour of the adjacent street is typically between 7:00 AM and 9:00 AM and PM peak hour of the adjacent street is between 4:00 PM and 6:00 PM, typical commute hours. *Trip Generation* does not note the peak hours of the generators. The equations for the peak hours of the adjacent street were used. Trip Generation defines single-family detached housing as follows:

> *Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.*[8]

In addition to the single-family detached units, each agricultural lot may have an ohana unit. Since there are no trip generation rates for ohana units in *Trip Generation*, trips generated by the ohana units were estimated using trip generation equations for apartments. These rates most likely result in an overestimation of the traffic from these units as some ohana units may be used by family members, some may be used as a home office and some may be rented as an apartment. Use of the trip rates for apartments should result is conservative conclusions.

The trip generation rates and equations used for the trip generation analysis and the results are summarized in Table 3.

---

[6] Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 2004, p. 7-12

[7] Institute of Transportation Engineers, *Trip Generation Manual, 9th Edition,* Washington, D.C., 2012

[8] Institute of Transportation Engineers, *Trip Generation Manual, 9th Edition*, Washington, D.C., 2012, p. 295

Table 3
Trip Generation Analysis

	Affordable Housing Subdivision							Family Agricultural Lot Subdivision						
	Single-Family (Land Use Code 210)			Ohana Units (Land Use Code 220)				Single-Family Units (Land Use Code 210)			Ohana Units (Land Use Code 220)			
Period & Direction	Units	Equation[1]	Trips	Units	Equation[1]	Trips	Subtotal	Units	Equation[1]	Trips	Units	Equation[1]	Trips	Total Project
Weekday Total	24	Ln(T) = 0.92Ln(X) + 2.72	283	24	T = 6.06(X) + 123.56	269	552	14	Ln(T) = 0.92Ln(X) + 2.72	172	14	T = 6.06(X) + 123.56	208	932
AM Peak Hour Adj St		T = 0.70(X) + 9.74	27		T = 0.49(X) +3.73	15	42		T = 0.70(X) + 9.74	20		T = 0.49(X) +3.73	11	73
AM In			7			3	10			5			2	17
AM Out			20			12	32			15			9	56
PM Peak Hour Adj St		Ln(T) = 0.90Ln(X) + 0.51	29		T = 0.55(X) + 17.65	31	60		Ln(T) = 0.90Ln(X) + 0.51	18		T = 0.55(X) + 17.65	25	103
AM In			18			20	38			11			16	65
AM Out			11			11	22			7			9	38

Notes:
(1) Source: Institute of Transportation Engineers, *Trip Generation Manual, 9^{9h} Edition*, Washington, D.C., 2012
(2) X=Number of Units, T=Trips per Hour.

Project trips were distributed based on the existing turning movements at the intersection of Hana Highway at Waikoloa Road, the nearest existing intersection. The trip distribution pattern and the resulting trip assignments are shown on Attachment C.

J. Background Plus Project Projections

Background plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the background (without project) peak hour traffic projections. This assumes that the peak hourly trips generated by the project coincide with the peak hour of the adjacent street. This represents a worse-case condition as it assumes that the peak hours of the intersections coincide with the peak hour of the study project. The resulting background plus project peak hour traffic projections are shown on Attachment C.

K. Traffic Impact Assessment

A level-of-service analysis of the intersection of Hana Highway at the Project Driveway was performed to confirm that the intersection will operate at an acceptable level-of-service. For the level-of-service analysis, it was assumed that the intersection will be a three-legged, unsignalized intersection. All the intersection approaches will be one lane each. The stop sign will be on the eastbound approach, the Project Driveway. The northbound approach of Hana Highway will be an optional left turn or through lane. The southbound approach of Hana Highway will be an optional through or right turn lane. The eastbound approach, the Project Driveway approach to Hana Highway, will be an optional left turn or right turn lane.

The results of the level-of-service analysis of the intersections of Hana Highway at the project driveway is summarized in Table 4. Shown are the delays and levels-of-service of the overall intersection and each controlled lane group. The methodology for unsignalized intersections described in the *Highway Capacity Manual* does not estimate delays and levels-of-service for uncontrolled lane groups. Also shown in the table are the estimated queue lengths. Synchro reports the queue lengths is feet. The queue lengths shown in the table are estimated vehicles using an average vehicle length of 25 feet.

Table 4
2020 Levels-of-Service of Unsignalized Intersections

	AM Peak Hour			PM Peak Hour		
	With Project			With Project		
Intersection, Approach and Movement	Delay	LOS	95th Queue	Delay	LOS	95th Queue
Hana Highway at Project Driveway	***1.7***	***A***	***NC***	***2.0***	***A***	***NC***
Eastbound Left & Right	10.1	B	<1	11.1	B	<1
Northbound Left & Thru	0.3	A	<1	2.1	A	<1
Southbound Thru & Right	Uncontrolled Lane Group			Uncontrolled Lane Group		

NOTES:
(1) Delay is in seconds per vehicle.
(2) LOS denotes Level-of-Service.
(3) 95th percentile queue in vehicles.
(4) NC = Not calculated
(5) See Attachment D of Level-of-Service Worksheets.

The conclusions of the level-of-service analysis are:

1. The overall intersection of Hana Highway at the Project Driveway will operate at Level-of-Service A during the morning peak hour and the afternoon peak hour.

2. The eastbound approach from the project will operate at Level-of-Service B during both peak hours.

3. All estimated 95th percentile queue lengths are less than one vehicle.

4. The northbound and southbound approaches along Hana Highway will operate at Level-of-Service A. This means that turning movements into and out of the project will have a negligible impact on traffic along Hana Highway.

An assessment of the need for a separate left turn lane along Hana Highway at the intersection with the project driveway was performed. This assessment was performed using the criteria described in NCHRP Report 457[9]. See Attachment E. This assessment concluded that a separate left turn lane along Hana Highway was not justified.

[9] Transportation Research Board, *NCHRP Report 457 Evaluating Intersection Improvements: An Engineering Study Guide*, 2001, Washington, D.C., pages 21 thru 22.

L. Mitigation

Level-of-Service D is the minimum acceptable Level-of-Service[10] for signalized intersections and that this standard is applicable to the overall intersection rather than each controlled lane group. Minor movements, such as left turns, and minor side street approaches may operate at Level-of-Service E or F for short periods of time during the peak hours so that the overall intersection and major movements along the major highway will operate at Level-of-Service D, or better. All volume-to-capacity ratios must be 1.00 or less[11].

A standard has not be established for unsignalized intersections. Therefore, we have used a standard that Level-of-Service D is an acceptable level-of-service for any major controlled lane groups, such as left turns from a major street to a minor street. Side street approaches may operate at Level-of-Service E or F for short periods of time. This is determined from the delays of the individual lane groups. If the delay of any of the side street approaches appears to be so long that it will affect the overall level-of-service of the intersection, then mitigation measures should be accessed.

Using this standard, no mitigation is recommended.

M. Summary and Recommendations

1. The proposed action is the construction of 24 affordable single-family housing units.

2. Access to and egress from the project will be provided by a new driveway along the west side of Hana Highway.

3. The trip generation analysis estimated that the proposed affordable housing project and the future agricultural subdivision combined could generate approximately 73 trips during the morning peak hour and approximately 103 trips during the afternoon peak hour. The affordable housing project could generate approximately 42 trips during the morning peak hour and 60 trips during the afternoon peak hour. .

4. A level-of-service analysis of the intersection of Hana Highway at the Project Driveway was performed to confirm that the intersection will operate at an acceptable level-of-service. The level-of-service analysis concluded that the intersection will operate at Level-of-Service A during the morning and afternoon peak hours.

5. An assessment of the need for a separate left turn lane along Hana Highway at the intersection with the project driveway was performed. This assessment was performed using the criteria described in NCHRP Report 457. This assessment concluded that a separate left turn lane along Hana Highway was **not** justified.

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[10] Institute of Transportation Engineers, *Transportation Impact Analyses for Site Development: A Recommended Practice*, 2006, page 60.

[11] Transportation Research Board, *Highway Capacity Manual*, Washington, D.C., 2000, p. 16-35.

6. Based on the results of the level-of-service analysis, no mitigation is recommended. Traffic to and from the proposed project has a minimal impact on traffic along Hana Highway. Separate left turn lane for traffic turning into the project will not improve the level-of-service as the northbound and southbound traffic along Lower Hana Highway will operate at Level-of-Service A with project traffic. Level-of-Service A is the highest level-of-service.

Respectfully submitted,
PHILLIP ROWELL AND ASSOCIATES

Phillip J. Rowell, P.E.
Principal

List of Attachments

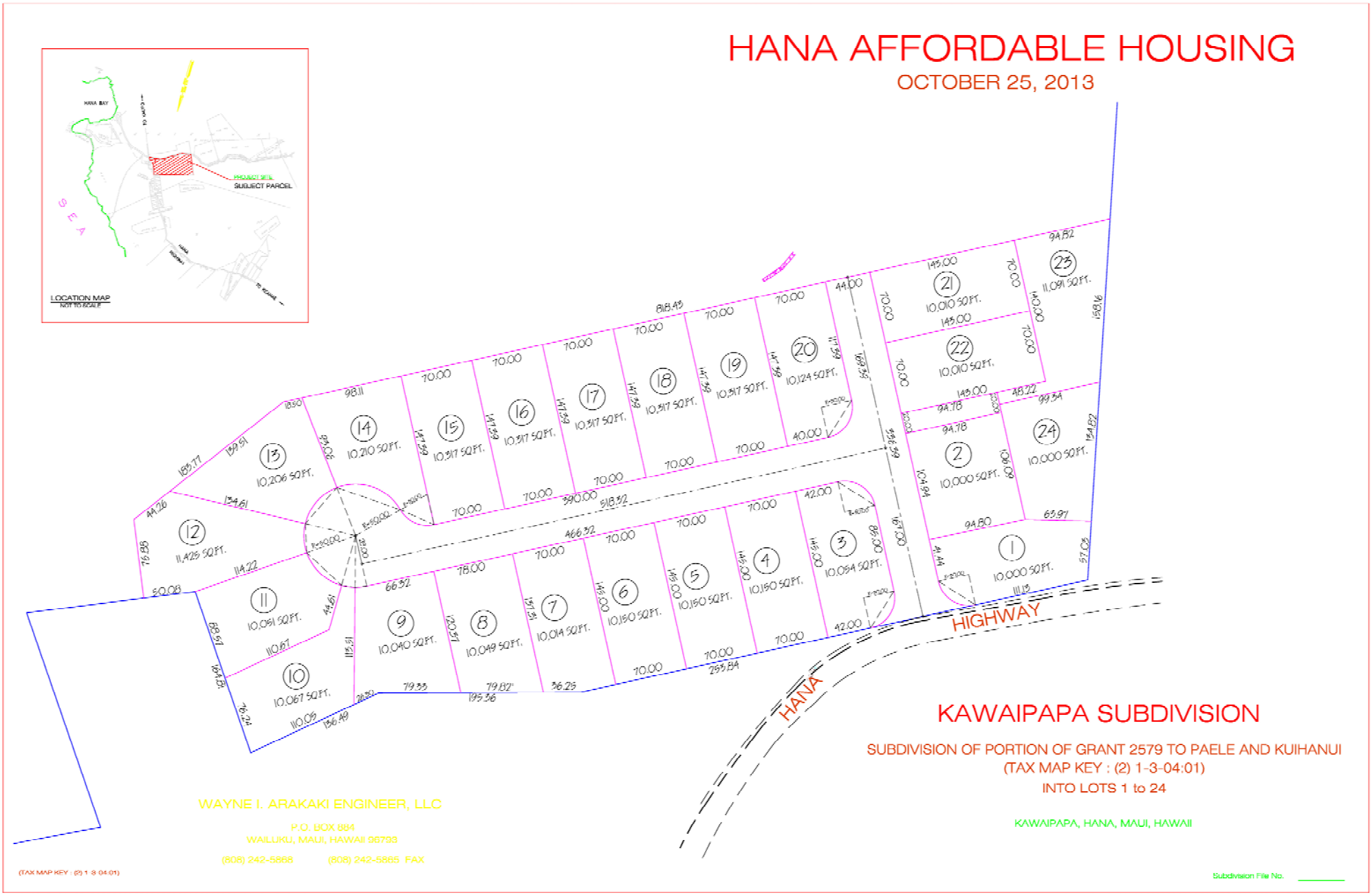
A. Preliminary Subdivision Plan

B. Existing (2015) Peak Hour Traffic Volumes, Background Growth and 2020 Background Peak Hour Traffic Projections

C. Project Trip Distribution, Trip Assignments and 2020 Peak Hour Traffic Projections with Project Generated Traffic

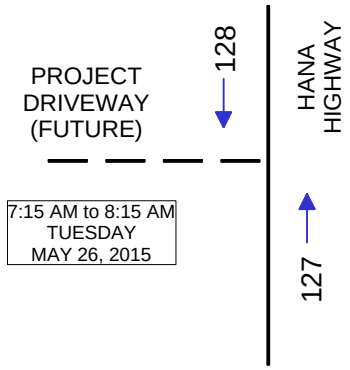
D. Level-of-Service Worksheets for 2020 Traffic Projections with Project Generated Traffic

E. Guidelines for Left Turn Lanes - Hana Highway at Project Driveway

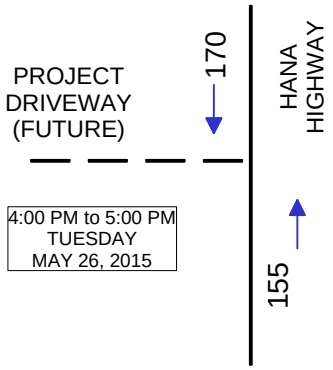


Attachment A
PRELIMINARY SUBDIVISION PLAN

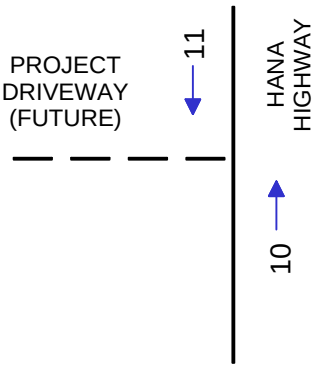
NOT TO SCALE



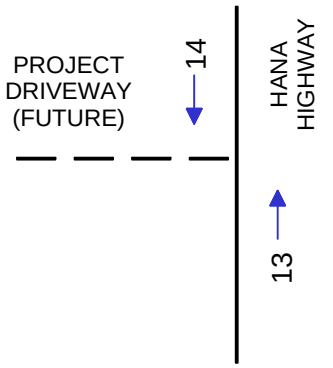
EXISTING PEAK HOUR TRAFFIC
AM PEAK HOUR



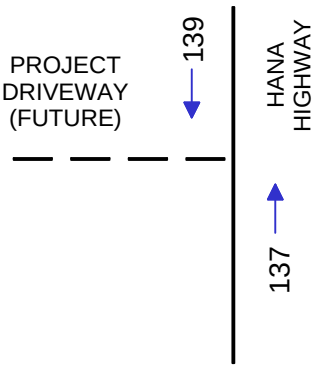
EXISTING PEAK HOUR TRAFFIC



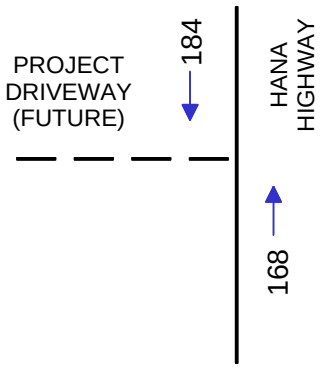
2015 TO 202 BACKGROUND GROWTH
AM PEAK HOUR



2015 TO 2020 BACKGROUND GROWTH
AM PEAK HOUR

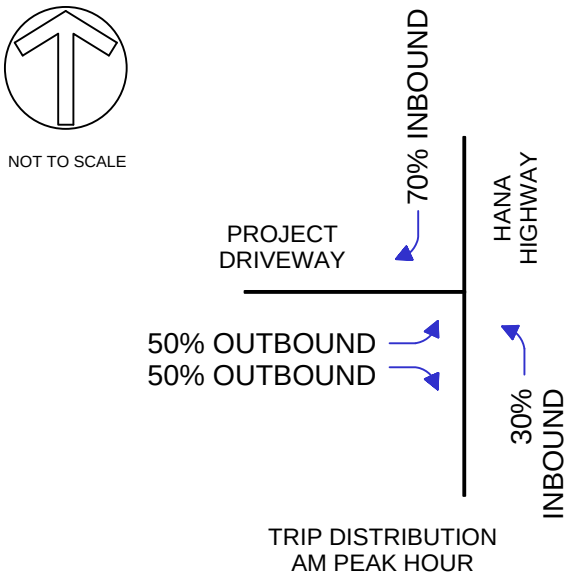


2020 BACKGROUND PEAK HOUR PROJECTIONS
AM PEAK HOUR

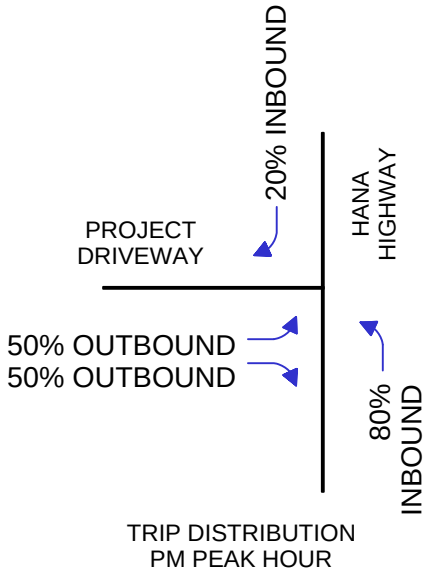


2020 BACKGROUND PEAK HOURPROJECTIONS
AM PEAK HOUR

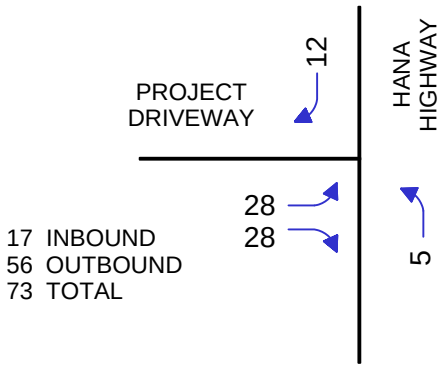
Attachment B
EXISTING (2015) PEAK HOUR VOLUMES.
BACKGROUND GROWTH AND
2020 BACKGROUND PEAK HOUR PROJECTIONS
WITHOUT PROJECT GENERATED TRAFFIC



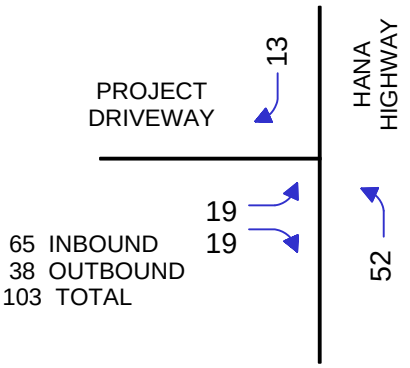
TRIP DISTRIBUTION
AM PEAK HOUR



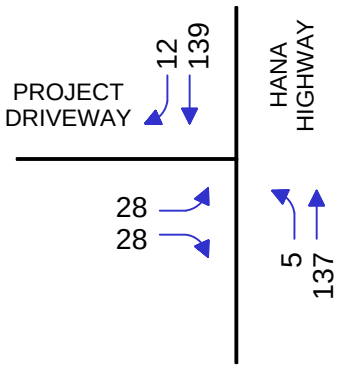
TRIP DISTRIBUTION
PM PEAK HOUR



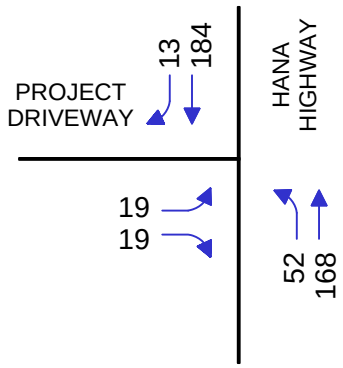
TRIP ASSIGNMENTS
AM PEAK HOUR



TRIP ASSIGNMENTS
PM PEAK HOUR



2020 PROJECTIONS
AM PEAK HOUR



2020 PROJECTIONS
PM PEAK HOUR

Attachment C
PROJECT TRIP DISTRIBUTION, TRIP ASSIGNMENTS
AND 2020 PEAK HOUR TRAFFIC PROJECTIONS
WITH PROJECT GENERATED TRAFFIC

Attachment D
Level-of-Service Worksheets for
2020 Traffic Projections
With Project Generated Traffic

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	28	28	5	137	139	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	30	5	149	151	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	317	158	164			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	317	158	164			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	97	100			
cM capacity (veh/h)	673	888	1414			

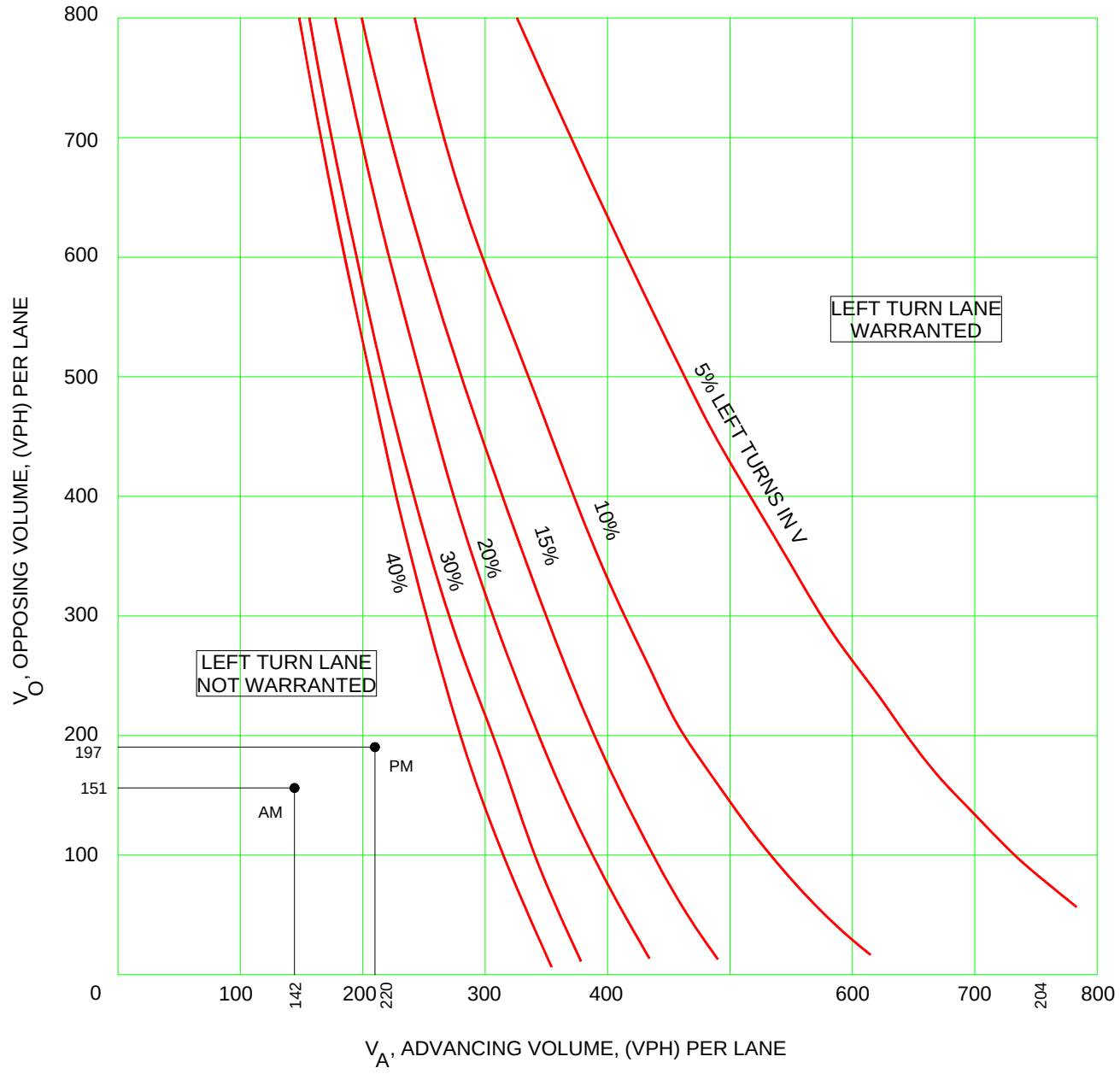
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	61	154	164
Volume Left	30	5	0
Volume Right	30	0	13
cSH	766	1414	1700
Volume to Capacity	0.08	0.00	0.10
Queue Length 95th (ft)	6	0	0
Control Delay (s)	10.1	0.3	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	0.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	19	19	52	168	184	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	21	57	183	200	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	503	207	214			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	503	207	214			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	98	96			
cM capacity (veh/h)	506	833	1356			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	41	239	214
Volume Left	21	57	0
Volume Right	21	0	14
cSH	630	1356	1700
Volume to Capacity	0.07	0.04	0.13
Queue Length 95th (ft)	5	3	0
Control Delay (s)	11.1	2.1	0.0
Lane LOS	B	A	
Approach Delay (s)	11.1	2.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		



Source:
FHWA-RD-76-86
"Guidelines for the Control of Direct Access to Arterial Highways," 1975

Interpretaion:
If the intersection of the approaching volume and the opposing volume intersect right of the percentage of left turns, a left turn lane is recommended.

PEAK HOUR VOLUMES			
2020	ADVANCING	OPPOSING	% LEFT
AM Peak Hour	142 vph	151 vph	4%
PM Peak Hour	220 vph	197 vph	24%

Attachment E
GUIDELINES FOR LEFT TURN LANES
HANA HIGHWAY AT PROJECT DRIVEWAY

APPENDIX F-1
Archaeological Inventory Survey

Report 614-010314

FINAL

ARCHAEOLOGICAL INVENTORY SURVEY

TMK: (2) 1-3-04:001

KAWAIPAPA AHUPUA‘A

HANA DISTRICT

ISLAND OF MAUI

Haun & Associates

Archaeological, Cultural, and Historical Resource Management Services

73-1168 Kahuna A‘o Road, Kailua-Kona HI 96740

Phone: 808-325-2402 Fax: 808-325-1520

FINAL

ARCHAEOLOGICAL INVENTORY SURVEY

TMK: (2) 1-3-04:001

KAWAIPAPA AHUPUA'A, HANA DISTRICT,

ISLAND OF MAUI

By:

Alan E. Haun, Ph.D.

and

Dave Henry, B.S.

Prepared for:

GTH Land Company LLC
651 Papipi Rd.
Kula, Hawaii 96790

October 2008
(Revised January 2014)

HAUN & ASSOCIATES

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL RESOURCE MANAGEMENT SERVICES
73-1168 KAHUNA A'O ROAD, KAILUA-KONA HI 96740
PHONE: 808-325-2402 FAX: 808-325-1520

SUMMARY

At the request of GTH Land Company LLC, Haun & Associates conducted an archaeological inventory survey of TMK: (2) 1-3-04:001, a 72.81-acre parcel located in Kawaipapa Ahupua'a, Hana District, Island of Maui. The objective of the survey was to satisfy historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-Historic Preservation Division (DLNR-HPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, Chapter 284, State Historic Preservation Rules. The survey fieldwork and report was completed in 2008; however, due to changing economic conditions the report was not submitted until May 2013.

The archaeological inventory survey identified 26 sites with 169 features. The features include 112 stone-lined pits, 19 walls, 12 terraces, 6 modified outcrops, 5 mounds, 3 enclosures, 2 artifact scatters, 2 platforms, 2 pavements, 2 concrete troughs and one each of the following; concrete basin, concrete foundation, railroad grade and road. Feature function includes agriculture (n=145), permanent habitation (9), livestock control (7), animal husbandry (4), transportation (2) and historic habitation (2).

All 26 sites are assessed as significant for their information content. One site (Site 4964), an historic railroad grade, is additionally assessed as significant for its contribution to the historic sugar cane industry on Maui.

The mapping, written descriptions and photography at 22 sites adequately document them and no further work or preservation is recommended. Three sites are recommended for mitigation through data recovery. The plans for data recovery would be detailed in a Data Recovery Plan prepared for DLNR-SHPD review and approval. Alternatively, the sites could be preserved in accordance with a Site Preservation Plan prepared for DLNR-SHPD review and approval. Representative sections of the remaining Site 4964 railroad grade are recommended for preservation, particularly at the southern end which is in good condition. Preservation of Site 4964 would be guided by a Site Preservation Plan prepared for DLNR-SHPD review and approval.

Table of Contents

FIGURES

FIGURES (cont.)

TABLES

INTRODUCTION

This report presents the results of an archaeological inventory survey of TMK: (2) 1-3-04:001, a 72.81-acre parcel located in Kawaipapa Ahupua'a, Hana District, Island of Maui (*Figures 1* and *2*). The objective of the survey was to satisfy current historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, Chapter 284, State Historic Preservation Rules (DLNR 2003).

The project landowner proposes to develop a 24-lot affordable housing subdivision in the seaward portion of the subject parcel, inland of the Hana Highway. The survey fieldwork was conducted June 15-21, and August 11-16, 2008 by a crew of four under the direction of Dr. Alan Haun. The fieldwork required 42 person-days to complete. Described in this report are the project scope of work, field methods, background information, survey findings, and significance assessments of the sites with recommended treatments. The report was completed in 2008; however, due to changing economic conditions the report was not submitted until May 2013.

Scope of Work

Based on DLNR-SHPD rules for inventory surveys, the following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct background review and research of existing archaeological and historical documentary literature relating to the project area and its immediate vicinity--including examination of Land Commission Awards, *ahupua'a* records, historic maps, archival materials, archaeological reports, and other historical sources;

2. Conduct a high intensity, 100% pedestrian survey coverage of the project area;

3. Conduct detailed recording of all potentially significant sites including scale plan drawings, written descriptions, and photographs, as appropriate;

4. Conduct limited subsurface testing (manual excavation) at selected sites to determine function;

5. Analyze background research and field data to assess the significance of any sites identified in the project area; and

6. Prepare and submit Final Report.

Project Area Description

The project area consists of an irregularly-shaped 72.81-acre parcel located in Kawaipapa Ahupua'a at elevations that range from c. 118 to 321 ft. The parcel is bounded by Kawaipapa Stream to the south, by undeveloped land to the north and west and by houses and the Hana Highway to the east. The soil throughout the project area is comprised of Malama extremely stony muck (3-25% slopes), which consists of a thin layer of black muck over a'a lava (Foote *et al.* 1972:92). This soil type has a rapid permeability, a slow runoff and a slight erosional hazard and is used primarily for a water source, with small areas classified as suitable for orchard crops and pasture.

Portions of the project area have been mechanically cleared. Cleared areas consist of a network of dirt roads throughout the property and five areas in the seaward portion of the parcel. These areas are

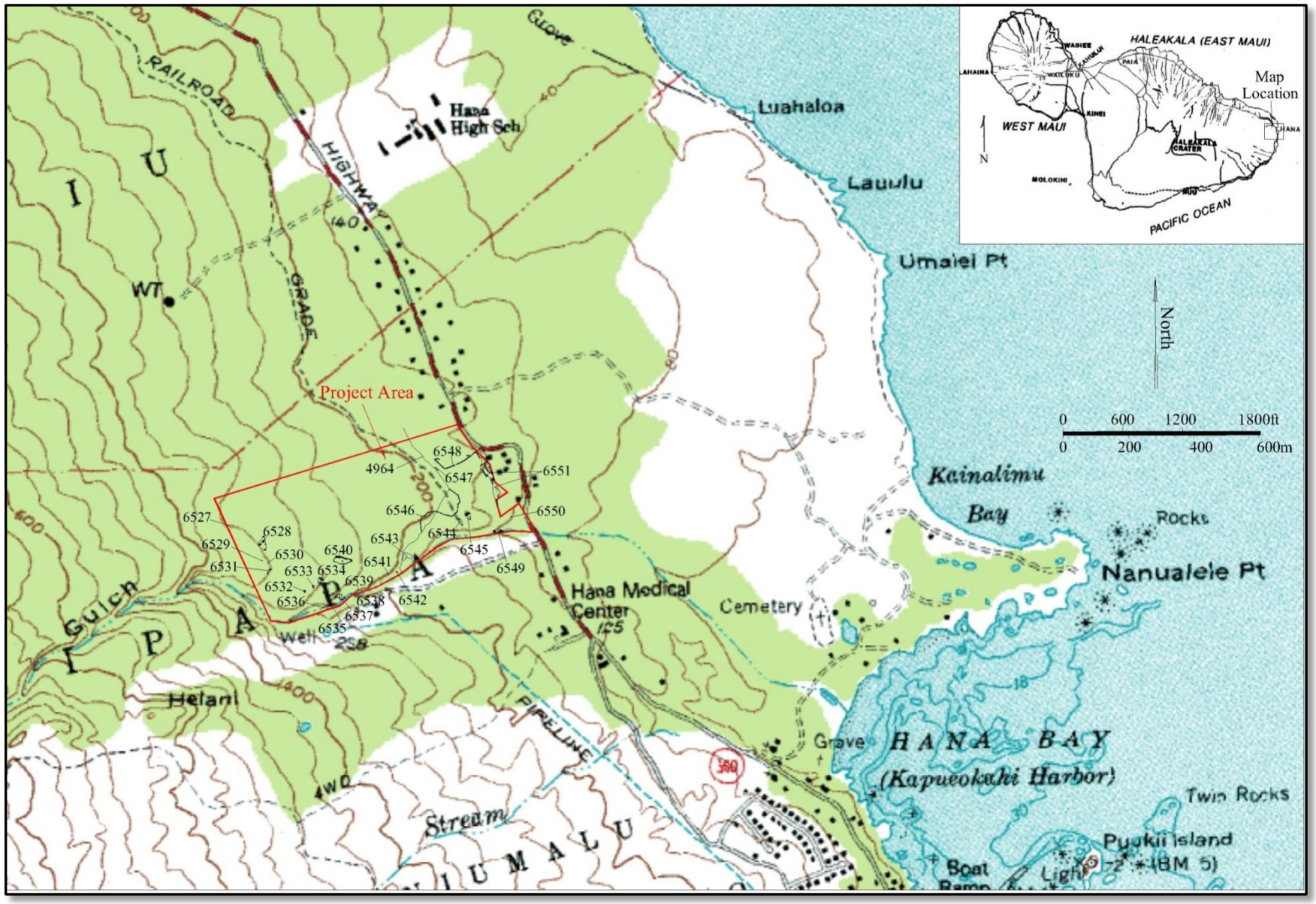


Figure 1. Portion of Hana 1983 USGS 7.5' quadrangle showing project area

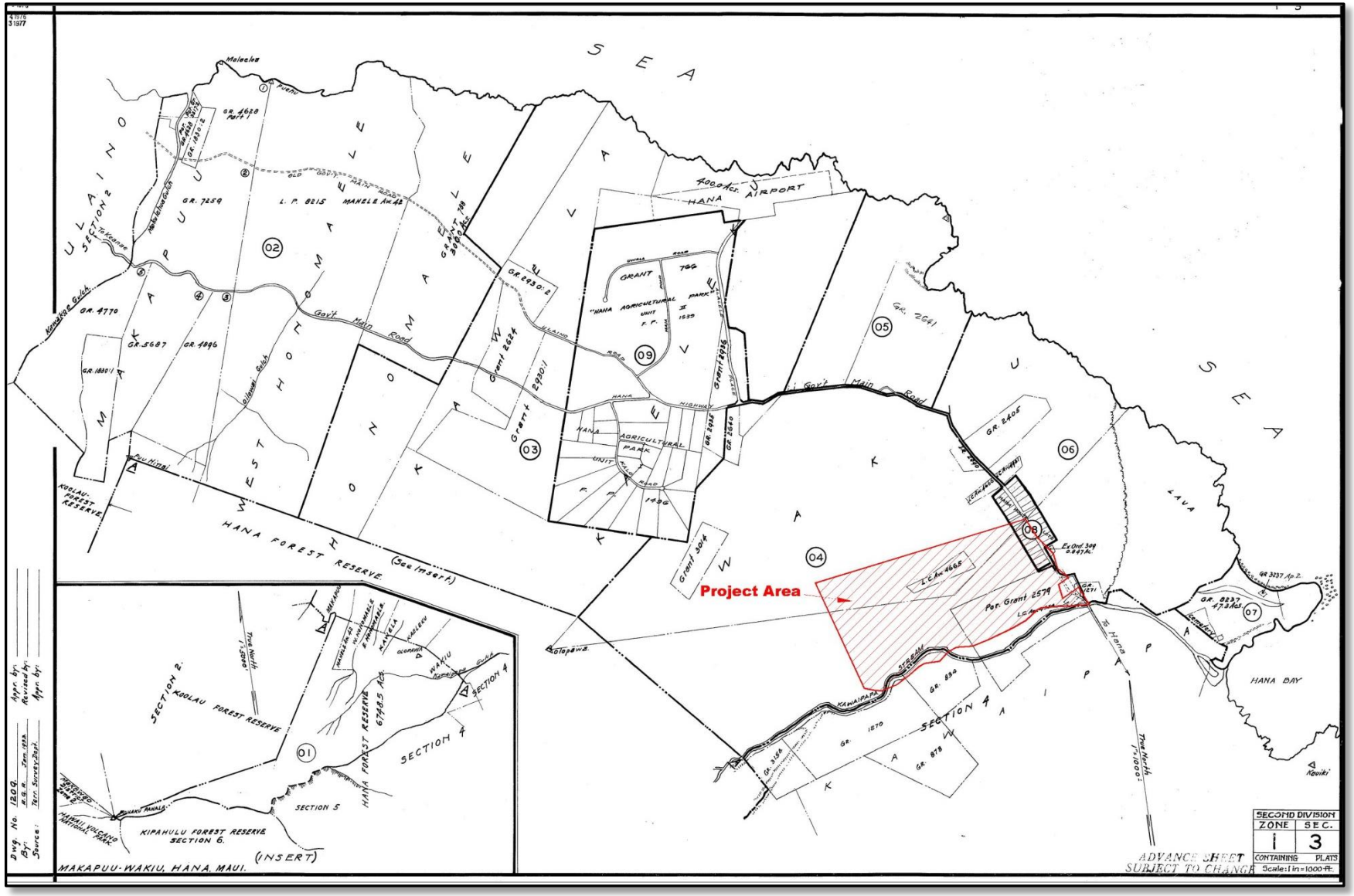


Figure 2. Tax Map Key 1-3-04 showing project area

depicted on *Figure 10* in the Findings section of this report. A total of 3,748.0 linear meters (2.3 miles) of dirt roads are present that average 5 m in width and cover an area of approximately 4.6 acres. The five cleared areas are located primarily in the seaward portion of the property, below approximately 220 ft elevation. These areas vary in area from 1,948.0 to 20,765 sq m and comprise a total of 35,548 sq m or approximately 8.8 acres. The combined extent of the roads and cleared areas is 13.4 acres. One of the cleared areas is illustrated in *Figure 3.*

Figure 3. Project area overview showing cleared area, view to northeast

Much of the property is characterized by secondary growth vegetation indicating previous impacts to the area. The introduced species are comprised of African tulip (*Spathodea campanulata*), avocado (*Persea cerospora*), bitter melon (*Momordica balsamina*), coconut (*Cocos nuciferia*), Heliconia (*Haleconia* spp.), koa-haole (*Leucaena leucocephala*), papaya (*Carica papaya* L.), silver oak (*Grevillea robusta*), plumeria (*Plumeria acuminata* Ait.), strawberry guava (*Psidium cattleianum* Sabine), Miconia (*Miconia* calvescens) and royal palm (*Roystonea oleracea* Jacq.).

Traditional cultigens and Indigenous species noted include breadfruit (*ulu, Artocarpus communis* Forst.), *hala* (*Pandanus* odoratissimus), *hala pepe* (*Dracaena* spp.), *kukui* (*Aleurites* moluccana), *ki* (*Cordyline fruticosa*), tree ferns (*hapu'u, Cibotium splendens* Gaud.), *noni (Morinda citrifolia*), *'awapuhi ko'oko'*o (torch ginger, *Phaeomeria magnifica*), *ohia* (*Metrosideros polymorpha*) and mango (*Mangifera indica* L.). *Figures 4* and *5* show examples of project area vegetation.

Figure 4. Project area overview, view to west

Figure 5. Project area overview, view to northeast

Methods

The project area was subjected to 100% surface survey with a crew of four surveyors spaced at 10 m intervals. The majority of the parcel contains a high tree canopy with minimal ground obscuring vegetation. Ground surface visibility in these areas is good. Areas with dense ground covering vegetation are however present in the parcel, resulting in poor ground surface visibility. These poor visibility areas are consistently located in the portions of the parcel that have been bulldozed.

The identified sites/features were flagged with pink and blue flagging tape and their locations plotted on a scaled project area map with the aid of Garmin Global Positioning System (GPS) III+ using the North American Datum (NAD) 1983 datum. The accuracy of the GPS device for a single point is +/- 15 m. This accuracy is increased to approximately 3-5 meters by taking multiple points including property corners and overlying the plotted points on a scaled map using AutoCAD software. The sites were subjected to detailed recording including preparation of scaled plan maps, completion of standardized site/feature forms, and photographic documentation. A metal site tag was placed at each site and the tag's location was plotted on the plan map. The sites, as defined for this study, consist of features situated less than 15 m apart. Features located more than 15.0 m apart were assigned separate site designations.

Subsurface testing was undertaken in two locations in order to verify feature function. The tested features consist of a permanent habitation platform (Site 6528, Feature C) and a permanent habitation pavement (Site 6545, Feature A). Site 6528-C is a small paved platform that may have potentially contained human remains. Site 6545-A is a large amorphous pavement in a bulldozed area. The test units were dug in arbitrary levels within stratigraphic layers and were terminated on bedrock. Standardized excavation records were prepared after the completion of each stratigraphic layer. The soil removed during the excavations was screened through ¼" mesh. Portable remains collected were placed in paper bags labeled with the appropriate provenience information. Recovered charcoal samples were carefully removed from either *in situ* locations or collected during the screening process. These samples were deposited in aluminum foil pouches and placed in properly labeled paper bags. Following the excavation of the test units, a section drawing depicting the stratigraphy was prepared, post-excavation photographs were taken, and the units were backfilled. Recovered cultural remains were transported to Haun & Associates laboratory for analysis.

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Historical Documentary Research

The project area is located in the *moku`aina* (district) of Hana on the northeast coast of the island of Maui, in the *ahupua`a* (land division) of Kawaipapa (*Figure 6*). The District of Hana or East Maui, is made up of five *moku`aina* (Kahikinui, Kaupo, Kïpahulu, Hana, and Koʻolau) each radiating from a large rock called Palaha, on the northeast rim of the crater of Haleakala. Legendary accounts and traditional historical information concerning Hana District are described in detail by Cleghorn and Rogers (1987), Orr (1990), and Sterling (1998). Legends concerning the deities Pele, Pu'uhele, Kane, Kanaloa, Maui, and Ku'ula figure prominently in Hana's legendary history.

In Thrum's *Hawaiian Annual* he recounts the legend of Kuʻula in which the first *loko* (fishpond) was invented and constructed in Hana at Lehoʻula (Thrum 1901:115). *Mo`olelo* (legends)*, mele* (songs)*, `olelo noʻeau* (proverbs), and *oli* (chants) about events that took place in pre-contact times are revealing in that they illustrate that many of the battles of this period were relatively quickly contained by the opposing *ali`i* (see History of Kualiʻi in Fornander 1917:IV: II: 364-434). These stories also illustrate the on-going inter-relationships between the people of the various islands.

One of Maui's most famous *ali`inui* during the late 1500s to early 1600s was Pi`ilani whose ancestors made Hana their home (Orr 1990). As a ruler, Pi`ilani spent time at both Hana and Lele/Lahaina. He was well known for his peaceful rule of Maui, Molokaʻi and Lanaʻi. While he ruled there were no wars between chiefdoms and island polities. Pi`ilani met his second son Kiha-a-Pi`ilani in Lele (now Lahaina). Kiha (ca.

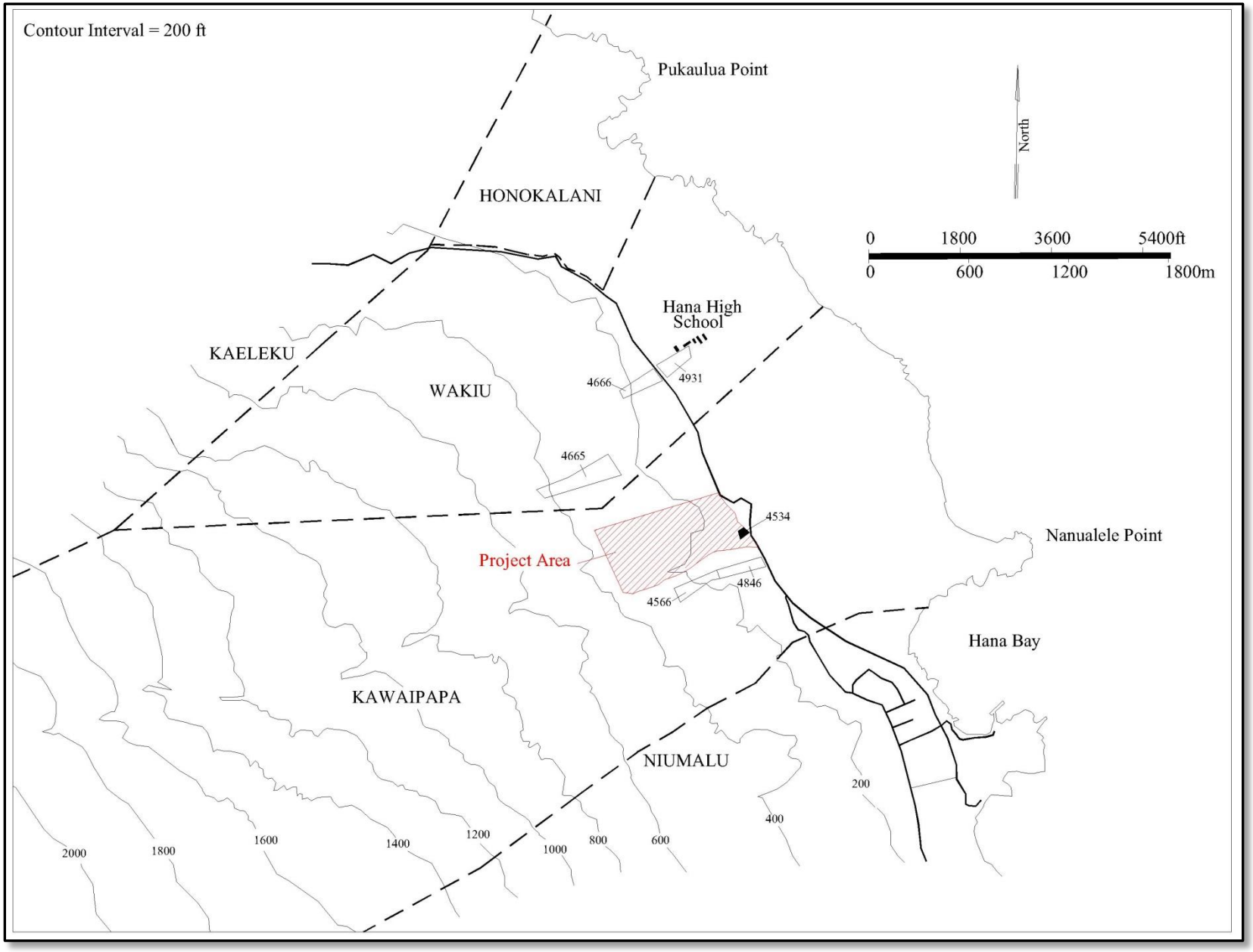


Figure 6. Ahupua'a boundaries and Land Commission Awards

early 1600s) was raised on O`ahu (Waikïkï) with his mother's family. As a young adult he grew tired of listening to his uncles and wanted to meet his father. A *mo`olelo* indicates that from the moment he met his father, Kiha was never satisfied with being a junior son to his older brother, Lono-a-Pi`ilani.

After the death of Pi`ilani in Lele, friction between the brothers escalated (Orr 1990). Kiha went to the Big Island to solicit the help of his sister Pi`ikea and her husband, Hawai`i *ali`inui* 'Umi-a-Lïloa, but not before he spent some time living in Hana. After a year of building an army to challenge Lono-a-Pi`ilani, Kiha and Umi traveled to Maui to find that Lono had recently died, presumably from fear of doing battle with his brother and brother-in-law.

Kiha-a-Pi`ilani eventually took control of the Maui domain. He is credited with many public works, one of which was to finish the Hono-a-Pi`ilani trail that his father started. Remnants of this monumental feature, also referred to as the King's or Kihapi'ilani Trail, can still be seen today in various parts of Maui. According to Manu (1884 – cited in Shefcheck and Dega 2007:12), "The construction of the road was begun at the stream of Kawaipapa and at Pihehe where it would start to enter the *hala* grove of Kahalaowaka".

In the *History of Kuali'i*, the exploits of Kuali'i (great-great grandson of Kahuihewa, *ali`inui* of O'ahu) take him to every island and he eventually unites all the islands "from Hawai'i to Ni'ihau" (Fornander 1917:IV: II: 406). Kuali'i lives in the time of Maui *ali`inui* Kamalalawalu and Kauhiokalani, sons of Kiha-a-Pi`ilani by each of his two wives [Kumaka and Koleamoku] and Kauhiakama, son of Kamalalawalu (Kamakau 1992:56; McKenzie 1986).

Between 1650 and 1795, many wars took place between intra-island chiefdoms and inter-island kingdoms; the majority of these *ali`inui* were related in various ways. In 1736, Maui *ali`inui* Kekaulike died. He chose his *ni`aupi`o* son Kamehameha-nui to be his heir; although Kauhi was the oldest, he was of a slightly lower rank. Kamehameha-nui was the brother of Ka-lola, Ka-hekili, and Ku-ho`oheihei-pahu. In 1737 and 1738 Kauhi-`aimoku-a-Kama (Kauhi), oldest son of Ke-kau-like rebelled against his younger brother, Kamehameha-nui. The fighting men of Kamehameha-nui were slaughtered. This prompted Kamehameha-nui to flee to his uncle's canoe, Hawai'i Island *ali`inui* Alapa`i-nui-a-Ka-uaua (Alapa`i), who took him to Hawaii Island where they spent a year preparing for war. Alapa`i was the half-brother of Kamehameha-nui's mother (Kamakau 1992:73-74).

When Kauhi heard that Alapa`i was heading back to Maui, he enlisted the help of Pele-io-holani, Kauai *ali`inu* who was also ruling chief of O'ahu and the son of Kuali'i; Pele-i'o-holani was also father of Ke`eaumoku and cousin of Alapa`i (McKenzie 1986:23). Alapa`i attacked Maui (1738), drying up the streams of Kaua`ula, Kanaha and Kahoma near Lahaina Luna, destroying the taro patches. His men kept guard over the streams of Olowalu, Ukumehame, Wailuku and Honokowai. "When Pele-i'o-holani heard that Alapa`i was in Lahaina he gathered all his forces at Honokahua and at Honolua. At Honokowai an engagement took place between the two armies, and the forces of Alapa`i were slaughtered and fled to Keawawa" (Kamakau 1992:74). Pele-i'o-holani had 640 men to Alapa`i's 8,440. However, the cousins once again came face to face in Pu`unënë and decided to once more opt for peace between the families. Kamehameha-nui ruled Maui in peace; Pele-i'o-holani retired to Moloka'i for a while, and Alapa`i went back to rule Hawai'i Island.

Around 1759, High Chief Kalani'opu'u from the Island of Hawai'i made war on East Maui and conquered Hana from *ali'inui* Kamehameha-nui, brother of Kalola, Kalani'opu'u's wife. Kalani'opu'u [father of Kiwala'o and grandfather of Keopuolani, sacred wife of Kamehameha I] took control of Hana's prominent Pu'u Ka'uiki as his fortress. He appointed one of his chiefs, Puna, as "governor" of Hana and Kipahulu. Puna was later tricked by Mahihelelima into going back to Hawai'i Island, thereby leaving Mahihelelima in control of Hana. Mahihelelima was an independent chief of Hana, Kipahulu and Kaupo, whose ancestors, grandparents, and parents had been chiefs of the districts (Kamakau 1992:81-82).

Kamehameha-nui relinquished Hana and lived in peace in west Maui. In 1766 the peaceful Maui *ali'inui* died. After ruling Maui for 29 years, Kamehameha-nui was taken ill at Kawaipapa on a journey about the island. There in Hana he ceded his lands to his younger brother Kahekilinui'ahumanu (Kahekili), a fierce warrior and "manipulator" [and biological father of Kamehameha I] (Kamakau, 1992:82-84, 188). During this period, Ka'ahumanu, daughter of Ke`eaumoku and Namahana, was born at Mapuwena, Paliuli, in a cave at the base of Pu'u Ka'uiki, (she would later become queen and favorite wife of Kamehameha I, unifier of the Hawaiian Islands and nephew of Kalani'opu'u). "Her afterbirth was taken and buried at Kani-a-mako in Kawaipapa above Pihele" (Kamakau 1992:309).

In 1775, Kalani'opu'u, son of Ka-lani-nui-i-a-mamao and his forces in Hana raided and severely destroyed the neighboring Kaupo district, before continuing several more raids on the islands of Moloka'i, Lana'i, Kaho'olawe and parts of West Maui. He returned again in 1776 and for several years later, raiding and treating the *maka'ainana* cruelly. In 1777 when very young, her parents took Ka'ahumanu and their whole family to Hawai'i to get away from the war between Kalani'opu'u and Kahekili (Silverman, 1987:iii, 5-6; Kamakau, 1992:310).

In January 1778 Cook landed in Waimea, Kaua'i and the culture of old Hawai'i began its spiraling change (see Day 1992). Cook left Hawai'i for several months, but returned later in the year. Captain Cook's ship *Resolution* stood off Hana's shore for four days in November 1778 (Barrow 1993). They "saw people on several parts of the shore, and some houses and plantations. The country seemed to be well wooded and watered." (1993:404). The Hawaiians traded cuttlefish, breadfruit, potatoes, taro, bananas and small pigs for nails and iron tools.

Kalani'opu'u was fighting Kahekili's forces in Wailua, Maui on November 19, 1778 when Cook's ship was sighted on his return trip to the islands. Kalani'opu'u visited Cook on the *Resolution,* while Kahekili visited Clerke on the *Discovery* (Kuykendall and Day 1976:16). When Cook sailed into Kealakekua Bay on January 17, 1779, Kalani'opu'u was still fighting Kahekili on Maui. At this time Kaeo was ruling chief of Kaua'i; Ka-hahana of O'ahu and Moloka'i; Kahekili of western Maui, Lana'i and Kaho`olawe; and Kalani'opu'u of Hawai'i Island and Hana (Kamakau, 1992:84-86, 92, 97-98). On January 25th Kalani'opu'u visited Cook again at Kealakekua Bay, presenting him with several feather cloaks. In February Cook's scheme to kidnap Kalani'opu'u as a hostage was thwarted and Cook was killed following a skirmish over a stolen cutter (Kuykendall and Day 1976:18).

The warring between the Hawai'i and Maui forces continued. When Kahekili heard about the death of Kalani'opu'u, he was determined to retake East Maui [Hana District]. The chiefs of Hana, bastioned at the fortress of Ka`uiki, were Mahi-hele-lima, Kaloku-o-ka-maile, Nae-`ole, Malua-lani, Kaloku, a grandson of Keawe and other chiefs of Hawai'i who "liked to live there" [in Hana] as well as some native Hana chiefs "who with some commoners, took the side of Hawai'i" (Kamakau 1992:115). Kahekili split his forces and sent them through the southeastern Kaupo Gap and the northeastern Ko'olau Gap into Hana in 1781. After being thwarted Kahekili sent for Ku-la`a-hola who advised him.

> The fortress of Ka`uiki depends upon its water supply. Cut that off and Ka`uiki will surrender for want of water…. Let the chiefs, guards, and fighting men cut off the springs of Punahoa, Waka`akihi, Waikoloa [Kawaipapa], and the ponds from Kawaipapa to Honokalani on the Ko`olau side of the hill…. When the people are dying of thirst and can get no water, then they may be slaughtered (Kamakau 1992:116).

After damming and diverting the supply of spring water to Pu`u Ka'uiki, the Hawai'i chiefs were finally defeated, and the Maui *ali'inui* regained control of Hana in 1782. The corpses of the defeated Hawai'i forces were burned at two *luakini heiau* (war/human sacrifice temple), Kuawalu and Honua'ula; *heiau* that King Hua was supposed to have built during his infamous reign in Hana (Kamakau, 1992:84-86; 115-116; Fornander 1917: Vol II 146-7, 150, 216). Both *heiau* were destroyed during the sugar plantation era and

on their sites, Catholic and Protestant churches now stand (Walker 1931:186; see also Sterling, 1998:133). Kahekili reclaimed Hana, then through war and trickery went on to gain control of all the islands except Hawai'i Island (Kamakau 1992:116, 128-141).

By 1790 Kamehameha I had gained enough control of the island of Hawai'i that he could leave to join the war parties on Maui. The canoe fleet "beached at Hana and extended from Hamoa to Kawaipapa" to battle Kalanikupule, son of Kahekili, and ruling chief of Maui while his father ruled O'ahu. After several battles along the East Maui coast, Kamehameha's force reached Wailuku where the "great battle" took place. This would be the beginning of the end of independent ruling chiefs because of the inequity of battle strategy. Kamehameha had brought a cannon from the *Eleanor* along with her captain, Isaac Davis, and crewmember John Young, now his *aikane punahele* (favorites) and advisors (Kamakau 1992:147-148).

In October 1819, seventeen Protestant missionaries set sail from Boston to Hawai'i. Earlier that year, on May 8, 1819, Kamehameha I died. Following his death, his son and heir Liholiho banished the *kapu* system on the advice of his queen mother Keopuolani and queen regent Ka'ahumanu (Kamakau, 1992:210, 222). The missionaries arrived in Kailua-Kona in 1820. They quickly started missions on all of the islands, including a station in Hana. In 1828 a group of Protestant missionaries made a trip to Hana where they "found nearly a thousand scholars" on the plain of Hana (Forster 1959:18). In 1837 Rev. Conde brought his wife and baby to Hana, establishing its first permanent mission station--they were the "first European woman and baby ever seen by the local inhabitants." Conde estimated there were about 6,000 Hawaiians living in the district at that time. Later a missionary report of 1839 stated that "31 schools existed in the [Hana] district with 1,523 pupils" (Forster 1959:17-19, see also McGregor 1996:355).

The first sugar venture in Hana was established in 1849 when 60 acres of land in the heart of Hana was cleared and planted by a refugee of the whaling industry (Youngblood 1992:44). The Hana Plantation, later called the Ka'eleku Sugar Company, was first established in 1851. "The acquisition of lands by the plantations created a new population distribution in the district. For the first time, dwellings were moved to the sea coast and the hinterland was completely given over to the raising of sugar" (Forster 1959:22).

The 1840s also heralded other changes as well. The Hawaiian government, with the aid of the missionaries, encouraged the sugar industry as well as other enterprises such as coffee, cotton, rice, potatoes, and silk worms (Speakman 2001: 93). Disease had a devastating effect on the population and the landscape, killing *ali'i* and *maka'ainana* alike; measles epidemics in 1848 and 1849, were followed by a severe smallpox epidemic in 1853. "The whole population was wiped out from Wakiu, the uplands of Kawaipapa, Palemo, and *mauka* of Waika'akihi in the Hana district, and so for Kipahulu and Kaupo…ten thousand [all toll] of the population are said to have died of this disease [in Hawai'i]" (Kamakau, 1992:418).

The Waihona 'Aina database (2000); which is a compilation of data from the Indices of Awards (Indices 1929), Native Register (NR n.d.), Native Testimony (NT n.d.), and Foreign Testimony (FT n.d.); lists 17 parcels claimed by eight individuals within Kawaipapa and the adjacent Wakiu in the mid-1800s during the Mahele (*Table 1*). The locations of the awarded parcels are shown on *Figure 6*. Six parcels were awarded to six claimants. The Land Commission Award (LCA) parcels are situated inland along the Government Road. Land use described in the LCA claim testimony is very limited. Three claims mention *kïhapai* (cultivated patch), one consisted of a potato patch, and another had coconuts. The LCA claim testimony also mentions a *hala* grove, a trail to the sea, the Government Road, and forest. The awarded parcels range in area from 0.7 to 11.9 acres with an average of 5.73 acres.

McCall (1940) describes the early development of commercial sugar cane cultivation in Hana. The Hana Plantation was managed by George W. Wilfong in 1851 with 60 cultivated acres. In 1852, he brought

Table 1. Summary of Land Commission Awards

LCA	Claimant	Apana claimed	Apana awarded	Section No.	Ahupua'a	Ili	Land Use	Boundary Mauka	Boundary Koolau	Boundary Makai	Boundary Kipahulu	Date Rec'd	Giver	Acreage	Royal Patent	Sources	Comment
4534	M. Ulunahele	1	1		Kawaipapa	Poliokane	kihapai, coconuts	Miki	Kaneke	road		1843	Lonoaukai	0.70	none	NR 177v6, FT 252v8, NT 387v5	
4566	Waihineaa	2	1		Kawaipapa	Kaneaumoku	N/A					Kaahumanu's birth	Kealawaa	5.19	7604	NR 184v6, FT 239v8, NT 373v5	
				1				Puoo	Kahua	Kaholokai	Kapawa						
				2				Kepiipahaia	stream	Pueo	Kaholokai						
4665	Pua Lau	2	1		Wakiu	Kamoku	Gov't Road to east					1833	Kaahaaina	11.90	7126	NR 188v6, FT 263v8, NT 400v5	probably awarded Section 1 (no awarded claims next to sea)
				1				Popeakau	Kamai	Manui	Aki						
				2			potato patch	Kama	Hepa	sea	Kuaana						
4666	Puhake	1	1		Wakiu	Puakamalii		waste land, forest	Kupuka	Gov't Road	Kamai	1835	Aki	5.14	6566	NR 189v6, FT 399v5, NT 399v5/263v8	
4844	Kuana	2	0		Wakiu	Oiolikea, Kalauaiaea	N/A	N/A	N/A	N/A	N/A	N/A	Makua	0.00	none	NR 206v6	
4846	Kaholokai	3	1		Kawaipapa							1819	Lonoaukai	7.00	6447	NR 207v6, FT 276v8, NT 413v5	
				1		Nehali	N/A	Piipii	Kaneihalau	Kahina	Kahina						
				2		Puohou	kihapai	konohiki	konohiki	konohiki	konohiki						
				3		Onehali	N/A	Kapawa	Wahineaea	konohiki	Memehu						
4931	Kaahina	1	1		Wakiu	Haliiea		Gov't Road	trail to sea	Kolokolo	hala grove	1819	N/A	5.00	none	NR 222v6, FT 262v8, NT 399v5	also awarded house lot in Hana
5149	Kahinawa	2	0		Kawaipapa	Pouhai	N/A					1835	Kanianaupio	0.00	none	NT 413v5	
				1				Amaumau	Lono	Kuhaimano	Kapakahawai						
				2			kihapai	Kamaka	Kamaka	Kamaka	Kamaka						
5185B	Kaholokai	3	0		Kawaipapa							1819	Lonoaukai	0.00	none	NT 413v5	awarded under LCA
				1		Nehali	N/A	Piipii	Kaneihalau	Kahina	Kahina						
				2		Puohou	kihapai	konohiki	konohiki	konohiki	konohiki						
				3		Onehali	N/A	Kapawa	Wahineaea	konohiki	Memehu						

laborers from China. The small mill only produced syrup, which was sold to whale ships. Wilfong left the plantation after the mill burned and he could not obtain credit to rebuild.

The lands of the Hana Plantation passed through a succession of owners until the partnership of Thomas E. Cooke, William G Needham, and August Unna, a native of Denmark, controlled them in 1861 (Conde and Best 1973). Needham left the partnership soon after it was formed and Cooke left in 1867. In 1868, Unna imported workers from Japan. Unna is credited with the development of the railroad system that was put in service in 1883. Unna died in 1895. Flumes were developed to provide water to the mills and to transport cane from the fields.

Correspondence reviewed at the State Archives included a letter dated June 3, 1893 from M.H. Reuter to Minister of Interior J.A. King that refers to the recent return of lease land in Kawela, Honomaʻele, and Kaeleku to the government. Reuter offers to pay an annual lease of $100 for fifteen years. A letter dated January 8, 1894 from August Unna to Minister of Interior E.O. Hall transmits $50 to pay lease rent on government lease land in Kawela, Honomaʻele, and Kaʻeleku for the two years ending August 26, 1872. The letter states Unna did not release the land in 1873 because he purchased 600 acres in Kaʻeleku. Unna offers to pay an annual lease of $25, which was the amount paid previously, for ten years. The lease area extends from the government road to the ocean. A letter dated January 8, 1894 from Unna to Minister of Interior L.G. Wilder transmits $25 to pay lease rent for the year of 1880.

In 1883, the Reciprocity Sugar Company was founded and by 1888 the company owned 2,800 acres with 600 acres in cultivation and 240 employees (McCall 1940). In 1888, the Hana Sugar Company consisted of 5,000 acres with 700 in cultivation. The company had 250 employees and 250 head of working stock. M.S. Grinbaum formed the Hana Plantation Company in 1889, combining the lands of the Hana and Reciprocity Sugar Companies with lands at Hamoa (Conde and Best 1973).

The Kaeleku Sugar Company was established in 1905 (McCall 1940). The company took over the Hana Plantation lands, which consisted of 886 acres in fee and 13,184 in leasehold. In 1913, 300 acres were leased from the Hamoa Agricultural Company. Additional acreage was leased from the Haneoʻo Agricultural Company bringing the total acreage to 15,407 acres. Only about 20% of the land could be cultivated because of gulches and rocky areas. The Kaeleku Sugar Company eventually included the lands of six former plantations (McCall 1940). Only two plantations, Hana and Reciprocity, had mills and piers.

A map surveyed by W.E. Wall and traced by H.E. Newton in 1915 (*Figure 7*) shows a cluster of houses near Pailoa Bay. A plantation railroad parallels the Government Road within the project area. A 1928 US Coastal and Geodetic Survey (USCGS) map based on surveys between 1923 and 1925 (*Figure 8*) also shows a plantation railroad track extending through the project area. The map shows a series of structures along the road to the coast at Pailoa Bay where a cemetery is shown.

In 1927 a 55-mile highway to Hana built by prisoners--compliments of the Territorial Government, was completed allowing easier access to Hana. Until then, "the settlements along the Hana Coast were only accessible by ocean or along rugged horse and mule trails" (Youngblood 1992:96-7). By 1930, in the Hana District--from Keʻanae to Kahikinui--there were only "2,436 people living in this area, out of whom 1,117 or 48 per cent were Hawaiian" (McGregor 1996:353-354).

Handy and Handy (1972) report the Hana area was used to cultivate taro, yams, bananas, *wauke*, and *olona*. They report a coastal settlement at Hamoa in the 1930s where people raised sweet potatoes and obtained fish from the sea and a fishpond. Taro and bananas were cultivated in inland gardens. They also report a sizable settlement at Honokalani situated above the sea cliffs and fresh water caves of Waiʻanapanapa. A small valley below Puʻu Olopawa at 1,500 ft elevation was previously used to grow taro in the dry season. A *hala* forest covered the coastal plain formed by recent lava flows between ʻUlaʻino and Hana.

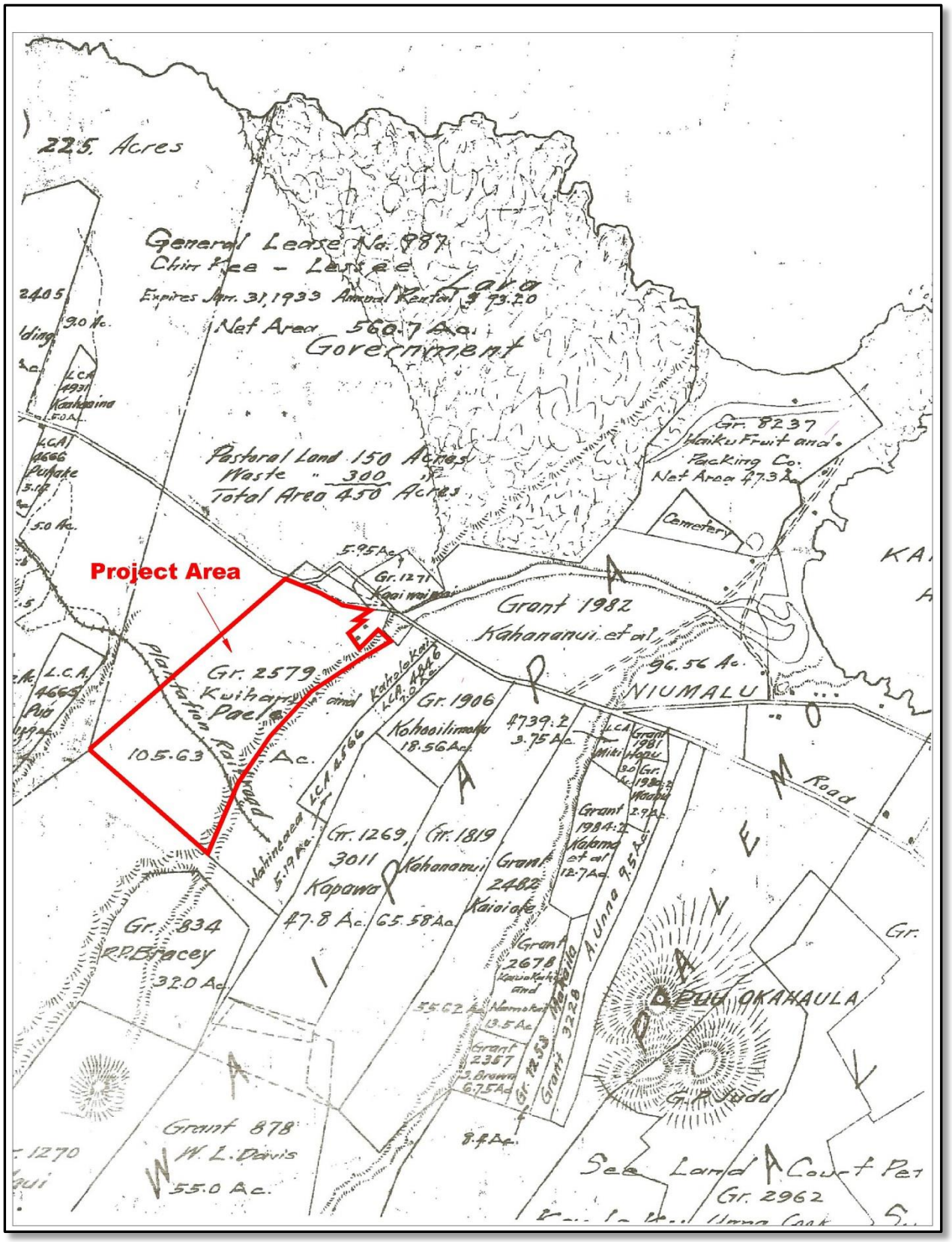


Figure 7. Portion of Wall's 1915 map of Hana showing project area

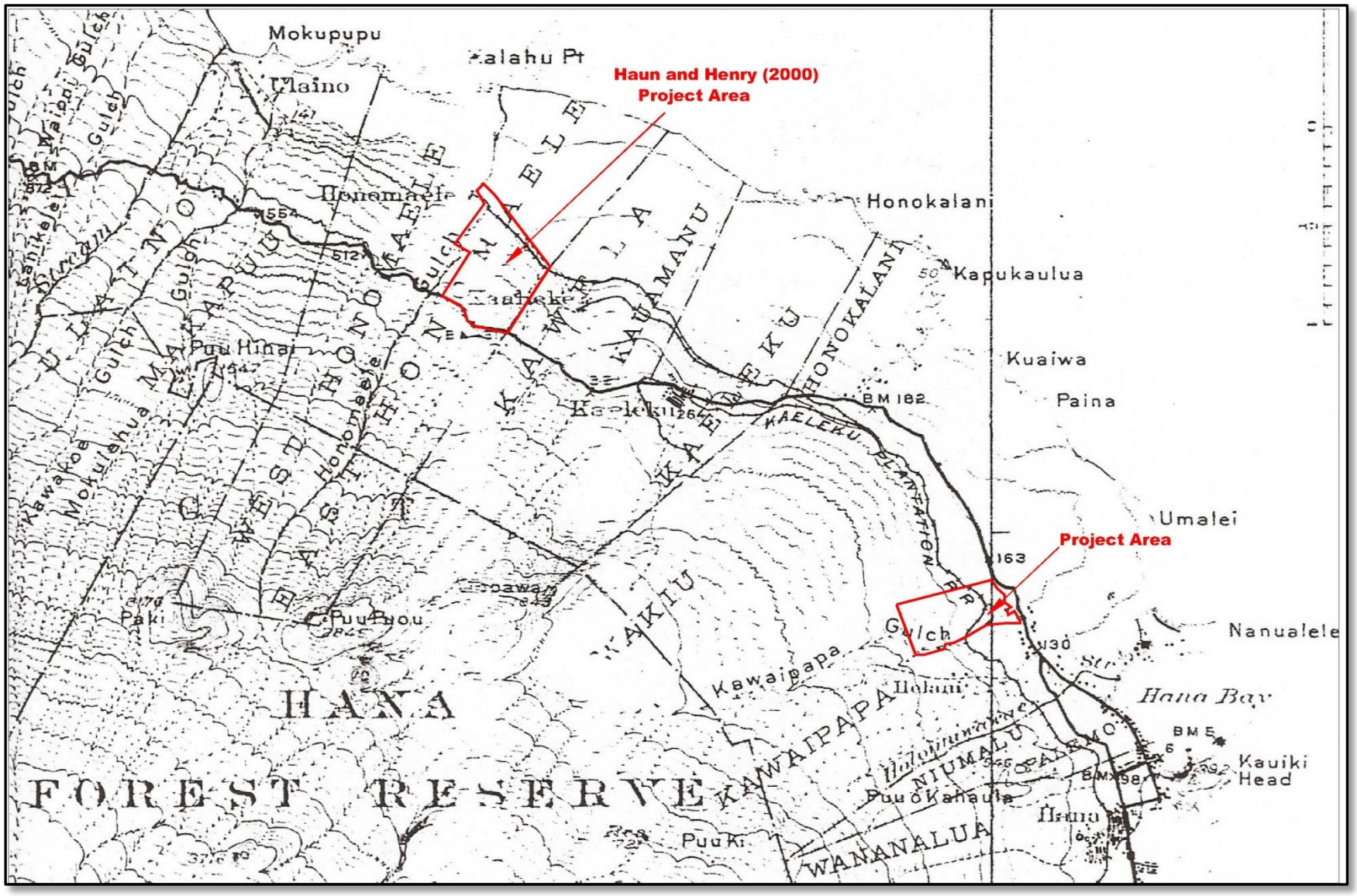


Figure 8. USCGS 1928 Hana Quadrangle

Hana's sugar industry was declining by the 1930's, when Paul Fagan bought the Ka'eleku Sugar Company. The Ka'eleku Sugar Company (previously known as Hana Plantation), the last sugar plantation in Hana, shut down operations in August, 1945 at the "high noon" whistle, signifying "death" of the Company, and the "end of plantation life of about 400-500 employees and their families" (Okano, nd:16). Many of the plantation laborers were relocated to other parts of Maui (Youngblood 1992:60, 67-70). In 1945, Fagan converted his sugar holdings to cattle ranching and the visitor industry (Youngblood 1992:67).

The plantation town of Hana changed to become the *paniolo* or "cowboy" town of Hana, with first-class accommodations at the Ka'uiki Inn, which later became Hotel Hana-Maui, for visitors who could afford to fly in to the grassy runway of Hamoa. The gentle Hana slopes were modified once again as sugar cane was cleared and alien grasses planted to accommodate the newly converted grazing lands. Hana's population declined to about 500 people in the 1950's, but started to increase again after the State paved the Hana highway in the 1960's, making Hana more accessible (Youngblood 1992:70-7). The economy picked up as visitors "discovered" Hana's beauty and charm, and wealthy Mainlanders invested in hideaway property.

Previous Archaeological Research

A search of DLNR-SHPD archaeological report database and the Office of Environmental Quality Control website which maintains an online library of Environmental Impact Assessments (http://oeqc.doh.hawaii.gov), identified 28 reports for Hana District between 'Ula'ino and Hamoa. *Figure 9* shows the locations of 20 survey projects and *Table 2* summarizes the projects. Not included in the figure and table are the general studies by Thrum (1901), Walker (1931), Nakkim (1970), Ashdown (1971), and Orr (1990), which focus on major sites, primarily *heiau* and fishponds, throughout Hana District, and a walk through survey by Sterling (1969) in Hana Town. Other site-specific studies not included are inspections of a lava tube system, Kaeleku Caverns, by Estioko-Griffin (1988) and Donham (1996). Burials are reported for the cave, but were not identified by the inspections. Kam (1980) conducted an inspection of areas surrounding Hana Airport with negative results as did Chun and Dillon (2007) during an examination of a small lot with Hana Town. Dixon (1998) reported the discovery of an apparently isolated human cranium from a cinder quarry at the base of Pu'u Olopawa.

Table 2. Previous archaeological work

Author	Year	Location	Ahupua'a	Study Type*	Area (ac)	Elev. (ft)	Prior Use	No. Sites	Hab Feas	Ag Feas	Burial Feas.	Ritual Feas.	Fish Pond	Historic Feas
Cordy/ Kolb	1970/ 1990	Coastal	Honomaele	IS	9	0-40	Pasture	13	6		3+	22+		2+
Pearson	1970	Coastal	Honokalani, Wakiu	IS	83	0-40	Pasture	5	14	4?	Many	1		4
Bevacqua	1972	Coastal Plain	Wakiu	RS	16		?	1	1					
Morton & Lum Ho/ Kennedy	1975/ 1984	Coastal-Coastal Plain	Wakiu, Kaeleku	RS	364	0-200	Pasture ?	1			Many	1		
Landrum	1984	Coastal	Kawaipapa	RS	14	70-90	?	0						1
Cleghorn and Rogers (Cleghorn and Flynn)	1987	Coastal, Lower Slopes	Haneoo to Wananalua	RS	581	0-200	Cane & Pasture	57	17	14+	Many	25	8	11+
Cleghorn & Flynn	1989	Coastal Plain	Honomaele	RS	126	0-70	Cane & Pasture	14	3	24+	5+	1+		1+
Kennedy	1990	Coastal	Kawaipapa	IS	1	0-10	?	1				1		1?
Borthwick et al.	1992	Lower Slopes	Haneoo, Aleamai, Papaauhau Oloewa	IS	400	200-760	Cane & Pasture	51	16	15+	6?	1		42+
Henry and Graves	1993	Lower Slopes	Kawaipapa	IS	10	160-200	Cane & Pasture	4		1				7
Kolb	1993	Coastal/ Lower Slopes	Hamoa	IS	51	0-440	Cane & Pasture	18	2	63+	1+	4		1
Masterson et al.	1997	Coastal	Haneoo	IS	1.5	0-20	?	5	1		6+	1	2	2
Bushnell and Hammatt	2000	Lower Slopes	Kaeleku	IS	34	150-350	Cane & Pasture	0						
Haun and Henry	2000	Lower Slopes	East Honomaele	IS	125	80-480	Cane & Pasture	4			1			6
Haun and Henry	2002	Lower Slopes	Honokalani, Waiku, Kawaipapa	IS	72.8	0-40	State Park	59	69	6	2	16		5
Chun and Dillon	2007	Coastal	Kawaipapa	AS	0.06	0-10	Parking area & Beach access	0						
Shefcheck and Dega	2007	Coastal	Wananalua	IS	37	80-480	Pasture	1						1
				Total	**1816**			**234**	**60**	**128+**	**20+**	**73+**	**10**	**78+**

*IS=Inventory Survey, RN=Reconnaissance Survey, AS=Assessment

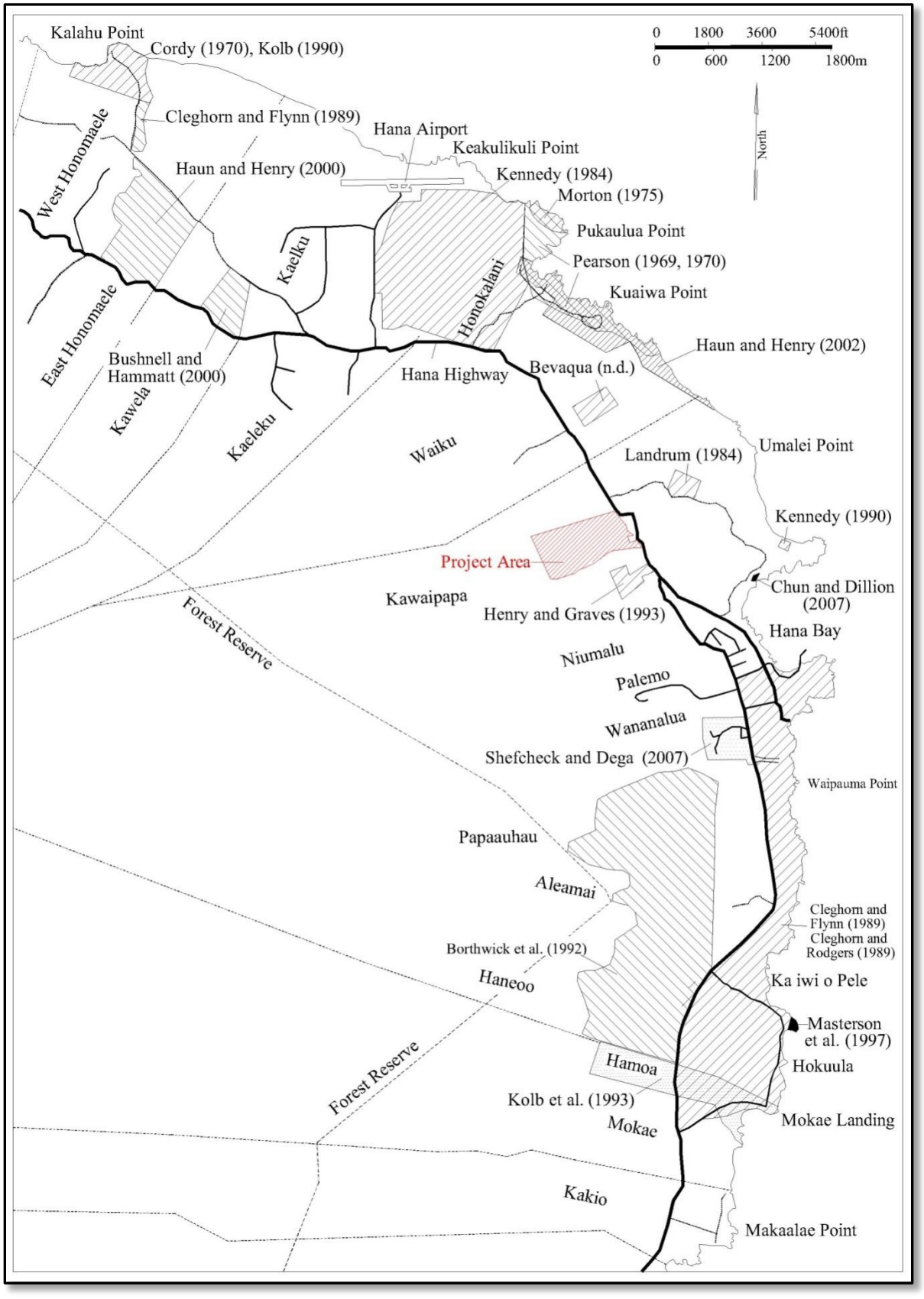


Figure 9. Previous archaeological work

Orr (1990) reviewed previous studies by Walker (1931), Ashdown (1971), Nakkim (1970), and others in her report on *heiau* of Hana. She lists 34 *heiau* in the eleven miles of Hana's shoreline between Kea'a Beach to the north and Pu'uiki to the south. Many of the sites have been destroyed. The data indicate that 12 were medium-sized, *mapele*, *heiau*; six were large, possible *luakini*, *heiau;* six were shrines, *ko'a*; and two were places of refuge, *pu'uhonua*. The distribution of these sites is not uniform within Hana District. The majority of *heiau*, 30 sites, are situated near Hana Town and along the coast to the south of town. Of these, roughly two-thirds are situated on the coast and the remainder are situated at the base of the lower mountain slopes.

Walker (1931) described Ohala Heiau (Site 104) as a 4 ft high platform that was 110 ft long and 75 ft wide. He noted numerous pits on the *heiau* and reported that informants said the sound of drums could be heard on certain nights coming from the site. Pearson (1970) conducted a survey of Wai'anapanapa State Park in Honokalani and Wakiu. The survey covered an area of approximately 83 acres between the coast and approximately 40 ft elevation. The survey identified 34 features that were grouped into five complexes of related features: a *heiau* and caves, fishing shelters (caves), markers (*ahu*) and a coastal stepping-stone trail, inland permanent house sites and enclosures, and graves or cemeteries. Pearson also identified a pictograph rendered in red ochre. A network of walls enclosing what were reported to be historic house sites was not recorded. No excavations were conducted. The sites were interpreted to be prehistoric to historic period in age. Haun and Henry (2002) returned to Wai'anapanapa and relocated the sites noted by Pearson (1970) along with a number of newly identified sites and features. This study documented a total of 59 sites with 119 features within the park.

The survey reports in *Table 2* cover over 1,800 acres of Hana District identifying 234 sites. The survey locations are categorized as "Coastal", "Coastal Plain", and "Lower Slopes". The coastal plain is defined here as the broad gently sloping plain between the shoreline and the lower mountain slopes between 'Ula'ino and Hana Town. South of Hana Town the coastal zone borders the lower slopes. To aid in reconstructing settlement patterns, features were quantified by probable age and function. Traditional Hawaiian features were categorized as habitation, agricultural, burial, ritual, and fishpond. Historic features were not segregated by function. Features not clearly assignable to these categories were omitted. The following discussion summarizes the studies beginning in the north and proceeding south.

Several studies have been conducted in the coastal and coastal plain portions of West Honoma'ele (Cordy 1970, Kolb 1990, Cleghorn and Flynn 1989). Cordy (1970) cleared and mapped Pi'ilanihale Heiau and surveyed the surrounding area. The survey identified two house platforms, a house site, three graves, a circular pit, three walls, a complex consisting of a wall, platform and enclosure; and a large enclosure, which formerly contained a number of houses. Other identified features, which were not recorded, consist of a post-1950s house site and a cemetery with at least 14 historic graves. The house site and cemetery are situated on top of the cliff at Kalahu Point. The cemetery and Pi'ilanihale Heiau were also described by Nakkim (1970).

Kolb (1990) conducted excavations at Pi'ilanihale Heiau, which he says is the largest *heiau* in Hawai'i. The excavations identified ritual and habitation areas and four major building episodes. Four radiocarbon age ranges span the period between A.D. 1270 and the mid-1900s. Kolb suggests that the complex may also have served as a chiefly residence.

Cleghorn and Flynn (1989) conducted a survey of Kahanu Gardens, which surrounds the area surveyed by Cordy. The report also describes nine sites recorded on Hana Ranch lands south of Hana Town. At Kahanu Gardens, the survey identified a boulder with cobbles piled on top, a retaining wall, an upright stone, two stone alignments in a stream bank, a low wall, two terraces, a buried stone alignment, a C-shape wall, and four feature complexes. One complex, Site 50-Ma-A10-23, consists of an L-shaped, linear mound, pavement, and overhang associated with hammerstones, cores, and flakes. Site 50-Ma-A10-24 consists of three modified boulders on a rocky beach. One boulder has indentations believed to be an unfinished *papamu*, one has four depressions thought to be bait cups, and the other boulder has a petroglyph of a

human form. Site 50-Ma-A10-25 consists of three platforms believed to be graves or a shrine. Site 50-Ma-A10-26 consists of a modified outcrop, a wall, and an enclosure. A hammerstone and basalt core and flake were collected from the site. No other interpretations are offered and no excavations were conducted.

Haun and Henry (2000) conducted an inventory survey of a 125 acre parcel situated between 80 ft and 480 ft elevation in East Honoma'ele. The survey identified four sites with seven features consisting of two complexes of historic sugar cane plantation railroad features, a historic road, and a burial. The skeletal remains represent an isolated late prehistoric to early historic burial. The railroad features were constructed before 1915 and abandoned by the 1920s. The roadbed was probably constructed after the 1920s, possibly as late as the 1960s.

Bushnell and Hammatt (2000) conducted an inventory survey of a 34-acre parcel in Kawela between the Hana Highway and 'Ula'ino Road. Their project area ranges in elevation from 150 ft to 300 ft. No sites were identified, although piles of stone were noted throughout the area. The absence of sites and piles of stone are attributed to plantation-era cultivation.

Kennedy (1984) conducted a survey of approximately 364 acres between the coast and 200 ft elevation in Kawela and Wakiu Ahupua'a. One site, a large complex of burial features, was recorded, which was previously identified by Pearson (1970). The survey identified 364 features consisting of filled crevices, platforms, *ahu*, incomplete graves, and a possible religious structure, a multi-tiered platform with upright stones. No counts for feature types are given and the features are not numbered on the site map. The cemetery is presumed to have been used between 1600 and the late 1800s. No excavations were conducted. Morton and Lum Ho's (1975) hand-written notes and maps appear to describe the seaward portion of the burial site.

Bevacqua (1972) conducted a survey of approximately 16 acres situated between 40 ft and 100 ft elevation in Wakiu. Only one site, a partially destroyed habitation, was identified. Landrum (1984) conducted a reconnaissance survey of 14-acre parcel in Kawaipapa situated between 70 ft and 90 ft elevation. The only site identified was a segment of the old government road. Kennedy (1990) conducted a reconnaissance survey of an approximately 1.6 acre parcel next to the coast in Kawaipapa. The survey identified Kauleiula Heiau, which was previously described by Walker (1931). A portion of the *heiau* was previously used for a historic house. No excavations were conducted.

Henry and Graves (1993) conducted a survey of a 10-acre parcel situated between 160 ft and 200 ft elevation in Kawaipapa. The survey identified two historic ranch walls and two complexes of features. One complex consisted of two enclosures, an L-shaped alignment, a terrace, and a platform. Excavations were conducted in several features at the site. The excavations produced food remains and historic artifacts indicating a historic habitation use for the site. The other complex consisted of a historic wall and an agricultural terrace.

Cleghorn and Rogers (1987) conducted background research for Hana Ranch lands seaward of the coastal highway between Hana Town and Hamoa. The project area of 581 acres ranges from sea level to approximately 200 ft elevation. Thirty-two sites were identified through background research, examination of aerial photographs, and field inspections. At least 12 of these sites, mostly *heiau* identified by Walker (1931), had been destroyed. A subsequent survey of the "coastal fringe of the Hana Ranch lands" (Cleghorn and Flynn 1989:5) identified nine additional sites. It is unclear from the reports whether the entire 581-acre area was systematically covered. The sites include eight fishponds, at least 25 ritual features, numerous burials, more than 14 agricultural features, and at least 17 habitation features. The habitation features include temporary shelters, primarily in caves, and probable permanent habitations represented by enclosures and platforms. Probable agricultural features consist of terraces, pits, walls, and mounds. Historic features included burials, habitations, and plantation infrastructure. No excavations were conducted.

Borthwick, Robins, Folk, and Hammatt (1992) conducted a survey of 400 acres of Hana Ranch land between approximately 200 ft and 760 ft elevation. The survey identified 51 sites consisting of at least 80 features. Most features consisted of ranch and sugar cane plantation remains including walls, enclosures, platforms, terraces, roads, and a railroad grade. Probable traditional Hawaiian sites included habitations, agricultural features, a *heiau*, and burials. Most traditional sites were described as remnants disturbed by historic activity. Two intact habitation sites were interpreted to be temporary habitations associated with agricultural activity. Probable traditional agricultural features included terraces, pits, walls, enclosures, and mounds. Excavations were conducted at several sites. Three radiocarbon samples produced age ranges of A.D. 1345-1650, 1425-1950, and 1640-1950.

Masterson, McDermott, and Hammatt (1997) conducted a survey and subsurface trenching in a 1.5-acre parcel on the coast in Haneo'o. The five recorded sites consist of Haneo'o Fishpond Complex, historic graves, a historic house site, a ranch wall, and a hearth. Excavations yielded food remains and artifacts consisting of both historic and traditional Hawaiian types.

Kolb (1993) reports research conducted in the *ahupua'a* of Hamoa. The research included survey of 51 acres inland of the highway and an unspecified acreage between the highway and the coast. The survey identified 18 sites consisting of more than 70 features. The majority of features were agricultural terraces, walls, and pits assigned an indeterminate "prehistoric/historic" age. Ritual sites consisted of three named *heiau* and a notched enclosure. Habitation features consisted of a cultural deposit in a sand dune and a rectangular enclosure. Excavations at several sites produced seven charcoal samples that yielded age ranges spanning the 1200s to mid-1900s.

Shefcheck and Dega (2007) conducted a survey of a 37-acre parcel in Wainanalua Ahupua'a and excavated a series of seven stratigraphic trenches. They identified one site with seven features consisting of a historic trash dump and a wall, two enclosures, a terrace, a foundation, and a portion of railroad track.

Summary of Land Use

Overall, the archaeological surveys conducted in Hana District have identified a relatively small sample of the traditional Hawaiian sites that were formerly present. The massive impacts of sugar cane cultivation and ranch-related pasture improvement and infrastructure have obliterated much of the pre-contact cultural landscape. Numerous *heiau*, burial sites, and fishponds along the coast attest to the presence of a substantial pre-contact population. Radiocarbon dating results indicate settlement by at least the 1200s with most results post-dating the mid-1400s. The first and largest building episode of Pi'ilanihale Heiau in West Honoma'ele dates to between 1270 and 1440 and indicates the presence of a substantial supporting population.

Habitation sites, both temporary and permanent, are present along the coast. Temporary habitations consist of caves, overhangs, and simple walled structures. Permanent habitations are represented by walled enclosures and platforms. Inland habitation sites on the lower mountain slopes are primarily temporary occupations, probably associated with agricultural activity.

Agricultural sites consist of terraces, walls, mounds, pits, and alignments. Typically these features are only found in rocky areas that were not affected by sugar cane cultivation. The agricultural features represent a pattern of informal agricultural plots and not formal fields. Opportunistically placed, informal plots are typical in agriculturally marginal, rocky areas elsewhere in Hawai'i. The absence of formal fields may be a bias resulting from historic modification of the more productive areas. Alternatively, conditions may not have required or resulted in the development of formal fields bounded by walls and terraces. The ample rainfall and soil of the district made agricultural use readily productive. Historic accounts attest to the bounty of agricultural produce, primarily grown without irrigation. Cultigens included breadfruit, taro,

sweet potatoes, yams, *olona, wauke, 'awa*, and bananas. Upland areas above 1,000 ft elevation were cultivated when seasonal droughts affected the lowlands.

The distribution of heiau and fishponds along Hana's coast between Kea'a Beach and Pu'uiki shows a marked increase in density from Hana Town south. The northern coast from Hana Town to 'Ula'ino has relatively few *heiau*. The area differs environmentally from the southern coast. It is characterized by a broad coastal plain derived from relatively recent lava flows. Unlike the south coast, the coastal settlements are separated from the lower mountain slopes by a broad gently sloping plain up to 6,000 m in width. There are only three major drainages crossing the plain at 'Ula'ino, Honoma'ele and Kawaipapa. If the better watered lower mountain slopes were the most productive agricultural area, then the greater distance from the coast may have made the northern coast a comparatively less favored area of occupation. LCA claims appear to support a difference between the north and south. The Waihona 'Aina database (Waihona 'Aina Corp. 2000) lists 14 LCA claims (8 awarded) in the nine *ahupua'a* from Nahiku to Kawaipapa. There were 72 claims (42 awarded) in the twelve *ahupua'a* from Niumalu to Pu'uiki.

Legendary and traditional accounts document the importance of Hana District as a seat of social and political power, especially in relations between the chiefs of Maui and Hawai'i Islands. This prominence continued into early historic times. Historic habitations and burial sites were scattered along the coast. Small areas of subsistence agriculture apparently continued in use into the 1900s; however, for nearly 100 years between the 1840s and 1940s sugar cane cultivation was the dominant form of land use. Nearly all readily cultivated areas of the lower mountain slopes and coastal plain were put into production by up to six plantations. Cartographic and documentary evidence illustrate the aggressive acquisition of land for cultivation and development of plantation infrastructure. Roads, flumes, and a railroad system were developed by the plantations. Mill operations, harbor facilities, and a series of laborer camps were established.

The original government road, Okaka Pu'u Road, in Ka'eleku, Kawela, and Honoma'ele followed the route of today's 'Ula'ino Road. The upper Government Road, today's Hana Highway west of the junction with 'Ula'ino Road, was constructed between 1894 and 1900. By 1915, a small settlement was present at the junction of the roads. The first railroad tracks in the area are shown on a map dating to 1915. In the waning years of the plantation, cultivation was focused in areas closest to the transportation system (McCall 1940). After 1945, the former sugar cane lands were converted to pasture for Hana Ranch.

Project Expectations

Prehistoric use of the project area is potentially evidenced by permanent and temporary habitation sites dating to as early as the 1200s. Such sites should become more common after the mid-1400s until the early historic period. Probable site types include temporary habitation sites (caves and small walled shelters), permanent habitations (enclosures, platforms, and terraces), trails, burial platforms, *heiau*, and agricultural features, such as terraces, enclosures, pits, and mounds.

Sites dating to the 1800s and early 1900s would include a few scattered examples of the agricultural and habitation sites mentioned above. Sugar cane plantation-related sites are also expected. By the 1940s, traditional agricultural and habitation sites should be rare. Ranching activity would be potentially evidenced by walls and corrals.

FINDINGS

The archaeological inventory survey identified 26 sites with 169 features. The sites include 13 single feature sites and 13 complexes of features. The identified features consist of 112 stone-lined pits, 19 walls, 12 terraces, 6 modified outcrops, 5 mounds, 3 enclosures, 2 artifact scatters, 2 platforms, 2 pavements, 2 concrete troughs and one each of the following; concrete basin, concrete foundation, railroad grade and road. Feature function includes agriculture (n=145), permanent habitation (9), livestock control (7), animal husbandry (4), transportation (2) and historic habitation (2). The 26 sites are summarized in *Table 3* and their locations are illustrated in *Figure 10.*

Subsurface testing was undertaken in two locations during the study. The tested features consist of a permanent habitation platform (Site 6528, Feature C – TU-1) and a permanent habitation pavement (Site 6545, Feature A – TU-2). The results of these excavations are presented below in the appropriate site description.

The six functional categories noted within the project area are summarized below. Detailed site descriptions are presented in the following section.

Summary of Functional Feature Types

Agricultural Features

As indicated above, the most common functional feature type identified within the project area is agriculture (n=145 or 86% of total). The majority of these features are stone-lined pits (n=112). The remaining agricultural features are terraces (11), walls (11), mounds (5), modified outcrops (4) and enclosures (2). The 145 agricultural features were identified at 18 of the 26 sites.

The physical characteristics of the stone-lined pit features are summarized in *Table 4.* These features probably functioned as cultivation pits that were excavated to retain moisture and nutrients. The pits range in length from 0.67 to 3.1 (average 1.42 m), in width from 0.57 to 2.75 m (average 1.16 m) and in depth from 0.25 to 1.1 m (average 0.57 m). The pit floors consist of level soil with scattered cobbles.

The remaining agricultural features are summarized in *Table 5*. The agricultural terraces functioned to retain soil on slopes for planting. The enclosures and the walls potentially served to delineate the boundaries of garden plots and the mounds and modified outcrops are interpreted as agricultural clearing-related features.

Permanent Habitation

Nine permanent habitation features were identified at three sites (Sites 6528, 6545 and 6549). The physical characteristics of these features are summarized in *Table 6*. The permanent habitation features consist of house foundations (n=5), one special purpose structure, an associated ancillary feature and two crude stone piles interpreted as site furniture based on proximity to other features of the site. The interpretation of these three sites as permanent habitations is based on substantial construction (faced sides, paved surfaces) and feature area following Cordy's (1981) model for traditional Hawaiian for residential structures.

Livestock Control

Seven features of three sites (Sites 6547, 6548 and 6551) are interpreted as historic livestock control walls. These walls along with the other historic sites/features noted in the project area are

Table 3. Summary of identified sites

SIHP Site No.	Type	Function	Age	No. of Feas.	Formal Type													Function						H & A Temp. Field No.
					Pit	Wall	Terrace	Modified Outcrop	Mound	Endosure	Artifact Scatter	Platform	Pavement	Concree Trough	Concrete Basin	Concrete Foundation	Railroad Grade	Road	Agriculture	Perm. Habitation	Livestock Control	Animal Husbandy	Transportation	Historic Habitation	
4964	Railroad Grade	Transportation	Historic	1													1						1		23
6527	Terrace	Agriculture	Prehistoric/ Historic	1			1												1						44
6528	Complex	Permanent Habitation	Prehistoric	5				2		1		2								5					3, 4, 5
6529	Mound	Agriculture	Prehistoric	1					1										1						6
6530	Artifact Scatter	Historic Habitation	Historic	1							1													1	7
6531	Complex	Agriculture	Prehistoric	2					2										2						8, 9
6532	Complex	Agriculture	Prehistoric	3				2	1										3						11
6533	Complex	Agriculture	Prehistoric	2				1	1										2						10
6534	Complex	Agriculture	Prehistoric	2			2												2						13, 15
6535	Terrace	Agriculture	Prehistoric	1			1												1						14
6536	Modified Outcrop	Agriculture	Prehistoric	1				1											1						12
6537	Complex	Agriculture	Prehistoric	6	4	1				1									6						16/17
6538	Wall	Agriculture	Prehistoric	1		1													1						19
6539	Wall	Agriculture	Prehistoric	1		1													1						18
6540	Complex	Agriculture	Prehistoric	12	11		1												12						20
6541	Pit	Agriculture	Prehistoric	1	1														1						21
6542	Terrace	Agriculture	Prehistoric	1			1												1						22
6543	Complex	Agriculture	Prehistoric	58	58														58						24
6544	Complex	Agriculture	Prehistoric	2		1	1												2						28
6545	Complex	Permanent Habitation	Prehistoric	2		1							1							2					29, 30
6546	Road	Transportation	Historic	1														1					1		25
6547	Wall	Livestock Control	Historic	1		1															1				45
6548	Complex	Livestock Control	Historic	4		4															4				31,42,43
6549	Complex	Permanent Habitation	Prehistoric	2						1			1							2					1
6550	Terrace	Agriculture	Prehistoric	1			1												1						33
6551	Complex	Agriculture, Livestock Control, Animal Husbandry, Historic Habitation	Prehistoric/ Historic	56	38	9	4				1			2	1	1			49		2	4		1	32, 34-41
			Total	**169**	**112**	**19**	**12**	**6**	**5**	**3**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**145**	**9**	**7**	**4**	**2**	**2**	

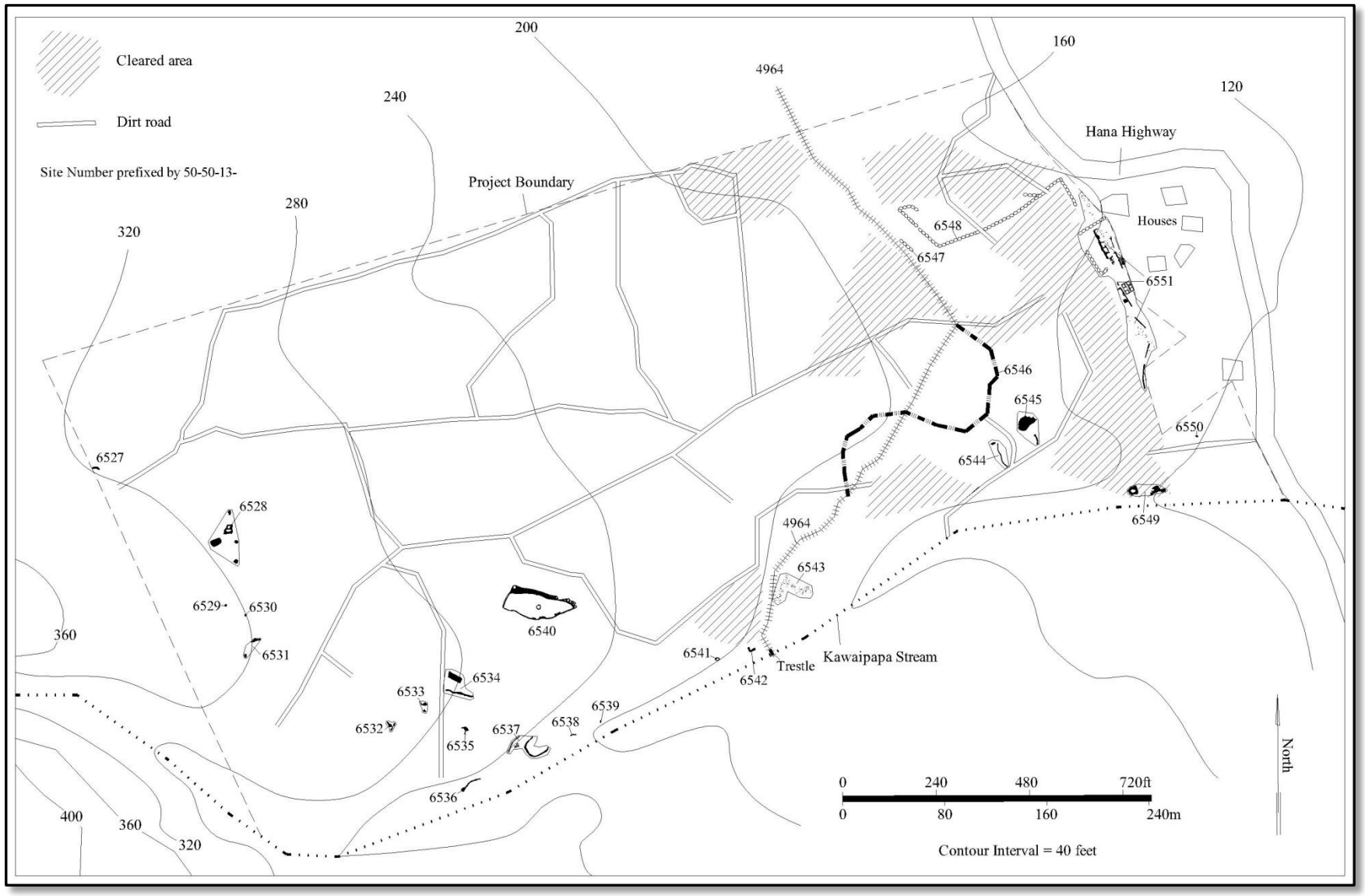


Figure 10. Site location map

Table 4. Summary of agricultural pits

Site	Feature	Length (m)	Width (m)	Depth (m)	Elevation (ft)	Field No.
6537	C	0.91	0.83	0.50	238	17b
6537	D	0.81	0.63	0.40	238	17c
6537	E	0.67	0.57	0.35	238	17d
6537	F	0.91	0.60	0.40	238	17e
6540	B	2.48	1.95	0.70	262	20b
6540	C	1.30	1.28	0.40	253	20c
6540	D	1.24	1.06	0.70	252	20d
6540	E	1.98	1.27	0.80	251	20e
6540	F	1.33	1.09	0.80	251	20f
6540	G	1.19	0.78	0.50	250	20g
6540	H	1.17	0.73	0.60	250	20h
6540	I	1.28	0.81	0.50	250	20i
6540	J	1.41	0.85	0.70	249	20j
6540	K	1.65	1.07	1.00	249	20k
6540	L	3.10	2.75	0.25	257	20l
6541	-	2.70	1.50	0.90	200	21
6543	A	1.05	0.85	0.60	194	24a
6543	B	0.98	0.80	0.55	193	24b
6543	C	1.05	0.91	0.45	192	24c
6543	D	1.12	1.07	0.70	192	24d
6543	E	1.16	1.07	0.60	193	24e
6543	F	1.21	1.10	0.55	194	24f
6543	G	1.15	1.06	0.45	192	24g
6543	H	0.92	0.78	0.60	192	24h
6543	I	0.98	0.86	0.35	192	24i
6543	J	1.39	1.16	0.50	193	24j
6543	K	1.17	0.92	0.50	192	24k
6543	L	0.93	0.78	0.70	192	24l
6543	M	1.07	0.98	0.65	193	24m
6543	N	1.14	0.94	0.60	192	24n
6543	O	1.10	0.82	0.60	192	24o
6543	P	1.13	1.00	0.55	193	24p
6543	Q	1.12	1.06	0.70	193	24q
6543	R	1.18	1.06	0.85	193	24r
6543	S	1.47	0.97	0.60	192	24s
6543	T	0.92	0.88	0.50	191	24t
6543	U	1.25	0.97	0.50	191	24u
6543	V	1.19	1.17	0.45	193	24v
6543	W	1.29	1.23	0.60	193	24w
6543	X	1.28	1.11	0.60	192	24x
6543	Y	1.69	1.56	0.50	192	24y
6543	Z	1.40	0.94	0.50	192	24z
6543	AA	1.13	1.05	0.70	190	24aa
6543	AB	1.21	1.11	0.75	190	24ab
6543	AC	1.36	1.35	0.70	189	24ac
6543	AD	1.30	1.25	0.45	190	24ad
6543	AE	1.26	0.81	0.40	190	24ae
6543	AF	1.21	1.13	0.60	189	24af
6543	AG	1.46	0.93	0.60	188	24ag
6543	AH	1.00	0.83	0.55	188	24ah
6543	AI	1.30	1.27	0.50	188	24ai
6543	AJ	1.17	1.13	0.55	187	24aj
6543	AK	1.53	0.92	0.60	187	24ak
6543	AL	0.92	0.85	0.45	186	24al
6543	AM	1.06	0.93	0.70	186	24am
6543	AN	1.31	0.85	0.60	186	24an
6543	AO	1.12	0.94	0.50	186	24ao
6543	AP	0.96	0.81	0.35	185	24ap
6543	AQ	1.07	0.93	0.35	185	24aq
6543	AR	1.38	0.98	0.50	184	24ar
6543	AS	1.18	0.91	0.70	184	24as

Site	Feature	Length (m)	Width (m)	Depth (m)	Elevation (ft)	Field No.
6543	AT	0.95	0.77	0.55	184	24at
6543	AU	0.98	0.88	0.50	184	24au
6543	AV	0.90	0.79	0.60	184	24av
6543	AW	1.07	0.85	0.60	183	24aw
6543	AX	0.97	0.94	0.45	183	24ax
6543	AY	1.03	0.90	0.40	183	24ay
6543	AZ	1.61	0.96	0.70	183	24az
6543	BA	1.12	1.06	0.85	182	24ba
6543	BB	1.13	1.12	0.60	182	24bb
6543	BC	1.94	1.50	0.50	182	24bc
6543	BD	1.39	0.96	0.50	182	24bd
6543	BE	1.44	0.89	0.45	181	24be
6543	BF	1.07	0.91	0.50	181	24bf
6551	A	2.45	2.08	0.45	161	40a
6551	B	2.15	1.35	0.55	161	40a
6551	C	1.65	1.60	0.5	161	40b
6551	D	2.60	2.55	0.45	161	40c
6551	E	1.85	1.44	0.6	162	40d
6551	F	1.75	1.23	0.4	161	40e
6551	G	1.28	1.05	0.7	161	40f
6551	H	1.47	1.46	0.7	161	40g
6551	K	1.74	1.16	0.50	158	40l
6551	L	1.45	1.05	0.60	156	40m
6551	M	1.59	1.46	0.50	157	40n
6551	N	1.73	1.17	0.40	157	40p
6551	O	1.54	1.10	0.50	157	40s
6551	P	1.38	0.81	0.45	156	40r
6551	Q	1.26	1.01	0.50	155	40q
6551	R	1.27	1.18	0.50	156	40t
6551	S	2.09	1.52	0.50	154	40u
6551	T	1.58	0.98	0.35	156	40v
6551	W	1.54	0.84	0.55	153	40x
6551	X	2.35	1.65	0.60	154	40y
6551	AA	1.44	1.29	0.70	153	40aa
6551	AB	1.29	1.16	0.70	153	40ab
6551	AC	1.26	1.04	0.60	153	40ac
6551	AF	1.63	1.42	0.50	152	40ad
6551	AN	2.10	1.95	0.50	148	34a
6551	AO	1.62	1.14	0.60	148	34b
6551	AP	0.96	0.83	0.30	147	34c
6551	AQ	2.04	1.33	0.85	147	34d
6551	AS	2.49	2.27	0.50	146	34e
6551	AT	2.94	2.36	1.00	146	34f
6551	AU	2.08	1.92	1.10	144	34h
6551	AV	2.11	2.10	0.60	145	34g
6551	AW	1.89	1.76	0.45	144	34i
6551	AX	1.10	0.93	0.60	143	34k
6551	AY	1.54	1.33	0.50	143	34l
6551	AZ	1.60	1.33	0.50	143	34m
6551	BA	1.68	1.29	0.50	143	34n
6551	BB	1.13	1.09	0.45	142	34p

Table 5. Summary of remaining agricultural features

Site	Feature	Type	Shape	Length (m)	Width (m)	Height (m)	Elevation (ft)	Construction	Field No.
6527	-	Terrace	Linear	5.95	0.62	0.80	319	Stacked and piled cobbles and small boulders - Metal cup present	44
6529	-	Mound	Oval	1.52	1.30	0.36	323	Stacked and piled cobbles and small boulders	6
6531	A	Mound	Linear	7.60	2.00	0.65	318	Piled cobbles and small boulders	8
6531	B	Mound	Oval	2.80	1.70	0.87	321	Piled cobbles and small boulders	9
6532	A	Modified Outcrop	Oval	1.48	1.05	0.70	290	Piled cobbles and small boulders	11a
6532	B	Modified Outcrop	Linear	2.35	1.06	0.45	289	Piled cobbles and small boulders	11b
6532	C	Mound	Linear	2.45	0.75	0.40	288	Piled cobbles and small boulders	11c
6533	A	Modified Outcrop	Oval	2.30	1.55	1.00	284	Piled cobbles and small boulders	10a
6533	B	Mound	Irregular	5.05	2.40	0.90	284	Piled cobbles and small boulders	10b
6534	A	Terrace	Rectangular	11.10	4.70	0.80	279-282	Stacked and piled cobbles and small boulders	15
6534	B	Terrace	Curvilinear	21.50	1.30	0.65	277-282	Stacked and piled cobbles and small boulders	13
6535	-	Terrace	L-shaped	5.40	2.30	0.80	262	Stacked and piled cobbles and small boulders	14
6536	-	Modified Outcrop	Linear	16.80	2.20	0.70	238	Stacked and piled cobbles and small boulders	12
6537	A	Enclosure	U-shaped	31.50	15.70	1.30	225-238	Stacked and piled cobbles and small boulders	16
6537	B	Wall	Linear	15.90	0.75	0.60	239-241	Stacked and piled cobbles and small boulders	17a
6538	-	Wall	Linear	4.60	0.70	0.75	220	Stacked and piled cobbles and small boulders	19
6539	-	Wall	Linear	2.50	0.85	0.70	205	Stacked and piled cobbles and small boulders	18
6540	A	Enclosure	Oval	56.00	20.80	1.30	249-267	Stacked and piled cobbles and small boulders	20a
6542	-	Terrace	L-shaped	3.90	2.40	0.90	196	Stacked and piled cobbles and small boulders	22
6544	A	Wall	Curvilinear	19.70	0.70	1.00	166-172	Stacked and piled cobbles and small boulders	28a
6544	B	Terrace	Oval	3.30	2.20	1.00	174	Stacked and piled cobbles and small boulders	28b
6550	-	Terrace	Oval	2.20	1.00	0.40	121	Stacked and piled cobbles and small boulders	33
6551	J	Terrace	Rectangular	11.40	3.20	0.20	157-160	Stacked and piled cobbles and small boulders	40i
6551	U	Terrace	Rectangular	4.50	3.85	0.60	156-157	Stacked and piled cobbles and small boulders	40j
6551	V	Wall	Linear	9.00	0.40	0.30	153-154	Piled cobbles and small boulders	40y
6551	Y	Terrace	Rectangular	4.70	4.20	0.30	155-156	Stacked and piled cobbles and small boulders	40k
6551	Z	Terrace	Rectangular	5.60	3.90	0.50	154-156	Stacked and piled cobbles and small boulders	40l
6551	AE	Wall	Linear	14.10	0.80	0.80	149-153	Stacked and piled cobbles and small boulders	40z
6551	AH	Wall	Linear	5.75	0.85	0.40	149-151	Stacked and piled cobbles and small boulders	40ae
6551	AM	Wall	Linear	17.30	0.78	0.40	148-150	Piled cobbles and small boulders	38b
6551	AR	Wall	Linear	11.80	0.85	0.60	144-146	Stacked and piled cobbles and small boulders	36j
6551	BC	Wall	Linear	10.60	0.65	0.40	142-143	Stacked and piled cobbles and small boulders	34a
6551	BD	Wall	Linear	19.60	0.80	0.90	143-144	Stacked and piled cobbles and small boulders	34b

Table 6. Summary of permanent habitation sites

Site	Feature	Formal Type	Shape	Substantial Construction	Area (sq m)	Elevation (ft)	Comments	Field No.
6528	A	Platform	Rectangular	Faced side, paved surface	53.0	319	Foundation for roofed structure	4a
6528	B	Enclosure	Rectangular	Faced sides	46.2	316	Foundation for roofed structure	4b
6528	C	Platform	Circular	Faced side, paved surface	6.9	313	Special purpose structure	4c
6528	D	Modified outcrop	Oval	None	6.1	314	Site furniture	3
6528	E	Modified outcrop	Oval	None	11.2	316	Site furniture	5
6545	A	Pavement	Irregular	Paved surface	99.5	173	Foundation for roofed structure	30
6545	B	Wall	Linear	None	7.5 m long	169	Ancillary Feature	29
6549	A	Enclosure	Oval	Faced sides	43.3	130	Foundation for roofed structure	1a
6549	B	Pavement	Irregular	Paved surface	52.7	118	Foundation for roofed structure	1b

summarized in *Table 7.* The walls are more substantially constructed than the prehistoric agricultural walls noted during the survey. These walls are built of stacked cobbles and small boulders with faced sides and core-filled cobble interiors. Wall height ranges from 0.8 to 2.1 m. The height and method of construction of these walls suggest that they were utilized to restrict the movement of cattle.

Table 7. Summary of historic sites

Site	Feature	Type	Function	Shape	Length (m)	Width (m)	Height (m)	Elevation (ft)	Construction	Field No.
4964	-	Railroad Grade	Transportation	Curvilinear	495.00	5.00	5.00	185-198	Sections are excavated into terrain, with other areas built up with stacked and faced cobble and boulder retaining walls	23
6527	-	Terrace	Agriculture	Linear	5.95	0.62	0.80	319	Roughly stacked and piled cobbles and small boulders - Retains area of level soil - Metal cup present	44
6530	-	Artifact scatter	Historic Habitation	n/a	0.50	0.50	0.00	320	2 glass bottles and a metal bowl	7
6546	-	Road	Transportation	Curvilinear	247.00	5.00	2.00	185-205	Sections are excavated into terrain, with other areas built up with stacked and faced cobble and boulder retaining walls	25
6547	-	Wall	Livestock Control	Linear	12.20	0.70	0.80	182	Stacked cobbles and small boulders with core-filled cobble interior	45
6548	A	Wall	Livestock Control	Linear	104.70	2.00	1.70	161-182	Stacked and faced cobbles and small boulders	43
6548	B	Wall	Livestock Control	Linear	59.60	1.70	1.70	182-184	Stacked and faced cobbles and small boulders	42
6548	C	Wall	Livestock Control	Linear	14.50	1.70	1.40	165-166	Stacked and faced cobbles and small boulders	43
6548	D	Wall	Livestock Control	Linear	38.00	2.00	2.10	161-162	Stacked and faced cobbles and small boulders	31
6551	I	Wall	Livestock Control	Linear	23.60	1.25	1.30	158-162	Stacked and faced cobbles and small boulders	41
6551	AD	Wall	Livestock Control	L-shaped	28.70	2.00	1.40	154-159	Stacked and faced cobbles and small boulders	32
6551	AG	Artifact scatter	Historic Habitation	Oval	6.40	4.20	0.00	149-151	Concentration of jars, bottles, ceramics, concrete blocks and metal	39
6551	AI	Concrete Foundation	Animal Husbandry	Rectangular	8.50	6.80	0.60	148-149	Formed concrete - Piggery	37a
6551	AJ	Concrete Trough	Animal Husbandry	Rectangular	2.45	0.70	0.22	151	Formed concrete - feed/water trough	37b
6551	AK	Concrete Trough	Animal Husbandry	Rectangular	2.38	0.70	0.32	148	Formed concrete - feed/water trough	37c
6551	AL	Concrete Basin	Animal Husbandry	Rectangular	2.90	2.55	0.10	149	Formed concrete - feed/water trough	38a

Animal Husbandry

Four features of one site (6551) were assigned an animal husbandry function (see *Table 7*). These features are made of formed concrete or mortared stone and are located along the seaward project area boundary adjacent to occupied homes. These features appear to be associated with an historic pig farm based on the shape and configuration of the features.

Transportation

Two sites are interpreted as historic transportation routes (see *Table 7*). These consist of the Site 4964 railroad grade and an historic road (Site 6546). The railroad grade functioned to transport sugarcane from the fields to the mill. The Site 6546 road appears to post-date the railroad grade and was likely built to provide access around narrow sections of the railroad grade for vehicles.

Historic Habitation

Two sites/features within the parcel are interpreted as the remnants of historic habitation sites (see *Table 7*). These consist of a concentration of two bottles and a metal bowl located in the inland portion of the project area (Site 6530) and a cluster of bottles, jars, glazed ceramics, metal and concrete blocks situated along the seaward project area boundary (Site 6551, Feature AG). These sites are interpreted as dating from the early to mid-1900s.

Site Descriptions

Site 4964

Site 4964 consists of a railroad grade that extends through the seaward portion of the project area between approximately 185 ft and 198 ft elevation. A section of this railroad grade was previously documented by Haun and Henry (2000) during a survey to the northwest of the present project area in Honoma'ele. The railroad grade was assigned its State Inventory of Historic Places (SIHP) site number during this previous study. The extent of the railroad grade along the Hana coast is illustrated in historic maps of the area (see *Figures 7 and 8)*. In *Figure 7,* it is referenced as a "Plantation Railroad" and in *Figure 8,* it is referred to as "Kaeleku Plantation RR". As illustrated in *Figure 8,* the railroad extends well south of the project area to Hana Town and beyond. The extent of the site within the current project area is depicted in *Figure 10.*

The portion of the railroad grade in the project area is 495 m in length, roughly paralleling the 185 to 190 ft elevation contour. The grade enters the parcel along the northern boundary at approximately 185 ft elevation and extends to the south-southeast for 196 m. It then angles to the southwest for 299 m where it encounters Kawaipapa Stream.

A bridge abutment is located along the northern bank of the stream. The abutment is constructed of stacked and mortared basalt cobbles and small boulders that have been partially coated in a concrete veneer (*Figure 11*). It measures 18.0 m long (north-south) by 7.0 m wide, with the sides ranging in height from 2.6 to 5.0 m. The western side of the structure has collapsed outward and the surface is comprised of soil, gravel and cobbles with scattered bricks and rusted metal.

The railroad grade has been generally cleared of ties and rails, although several twisted sections of small gauge metal rail were observed on and adjacent to the site. The grade ranges in width from 3.0 to 5.0 m. The grade evidences several construction techniques used to maintain a nearly level surface. Portions of the grade are excavated into the terrain where it passes over elevated areas. In low spots, the grade has been built up with sloping to near-vertical stacked and faced cobble and boulder retaining walls that range in height from 1.5 to 6.0 m. An example of a retaining wall is depicted in *Figure 12.* The retaining

Figure 11. Site 4964, bridge abutment in stream, view to north

Figure 12. Site 4964, railroad grade retaining wall, view to south

walls are generally present along the downslope side of the grade, although in several locations they are located along both the upslope and downslope sides, retaining the cut bank and grade, respectively.

Site 4964 is a historic transportation route used to transport sugar cane between the fields and the sugar mills. One historic map indicates the railroad was owned by the Kaeleku Sugar Company, which was established in 1905. The portion of the railroad within the project area is altered and in poor to good condition. Site 4964 is assessed as significant for information content (Criterion D) and as possessing characteristics of a type, period or method of construction (Criterion C).

Site 6527

Site 6527 is a crude stone terrace situated in the inland portion of the project area at approximately 319 ft elevation. The site is located just seaward of the inland project area boundary, on a soil-covered south-southwest facing slope. The terrace retaining wall is roughly stacked and piled cobble and small boulders. The wall is 5.95 m long (east-west) and 0.45 to 0.62 m wide (*Figure 13*). The wall is 0.2 to 0.8 m in height on the southern, downslope side and abuts an area of level soil on the upslope side. The western half of the retaining wall has collapsed outward and the eastern portion is relatively intact. An area of level soil (2.7 m long by 0.3 to 1.6 m wide) is located below the wall at the east end.

The level soil area above the wall is 2.3 to 5.75 m long and 0.3 to 1.2 m wide. A white metal enameled cup is present on the surface at the eastern end. The cup is 3 ¾ inch (9.5 cm) in diameter at the lip and 2 inches (5.1 cm) at the base. The word “German” is printed on the base of the cup. No other cultural remains are present at the site.

Site 6527 is interpreted as an agricultural feature used to retain a level soil area for planting. This interpretation is based on its formal type and its informal construction. The cup noted at the site indicates that it may have been utilized historically. Site 6527 is unaltered and in fair condition. The site is assessed as significant for its information content.

Site 6528

Site 6528 is a complex of five features located in the inland portion of the project area in an area of level soil between approximately 313 ft and 319 ft elevation. The features are two platforms (Features A and C), a double enclosure (Feature B), and two modified outcrops (Features D and E), located in an area 41.5 m long (north-south) and 22.0 m wide (*Figure 14*). The characteristics of these features are summarized in *Table 6.*

Feature A is a large roughly rectangular-shaped platform located along the western side of the site. It measures 7.75 to 8.55 m long (northeast by southwest) and 4.3 to 6.2 m wide. The northeast, southwest and portions of the northwest and southeast side of the structure have collapsed outward, ranging in height from 0.4 to 0.9 m above the surrounding ground surface. The remaining portions of the northwest and southeast sides, located in the eastern portion of the platform are intact, measuring from 0.6 to 0.7 m in height. The intact northwestern wall is faced.

The southwestern half of the platform surface is relatively level, but unpaved cobbles and small boulders. There is an oval-shaped depression in the surface that is 1.4 m long (north-south), 1.22 m wide and 0.5 m in depth. The surface in the northeastern portion of the platform is a level cobble pavement. No cultural remains are present at the feature.

Feature B is a large, double enclosure situated 4.75 m northeast of Feature A. The feature is roughly rectangular in shape and evidences overall dimensions of 7.0 m long (north-south) and from 5.05 to 6.6 m wide. The walls are built of stacked cobbles and small boulders that range in width from 0.63 to 2.65 m and in height from 0.3 to 0.8 m. Collapsed areas are present along the interior and exterior east and west

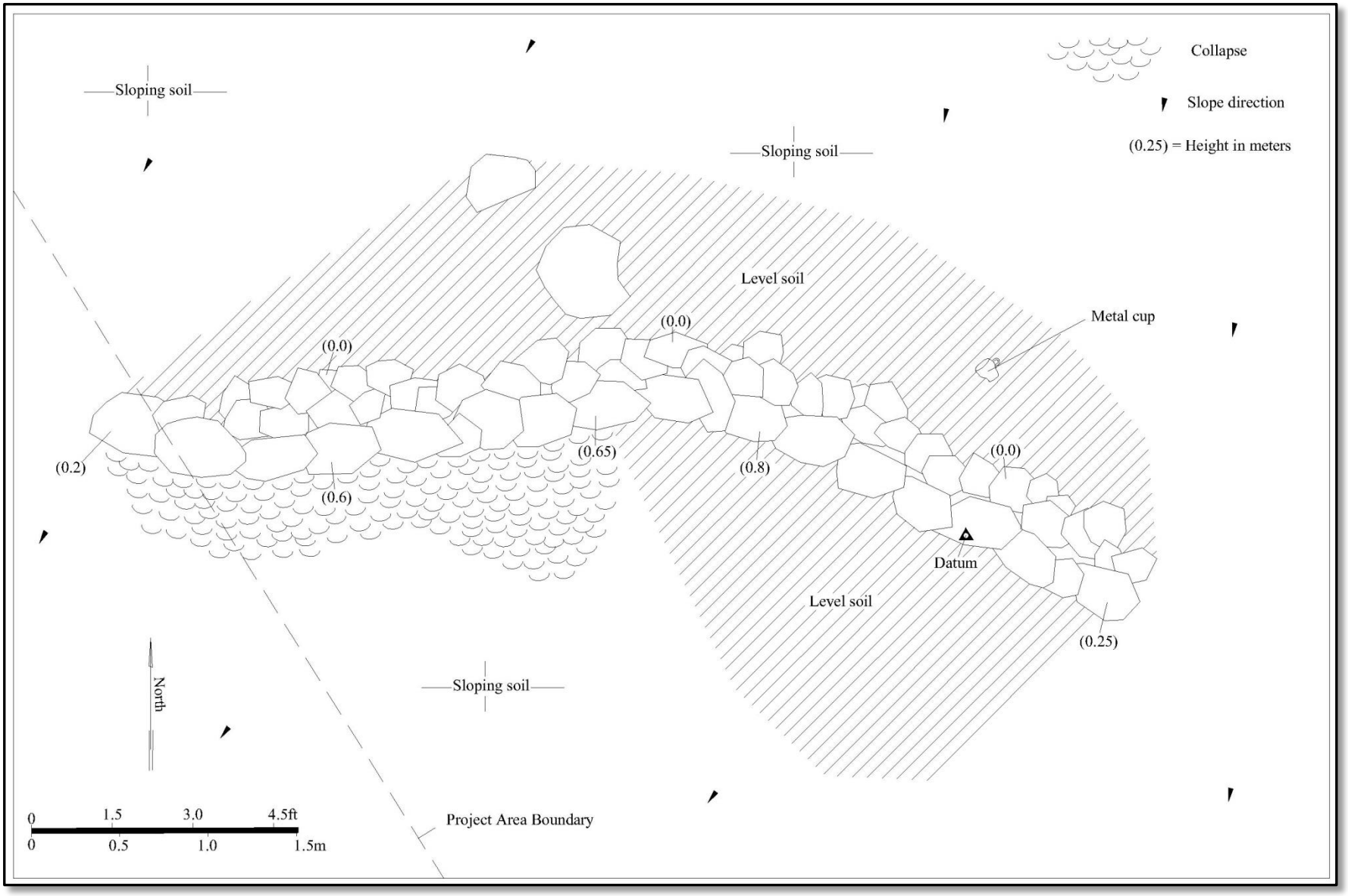


Figure 13. Site 6527 plan map

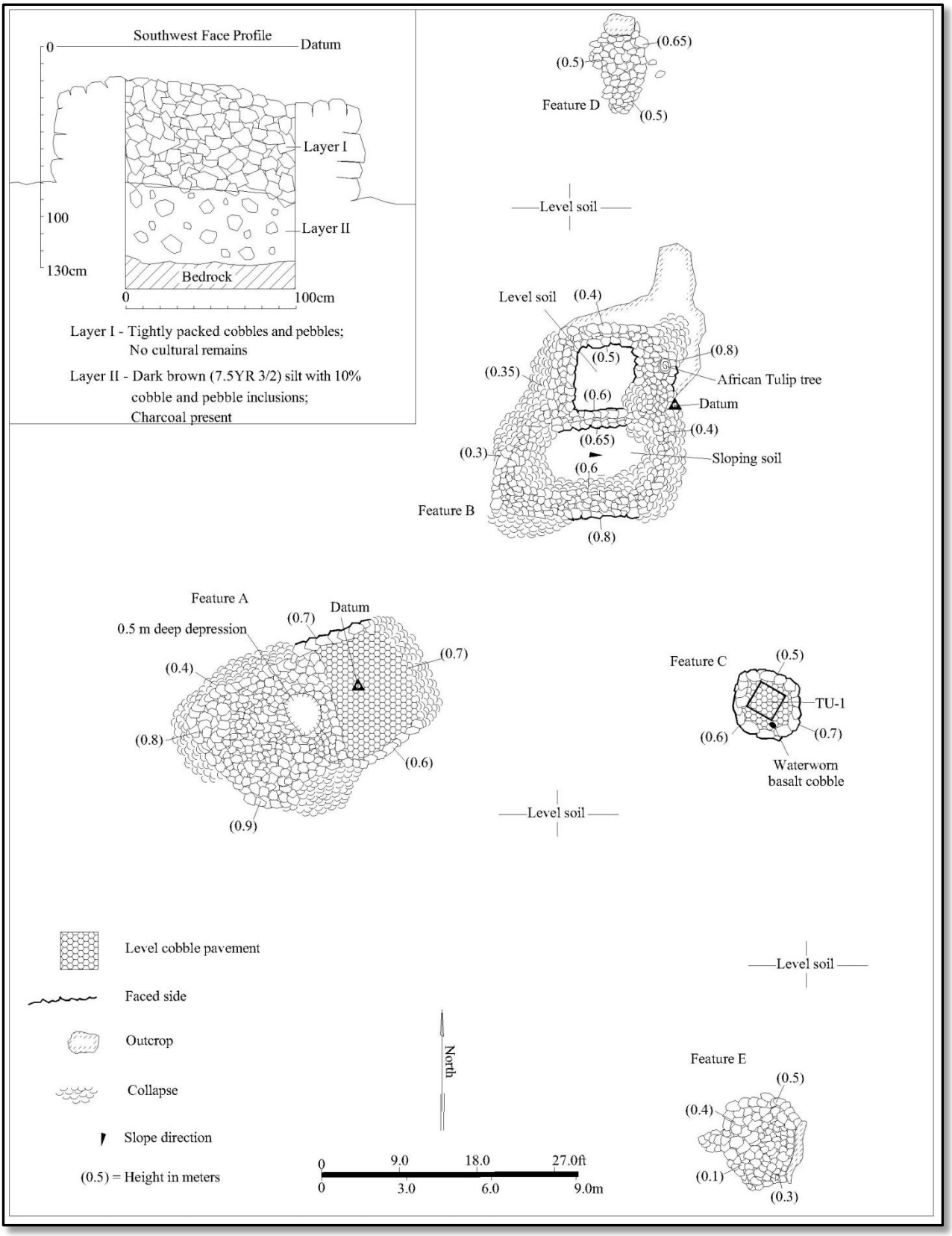


Figure 14. Site 6528 plan map and TU-1 southwest face profile

sides. The northern end of the structure is built on top of a low bedrock outcrop and an African tulip tree is growing out of the eastern wall.

There are two enclosed spaces within the structure; one at the north end and one at the south end. The northern enclosure is rectangular and is 2.3 m long (north-south) and 2.1 m wide, with facing present along the north, south, west and portions of the east sides. The floor is level soil. The southern compartment is oval-shaped and is 3.5 m long (east-west) and 1.85 m wide. The northern side of this enclosure is faced and the interior floor is soil that slopes gently to the east. No cultural remains are present at the feature.

Feature C is a nearly circular-shaped platform situated 6.0 m southeast of Feature B. The platform is 2.65 m long (northwest by southeast) and 2.6 m wide with sides built of stacked and faced cobbles and small boulders that range in height from 0.5 to 0.7 m. The surface is comprised of a level cobble pavement with no cultural remains present.

Due to its small size and substantial construction, a 1.0 by 1.0 m test unit (TU-1) was excavated in the platform to determine if human remains are present. This excavation revealed two layers over bedrock (see *Figure 14*). Layer I consisted of 0.54 to 0.63 m of tightly packed cobbles and pebbles with no cultural remains present. Layer II was comprised of 0.33 to 0.46 m of a dark brown (7.5YR 3/2) silt with 10% cobble and pebble inclusions. Cultural remains recovered from Layer II consisted of one fragment of charcoal (0.1 grams). No human remains are present.

Feature D is a crude modified outcrop located 7.4 m north of the Feature B enclosure. The feature is an oval-shaped pile of cobbles and small boulders, built on top of a low bedrock outcrop. It is 2.85 m long (north-south), 1.4 to 2.15 m wide, and 0.5 to 0.65 m high. The surface is uneven and irregular with no cultural remains present.

Feature E is a modified outcrop situated 12.5 m to the south of the Feature C platform. Feature E is oval-shaped and is 3.4 m long (north-south) and from 2.75 to 3.3 m wide. It is built against the western side of a raised bedrock outcrop. The sides of the feature range in height from 0.1 to 0.5 m and the surface is uneven and irregular. No cultural remains are present.

Site 6528 is interpreted as a complex of permanent habitation features. Features A and B likely functioned as the foundation for roofed structures based on their formal types, the substantial construction noted at each feature and their areas (Feature A = 53.0 sq m, Feature B = 46.2 sq m). The Feature C platform is interpreted as a special purpose structure based on its substantial construction, but small area (6.9 sq m). Features D and E likely served as site furniture, potentially a drying racks or storage areas based on the close proximity to the other features of the site. Site 6528 is unaltered and in fair condition. The site is assessed as significant for its information content.

Site 6529

Site 6529 is a roughly rectangular mound located in the inland portion of the project area 34.0 m south-southwest of Site 6528. The site is situated in an area of level soil at approximately 323 ft elevation. The mound is 1.52 m long (northeast by southwest) and 1.3 m wide. It is built of roughly stacked and piled cobbles and small boulders (*Figure 15*).

The mound surface is irregular and ranges in height from 0.3 to 0.34 m above the surrounding ground surface. No cultural remains are present at the site. Site 6529 is interpreted as an agricultural feature based on its formal type and its informal construction. The site is unaltered and in good condition. The site is assessed as significant for its information content.

Figure 15. Site 6529 mound, view to west

Site 6530

Site 6530 consists of a concentration of two glass bottles and a metal bowl located in the inland portion of project area at approximately 320 ft elevation. These materials are located on a rocky western slope in an area 0.5 m long by 0.5 m wide (*Figure 16*). One bottle is dark aqua colored glass and the other is a clear glass bottle. The aqua bottle is 12 inches (30.4 cm) in height with a 3-inch (7.6 cm) diameter base and a 1-inch (2.5 cm) diameter lip. The bottle is hand blown with a hand applied lip with dimples on each side for a lightning stopper closure. The base has a shallow kickup. Lightning stopper bottles were manufactured from the later 1870s until the 1920s when they were replaced by the crown cap (Fike 1998).

The clear glass bottle is 11 ¾ inches (29.3 cm) in height with a 3 ¼ inch (8.1 cm) diameter base and a 1 inch (2.5 cm) diameter lip. The bottle has a crown cap finish, the use of which originated in the 1920s (Fike 1998). The base of the bottle has "R & Co./45" on the base, which according to Toulouse (1971), indicates the bottle was manufactured by the Reed and Company of Massillon, Ohio.

The metal bowl is 6 inches (15 cm) in diameter at the top and 3.5 inches (8.75 cm) at the base. The bowl is coated with white enamel and the word "Germany" is printed on the base. Fragments of a rolled rim are present. Site 6530 likely represents the remnants of a single episode historic use of the location. Based on the age of the bottles, it is like that this use occurred in the 1920s during the decade when the two closure techniques overlapped. The site is unaltered and in fair condition. The site is assessed as significant for its information content.

Figure 16. Site 6350 historic artifacts, view from above

Site 6531

Site 6531 is a complex comprised of two mounds located in the inland portion of the project area 18.5 m south of Site 6530. The site encompasses an area 18.7 m long (northeast by southwest) and 7.0 m wide and is located at c. 318 to 321 ft elevation (*Figure 17*). **Feature A** is located at the northeast end of the site in an area of sloping soil that angles to the southeast. The mound is linear in shape and is 7.6 m long (east-west) and from 0.95 to 2.0 m wide. It is built of piled cobbles and small boulders and varies in height from 0.2 to 0.65 m. The surface of the mound is uneven and irregular and no cultural remains are present.

Feature B is situated 10.4 m to the southwest of Feature A in an area of level soil. This mound is roughly oval-shaped and is 2.8 m long (north-south) and from 0.6 to 1.7 m wide. The sides of the feature are from 0.4 to 0.8 m in height and the surface is irregular and uneven. No cultural remains are present at the feature. Site 6531 is interpreted as a complex of agricultural features based on the feature's formal type and insubstantial construction. The site is unaltered and in fair condition and is assessed as significant for its information content.

Site 6532

Site 6532 is a complex of two modified outcrops (Features A and B) and a mound (Feature C) located in the inland portion of the project area at approximately 288-290 ft elevation. The site is located on an east-facing slope and encompasses an area 6.7 m long (east-west) and 4.9 m wide (*Figure 18*). The **Feature A** modified outcrop is located at the northwest end of the site, built against the northwestern side of a raised outcrop. The feature is oval-shaped and is 1.48 m long (northwest by southeast) and 1.05 m wide, built of piled cobbles and small boulders. It ranges in height from 0.65 to 0.7 m and evidences and uneven, irregular surface. No cultural remain are present.

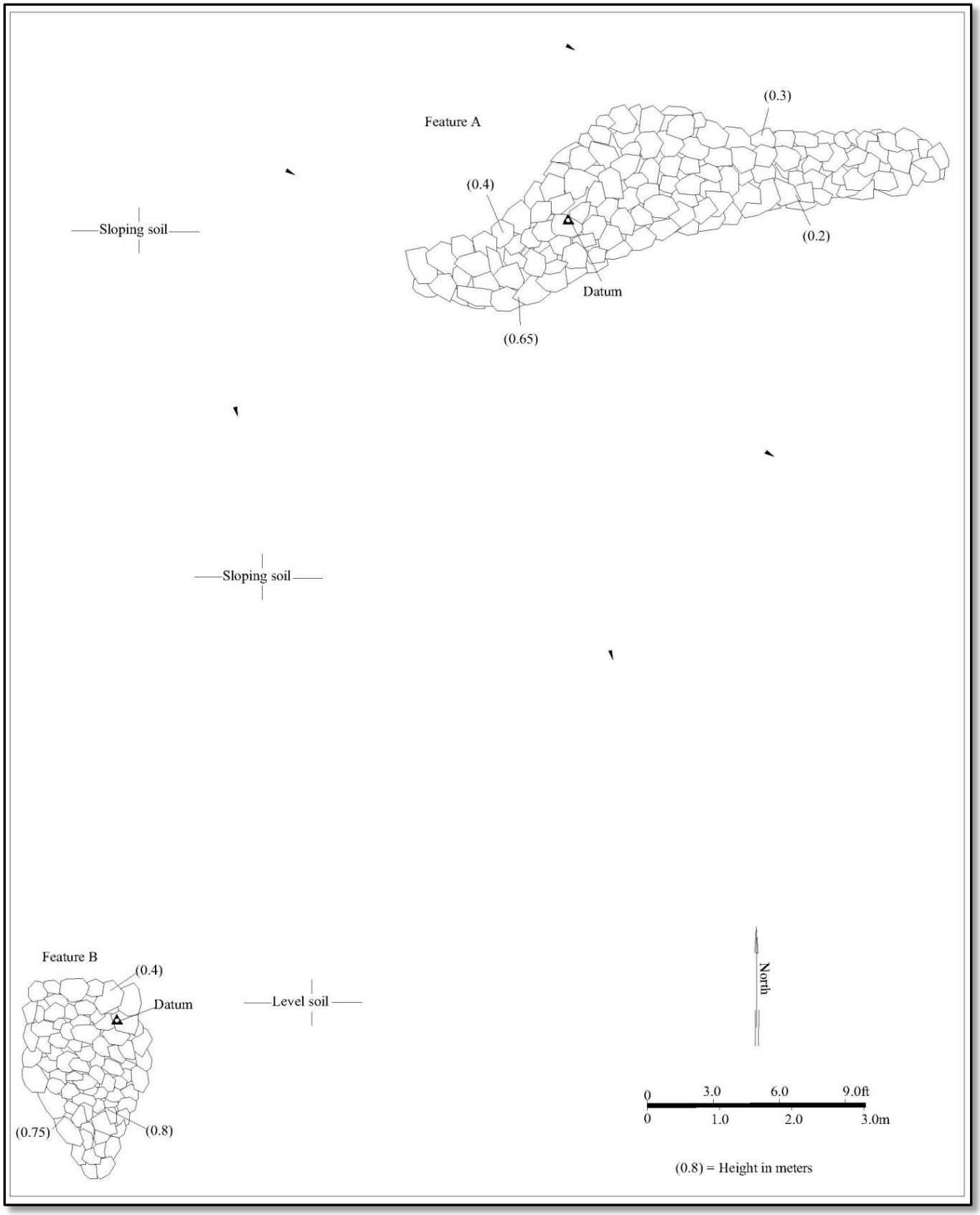


Figure 17. Site 6531 plan map

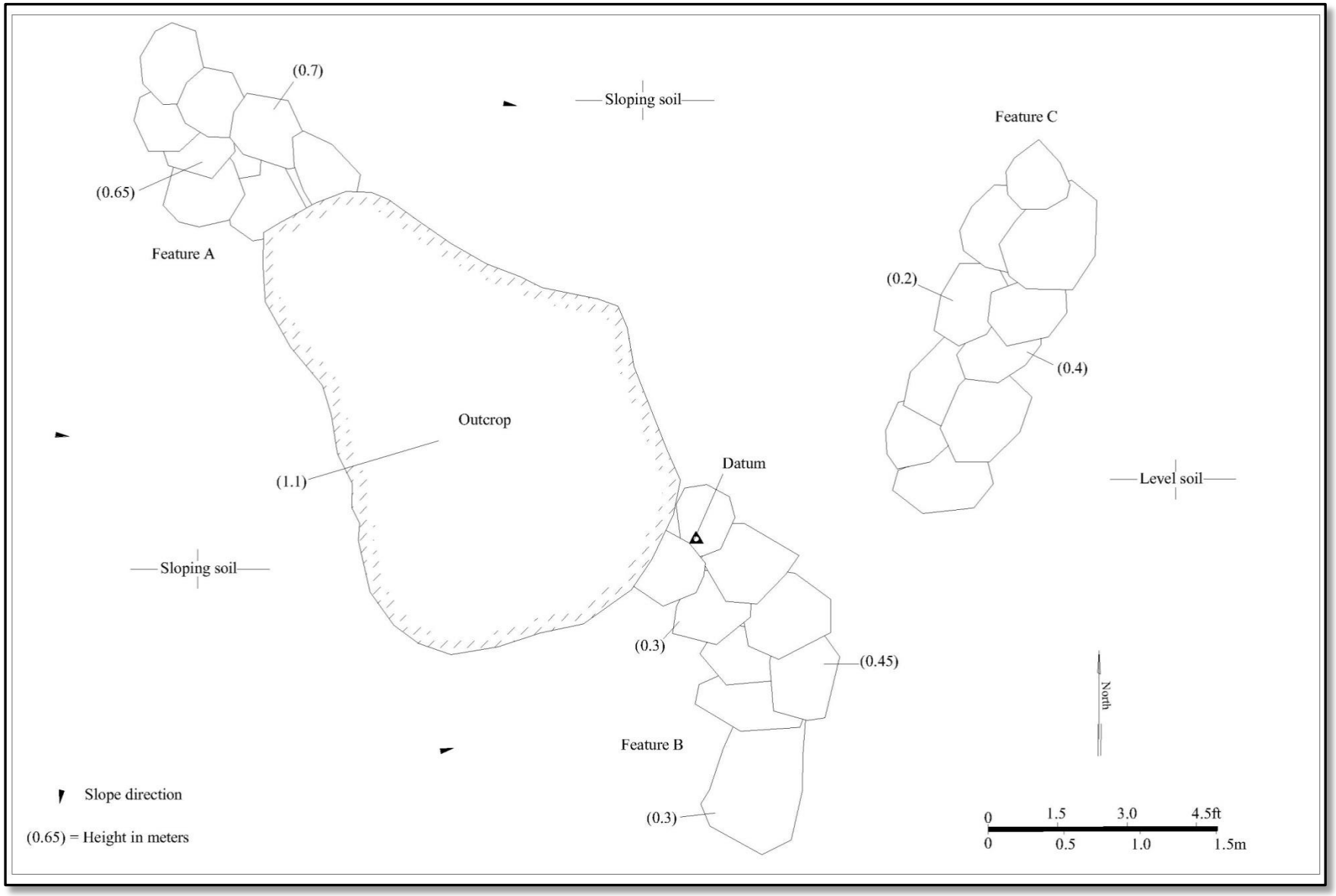


Figure 18. Site 6532 plan map

The **Feature B** modified outcrop is situated at the southeast side of the same outcrop that borders Feature A. This feature is linear and is 2.35 m long (north-south) and from 0.6 to 1.05 m wide. It is constructed of piled cobbles and small boulders and is 0.3 to 0.45 m in height, with an uneven surface and no cultural remains. The **Feature C** mound is located 0.75 m northeast of Feature B. It is linear in shape and is 2.45 m long (north-northeast by south-southwest) and from 0.7 to 0.75 m wide. It is also built of piled cobbles and small boulders and ranges in height from 0.2 to 0.4 m. No cultural remains are present. Site 6532 is interpreted as a complex of agricultural clearing piles. This is based on the feature's formal type and their informal construction. The site is unaltered and in fair condition and is assessed as significant for its information content.

Site 6533

Site 6533 is a complex comprised of a modified outcrop (Feature A) and a mound (Feature B) located in the inland portion of the project area at c. 284 ft elevation. The site is situated 24.0 m northeast of Site 6532 in an area of gently sloping soil that angles to the east and encompasses an area 7.05 m long (north-south) by 4.9 m wide (*Figure 19*). The **Feature A** modified outcrop is located at the south end of the site. It is roughly oval-shaped and is built of roughly stacked and piled cobbles and small boulders. It is 2.3 m long (east-west) and 0.65 to 1.55 m wide, constructed on and between two raised bedrock outcrops. The feature varies in height from 0.4 to 1.0 m and the surface is irregular and uneven. No cultural remains are present.

The **Feature B** mound is situated 3.15 m north of Feature A. It is irregular in shape and measures 5.05 m long (east-west) and 0.45 to 2.4 m wide, built of piled cobbles and small boulders. It measures from 0.1 to 0.9 m in height with an uneven, irregular surface. Two waterworn basalt cobbles were noted on the surface of Feature B. Site 6533 is interpreted as a complex of agricultural clearing piles based on the feature's formal type and their informal construction. The site is unaltered, in fair condition and is assessed as significant for its information content.

Site 6534

Site 6534 is a complex of two terraces located in the inland portion of the project area at elevations ranging from c. 277 to 282 ft. The inland end of each feature is buried beneath a large bulldozer push pile that parallels the seaward side of a road cut. The site encompasses an area 21.6 m in length (east-west) and 16.5 m wide (*Figure 20*).

The **Feature A** terrace is located at the northern end of the site, located on top of a raised ridge that slopes down to the north and south. The feature is rectangular in shape and is 10.3 to 11.0 m long (northwest by southeast) and 3.9 to 4.7 m wide. Roughly stacked and piled cobble and small boulder retaining walls extend along the northeast, southwest and southeast sides of the feature, ranging in height from 0.45 to 0.8 m above the surface of the sloping terrain. The surface of the terrace is comprised of a level soil deposit with no cultural remains present.

The **Feature B** terrace is located 7.1 to 9.6 m downslope of Feature A to the south. This feature is a slightly curvilinear retaining wall that extends perpendicular to the slope in a west-northwest by east-southeast a distance of 21.5 m. The wall is built of roughly stacked cobbles and small boulders and ranges in thickness from 0.6 to 1.3 m. The southern, downslope side of the wall is 0.3 to 0.65 m in height and the northern upslope varies from 0.0 to 0.2 m. The area adjacent to the retaining wall to the south is level soil. No cultural remains are present.

Site 6534 is interpreted as a complex of agricultural features based on formal type and insubstantial construction. The site has been altered by the excavation of the road cut and associated push pile. The features are in fair to good condition and the site is assessed as significant for its information content.

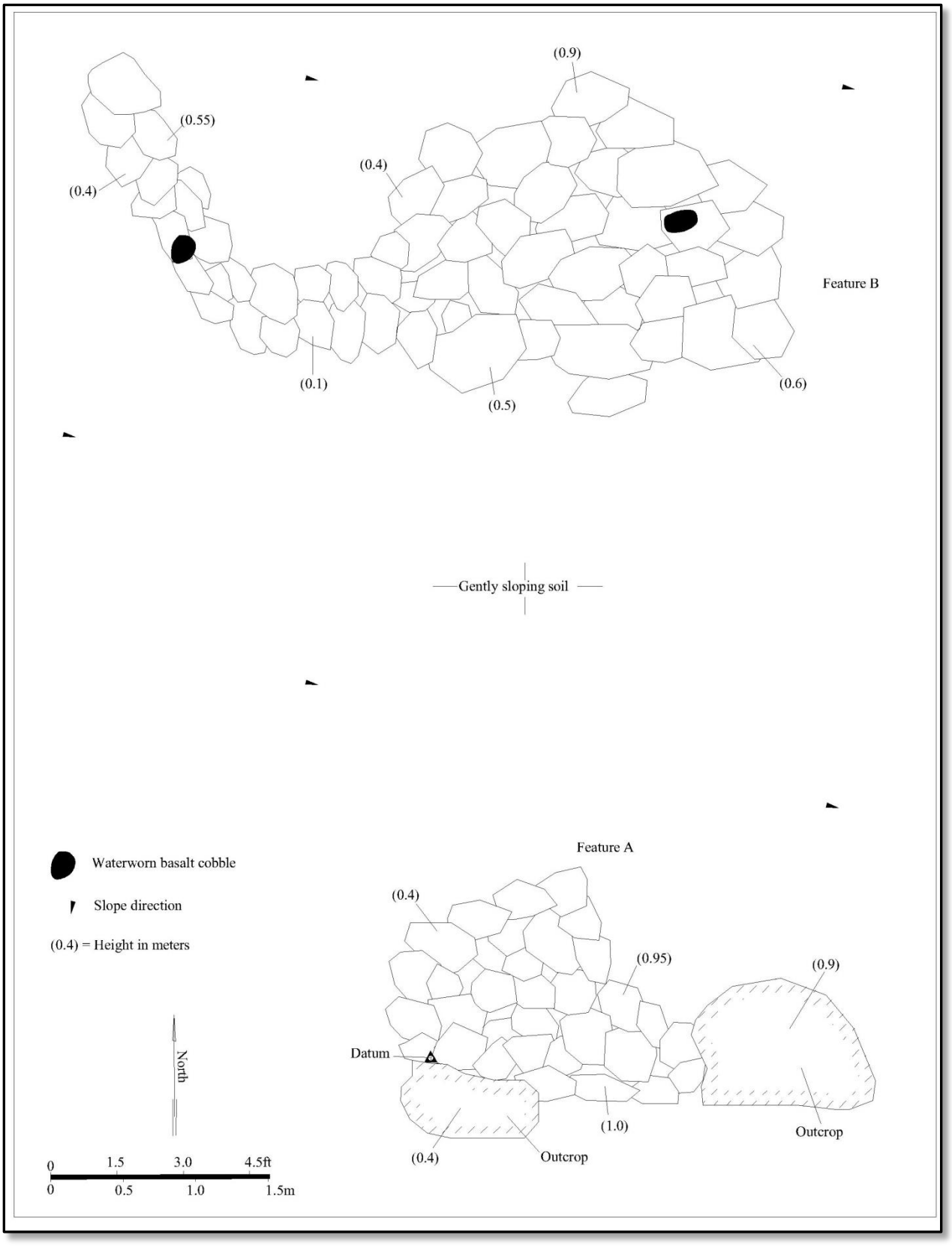


Figure 19. Site 6533 plan map

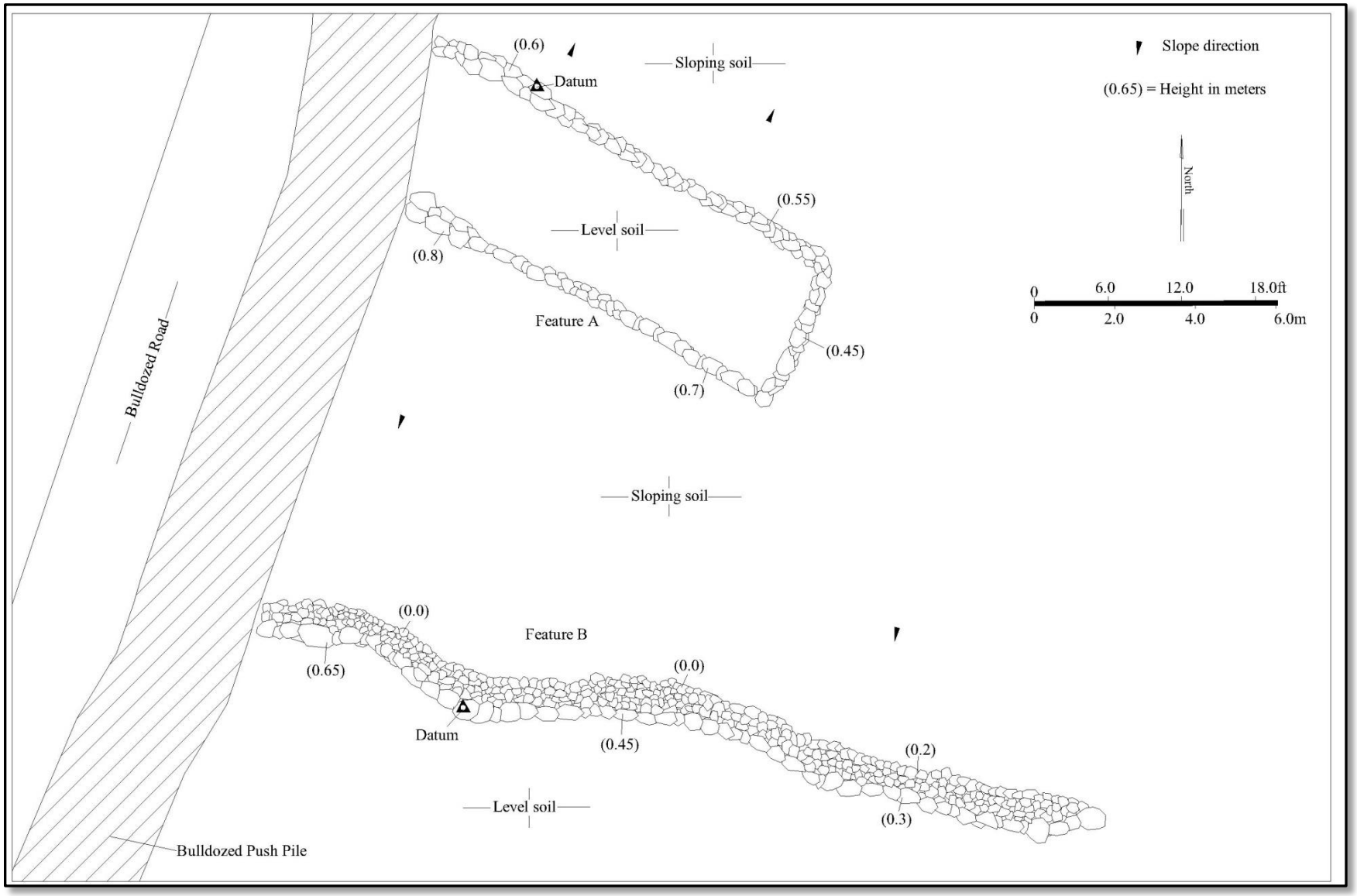


Figure 20. Site 6534 plan map

Site 6535

Site 6535 is a crude terrace situated in the inland portion of the project area at approximately 262 ft elevation. The terrace is an L-shaped retaining wall that measures 5.4 m long (north-south) and 2.3 m wide (east-west – *Figure 21*). The retaining walls are built of stacked and piled cobbles and small boulders and vary in height from 0.65 to 0.8 m. These walls retain areas of level soil to the north and southeast. A shallow drainage terminates against the eastern side of the site, measuring 0.95 to 3.0 m wide and 0.2 to 0.5 m deep. This drainage is bordered by stacked cobbles along the north side and an alignment of small boulders along the south side. No cultural remains are present at the site.

Site 6535 is interpreted as an agricultural feature based on its formal type and informal construction. The shallow drainage may represent an *auwai* that would have provided irrigation water for the site. Site 6535 is unaltered an in fair condition. The site is assessed as significant for its information content.

Site 6536

Site 6536 is a modified outcrop situated in the inland portion of the project area at approximately 238 ft elevation. The site is situated in an area of sloping rocky soil north of Kawaipapa Stream. The modified outcrop is linear, measuring 16.8 m long (northeast by southwest) and is 0.4 to 2.2 m wide. It is built of roughly stacked and piled cobbles and small boulders (*Figure 22*). It is 0.2 to 0.7 m high and the surface is uneven and irregular. No cultural remains are present at the site. Site 6536 is interpreted as an agricultural clearing pile based on formal type and informal construction. The site is unaltered and in fair condition. The site is assessed as significant for its information content.

Site 6537

Site 6537 is a complex of six features located in the inland portion of the project area, north of Kawaipapa Stream at elevations that range from approximately 225 to 241 ft. The features consists of an enclosure (Feature A), a wall (Feature B), and four stone-lined pits (Features C-F) located in an area 31.5 m long (east-west) by 15.7 m wide (*Figure 23*).

Feature A is a large U-shaped enclosure that is open to the northeast. The structure measures 13.8 m in length (northeast by southwest) and from 11.1 to 15.5 m wide. The feature walls are constructed of stacked and piled cobbles and small boulders. The walls range from 0.45 to 1.3 m in thickness and from 0.4 to 1.3 m in height. The interior floor is level soil, with an area of sloping soil at the northeast end that slopes down into the interior. Raised bedrock outcrop is incorporated into the enclosure wall along the southeast side. No cultural remains are present.

The **Feature B** wall is located along the western end of the site. It is linear with an overall length of 15.9 m. The wall is built of roughly stacked and piled cobbles and small boulders, varying in thickness from 0.5 to 0.75 m and in height from 0.45 to 0.6 m. **Features C, D, E** and **F** consist of shallow stone-lined pits that are located in an area of level soil east of Feature B and west of Feature A. The floors of these pits are soil filled and the stones that border their perimeters are level with the surrounding ground surface. The pits range in length from 0.67 to 0.91 m, in width from 0.57 to 0.83 m and in depth from 0.35 to 0.5 m. The individual characteristics of the four pits are presented in *Table 4.*

Site 6537 is interpreted as a complex of agricultural features. The Feature A enclosure and Feature B wall likely served to delineate the boundary of garden plot based on the level soil areas associated with them. Features C-F are interpreted as cultivation pits. Site 6537 is unaltered and in fair condition. The site is assessed as significant for its information content.

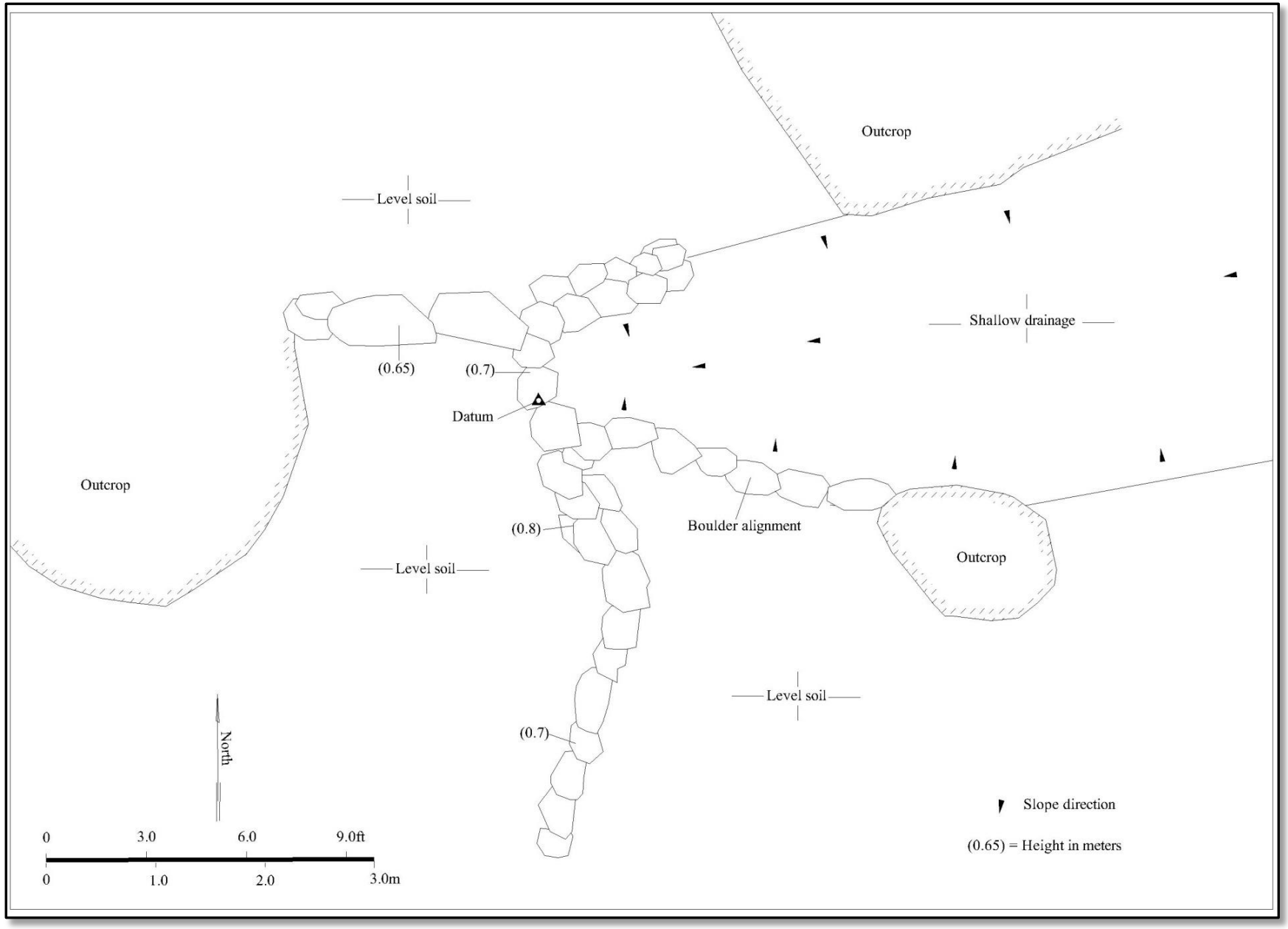


Figure 21. Site 6535 plan map

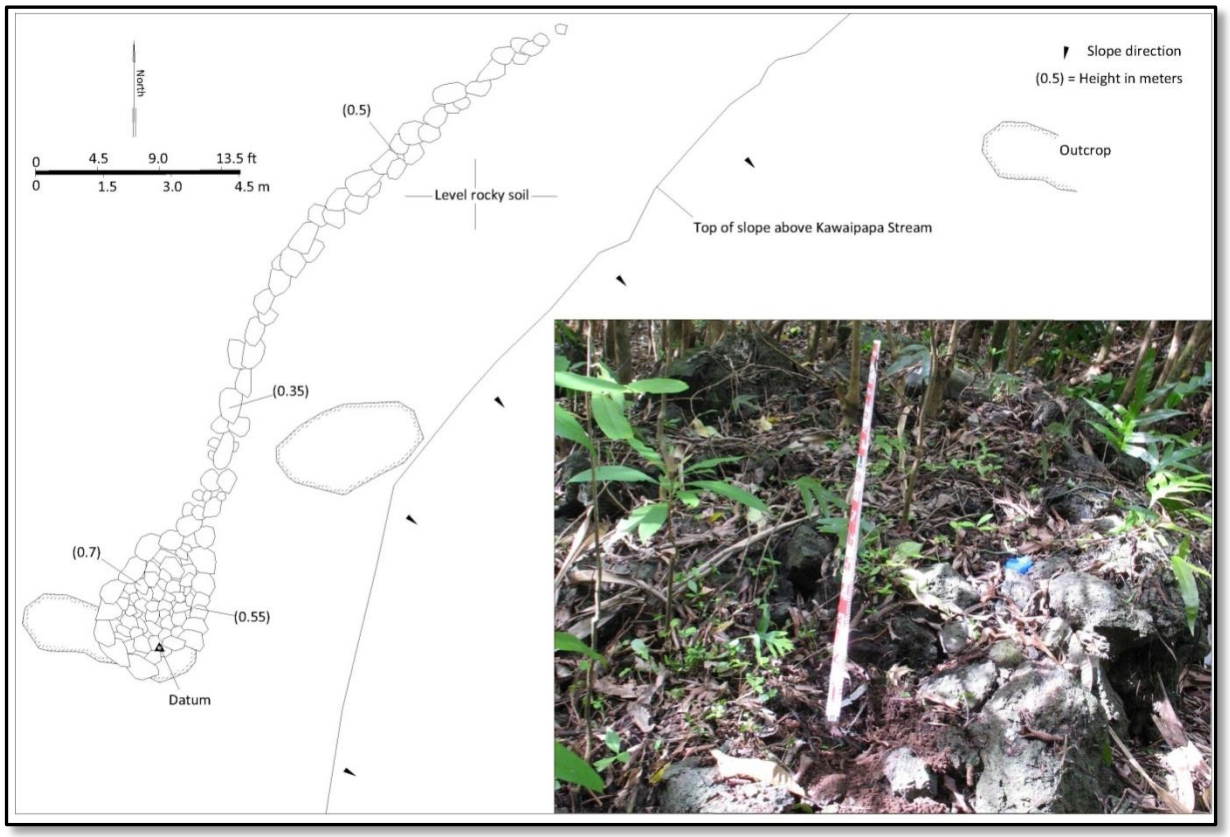


Figure 22. Site 6536 plan map and photograph (view to northeast)

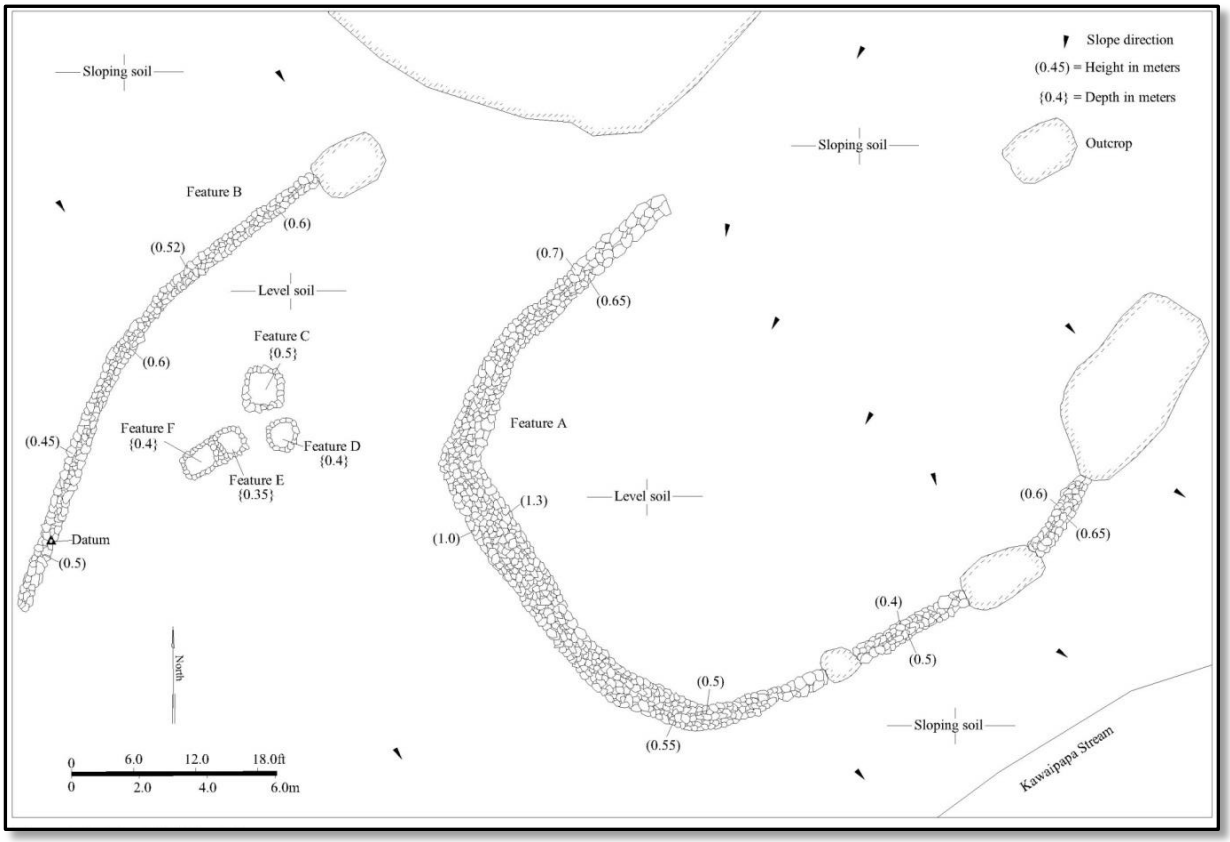


Figure 23. Site 6537 plan map

Site 6538

Site 6538 is a free-standing stone wall located in the inland portion of the project area, 20 m northeast of the Site 6537 complex. The site is situated on a rocky slope north of Kawaipapa Stream at approximately 220 ft elevation. The wall is 4.6 m in length (east-west) and from 0.45 to 0.7 m in thickness, built of roughly stacked and piled small boulders and large cobbles (*Figure 24*). The wall extends between two bedrock outcrops and ranges in height from 0.35 to 0.75 m. An area of level soil, relatively free of surface stones, is located adjacent to the wall to the south, above the stream. No cultural remains are present at the site.

Site 6538 is interpreted as a probable agricultural feature, potentially used to retain the level soil area based on formal type, insubstantial construction, and proximity to the level area. The site is unaltered and in fair condition and is assessed as significant for its information content.

Site 6539

Site 6539 is a short section of free-standing stone wall located on a level bench above Kawaipapa Stream, 22 m northeast of Site 6538. The wall is situated at approximately 205 ft elevation and extends between two bedrock outcrops. It is 2.5 m in length (north-south), 0.7 to 0.85 m thick, and 0.65 to 0.7 m in height. It is constructed of roughly stacked cobbles and small boulders (*Figure 25*). There is level soil on the western, upslope side of the wall. No cultural remains are present at the site.

Site 6539 is interpreted as a probable agricultural feature, potentially used to retain the level soil area based on formal type, insubstantial construction and proximity to the level area. The site is unaltered and in fair condition and is assessed as significant for its information content.

Site 6540

Site 6540 is a complex of 12 features located in the inland portion of the study area at elevations that range from approximately 249 to 267 ft. The features include a large enclosure (Feature A) and 11 stone lined pits (Features B-L) that are located in an area 57.9 m long (east-west) and 26.5 m wide (*Figure* 26). The site is situated in a level soil area at the bottom of a broad swale with the terrain sloping down from the north and south.

The **Feature A** enclosure is roughly oval in shape and is 56.0 m long (east-west) and from 4.0 to 20.8 m in width. The east, west and south sides of the enclosure are comprised of free-standing walls built of stacked cobbles and small boulders. The walls range in from 0.4 to 0.85 m in thickness and from 0.35 to 1.15 m in height. Portions of the walls have collapsed into the interior. The northern wall is terrace-like, built of stacked cobbles and small boulders and ranging in height from 1.0 to 1.3 m on the southern downslope side. A rough cobble and boulder paved area, a large exposed outcrop, and a series of stone-lined pits (Features D-K) border the north side of the feature. The interior floor is level soil and no cultural remains are present. There is no entrance to the enclosure.

Features B-L are a series of stone-lined pits, located within and adjacent to Feature A. These pits range in length from 1.17 to 3.1 m (average 1.72 m), in width from 0.73 to 2.74=5 m (average 1.32 m) and in depth from 0.25 to 1.0 m (average 0.63 m). The physical characteristics of the individual pits are summarized in *Table 4.* The Feature B pit is located at the northwest end of the site, at the edge of the crudely paved area. Features C-K are situated outside Feature A to the northeast and Feature L is located in the approximate center of the enclosure. No cultural remains are present at any of the stone-lined pits.

Site 6540 is interpreted as a complex of agricultural features. The Feature A enclosure appears to have served to delineate the boundary of a large garden plot based on the level soil within it. Features B-L are interpreted as cultivation pits. Site 6540 is unaltered and in fair condition. The site is assessed as significant for its information content.

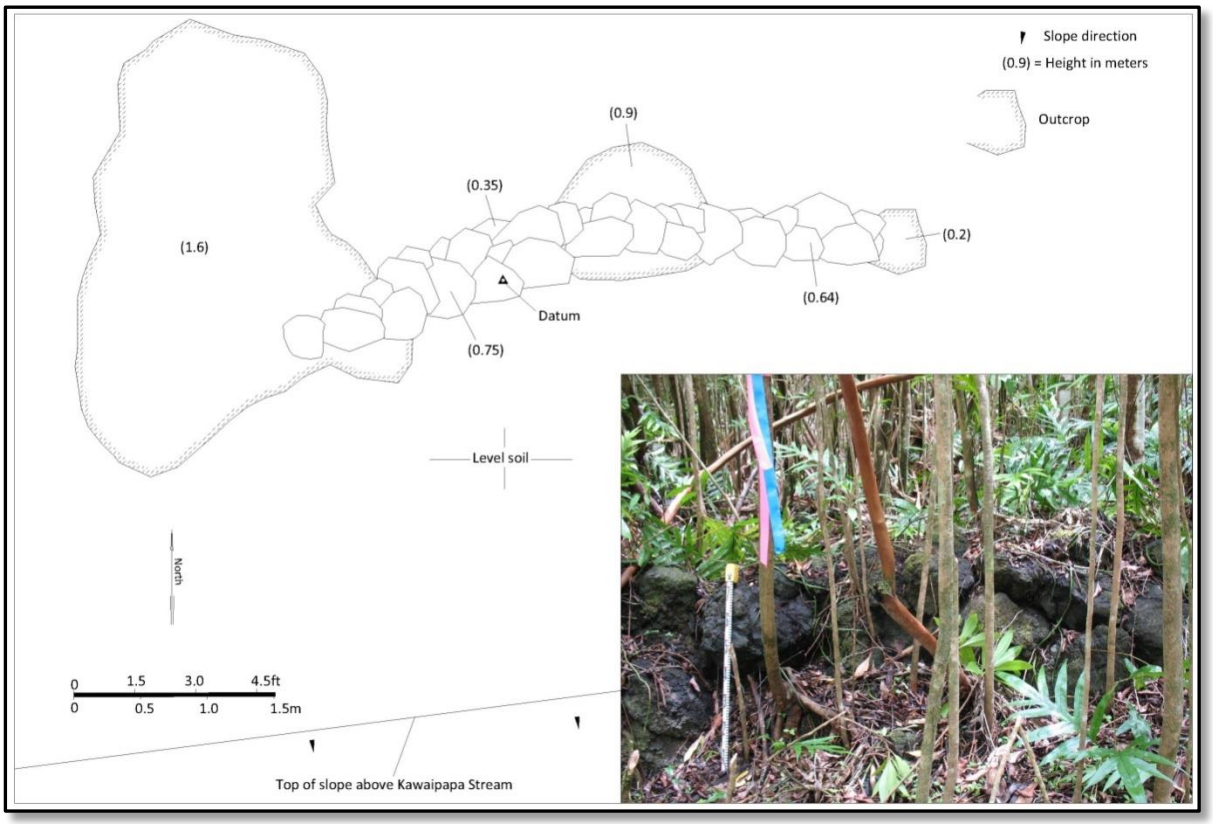


Figure 24. Site 6538 plan map and photograph (view to north)

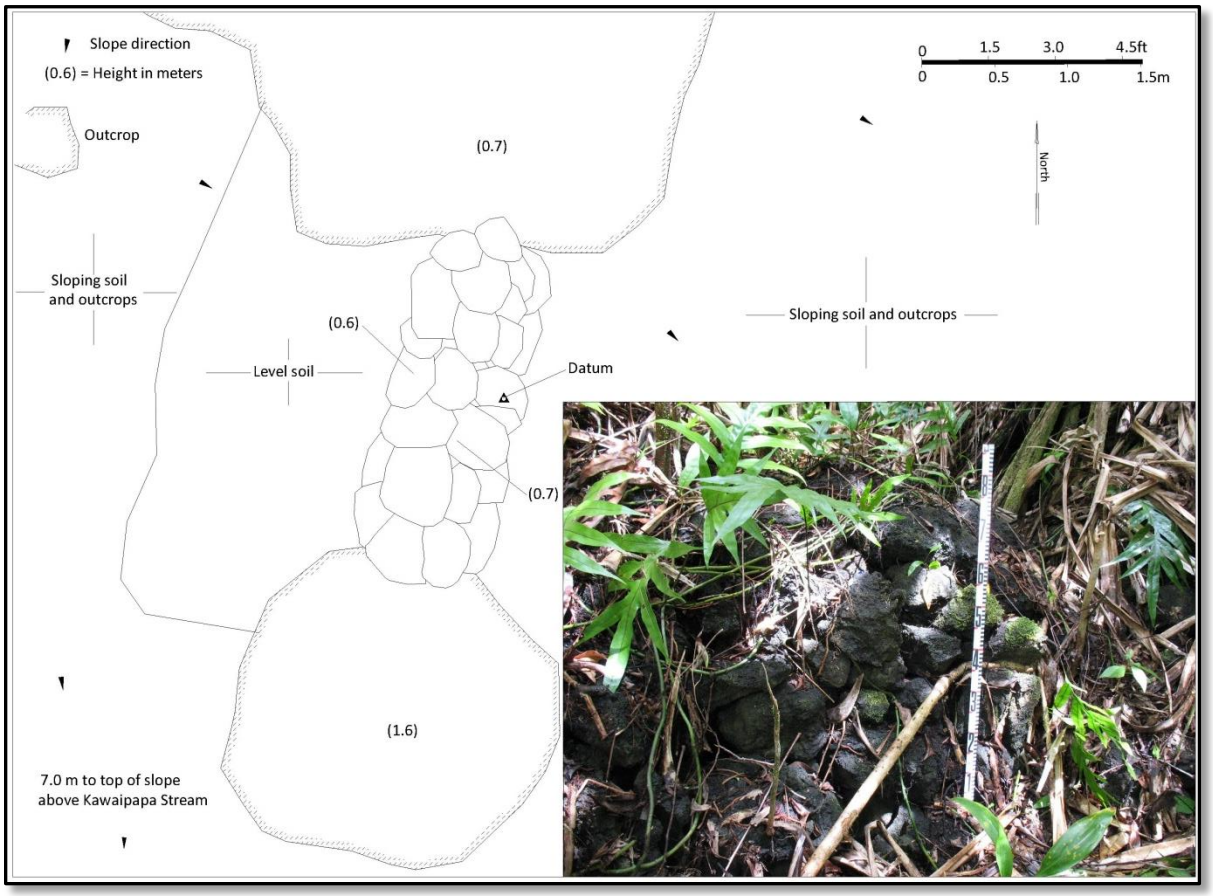


Figure 25. Site 6539 plan map and photograph (view to east)

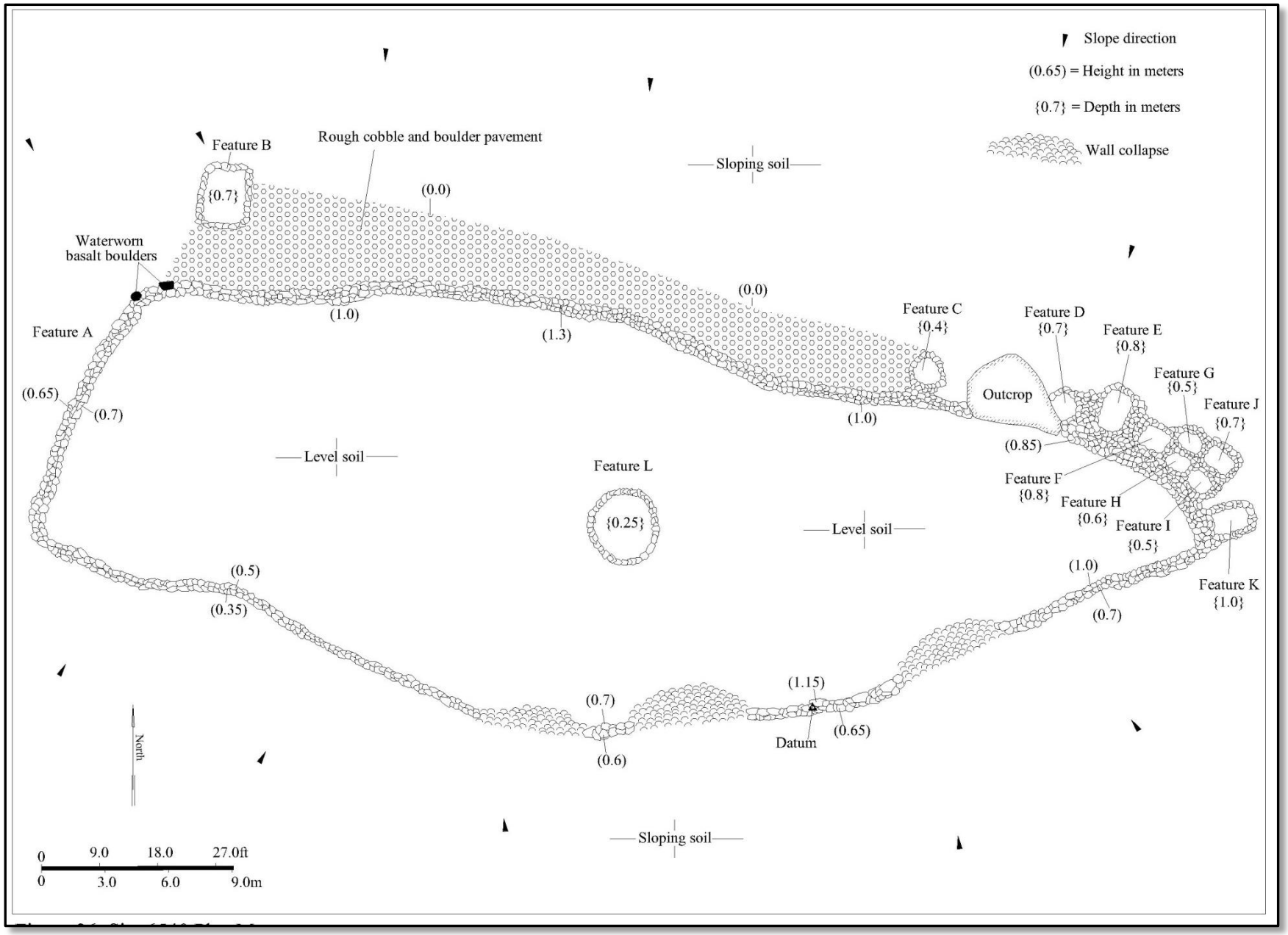


Figure 26. Site 6540 plan map

Site 6541

Site 6541 is a single stone-lined pit located in the south-central portion of the project area at approximately 200 ft elevation. The pit is located above Kawaipapa Stream, on the side of a slope that angles down to the east. The pit is oval in shape and is 2.7 m long (east-west), 1.5 m wide and from 0.2 to 0.9 m deep below the surrounding ground surface (*Figure 27*). The floor of the pit is level soil with no cultural remains present. Site 6541 is interpreted as a cultivation pit based on its formal type and appearance. The site is unaltered and in fair condition and is assessed as significant for its information content.

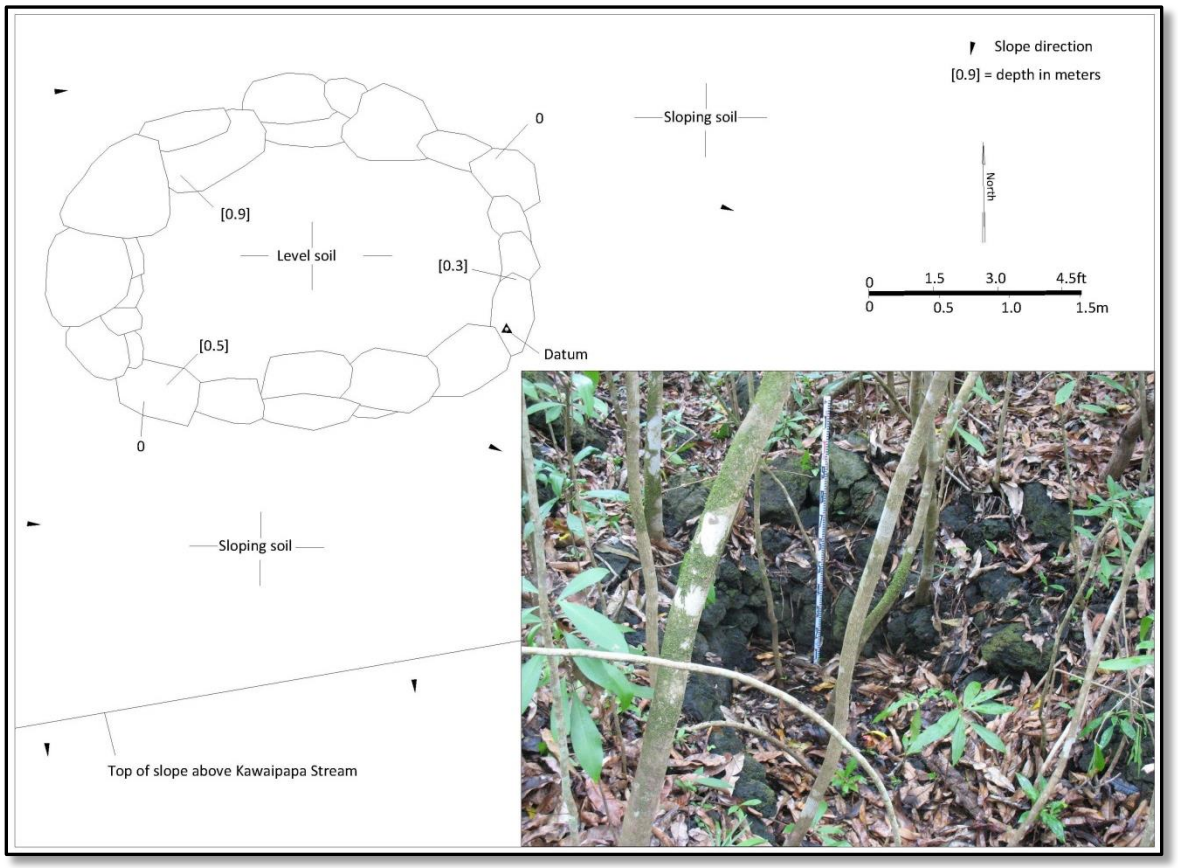


Figure 27. Site 6541 plan map and photograph (view to east)

Site 6542

Site 6542 is a crude terrace located in the south-central portion of the study area on a sloping bench above Kawaipapa Stream. The site is situated at approximately 196 ft elevation and is 23 m east of Site 6541. A bulldozed area is located to the north of the site. The terrace is L-shaped and measures 3.9 m long (north-northwest by south-southeast) and 2.4 m long (northeast by southwest - *Figure 28*). The site is formed by retaining walls extending along the southwest and portions of the southeast side, with raised bedrock outcrops located along the northwest and northeast sides. The retaining walls range in thickness from 0.9 to 1.15 m and are constructed of stacked and piled cobbles and small boulders. The retaining walls range in height from 0.7 to 0.9 m on the interior sides and 0.0 to 0.2 m on the exterior sides. The area to the east and north of the walls is level soil with no cultural remains present. There is an area on

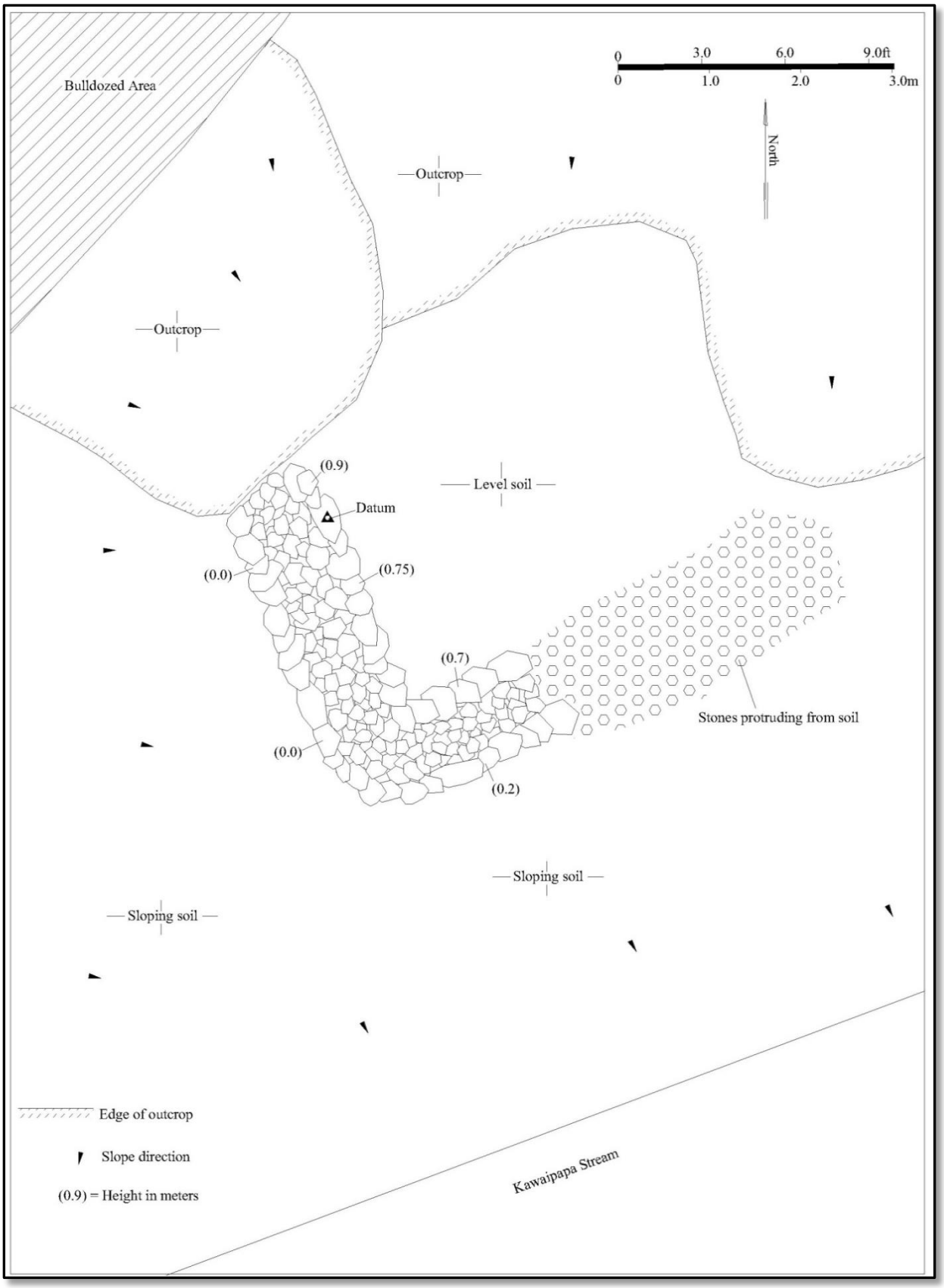


Figure 28. Site 6542 plan map

the southeast where there are stones protruding from the soil, that may represent an extension of the terrace.

Site 6542 is interpreted as a probable agricultural terrace used to retain a level soil area for planting. This interpretation is based on its formal type and its insubstantial construction. The site is unaltered and in fair condition and is assessed as significant for its information content.

Site 6543

Site 6543 is a complex of 58 stone-lined pits located in the south-central portion of the project area between approximately 181 and 194 ft elevation. The site is located adjacent to the east side of the Site 4964 railroad grade in an area of level soil (*Figure 29*). The pits are situated in an area 27.0 m long (east-west) and from 5.0 to 22.0 m wide.

The pit characteristics are summarized in *Table 4.* These features range in length from 0.9 to 1.94 m (average of 1.2 m), in width from 0.77 to 1.56 m (average 1.0 m) and in depth from 0.35 to 085 m (average 0.56 m). The pit floors are level soil and several also contain scattered cobbles. No cultural remains are present at any of the Site 6543 pits. The site is interpreted as a complex of agricultural features that functioned as cultivation pits, based on their formal type and appearance. The site is in fair condition and may have been altered by the construction of the adjacent railroad grade. Site 6543 is assessed as significant for its information content.

Site 6544

Site 6544 is a complex of two features located in the seaward portion of the study area between approximately 166 and 174 ft elevation. The site is situated north and west of bulldozed road cuts in an area of soil and outcrops that slopes to the south-southeast (*Figure* 30). The features consists of a free-standing wall (Feature A) and a terrace (Feature B) located in an area that is 22.5 m long (north-northwest by south-southeast) and 5.0 m wide.

Feature A is a curvilinear wall located at the south end of the site. It originates against the southern edge of a bedrock outcrop and extends 19.4 m in a south and south-southeasterly direction where it has been truncated by a dirt road. No evidence of the wall was found south of the road. The northern portion of the wall is an alignment of boulders that range in thickness from 0.3 to 0.6 m and in height from 0.5 to 0.7 m. The remaining section of the wall is built of stacked and piled cobbles and small boulders. It ranges in thickness from 0.5 to 0.7 m and in height from 0.65 to 1.0 m No cultural remains are present at the feature.

The **Feature B** terrace is located at the northern end of the site, built into the side of a sloping bedrock outcrop. The terrace is bordered on the south by a roughly stacked and piled cobble and small boulder retaining wall that is 2.1 m long (east-northeast by west-southwest) and 1.0 m in height. This wall retains an area of level soil to the north that is 3.3 m long (east-northeast by west-southwest) by 1.2 m wide. No cultural remains are present.

Site 6544 is interpreted as a complex of agricultural features. The Feature A wall may have served to delineate the boundary of a garden plot based on formal type and informal construction. The Feature B terrace potentially functioned as a small planting area. The Feature A wall has been altered by the construction of a dirt road. The remaining portion of the site is in fair condition. Site 6544 is assessed as significant for its information content.

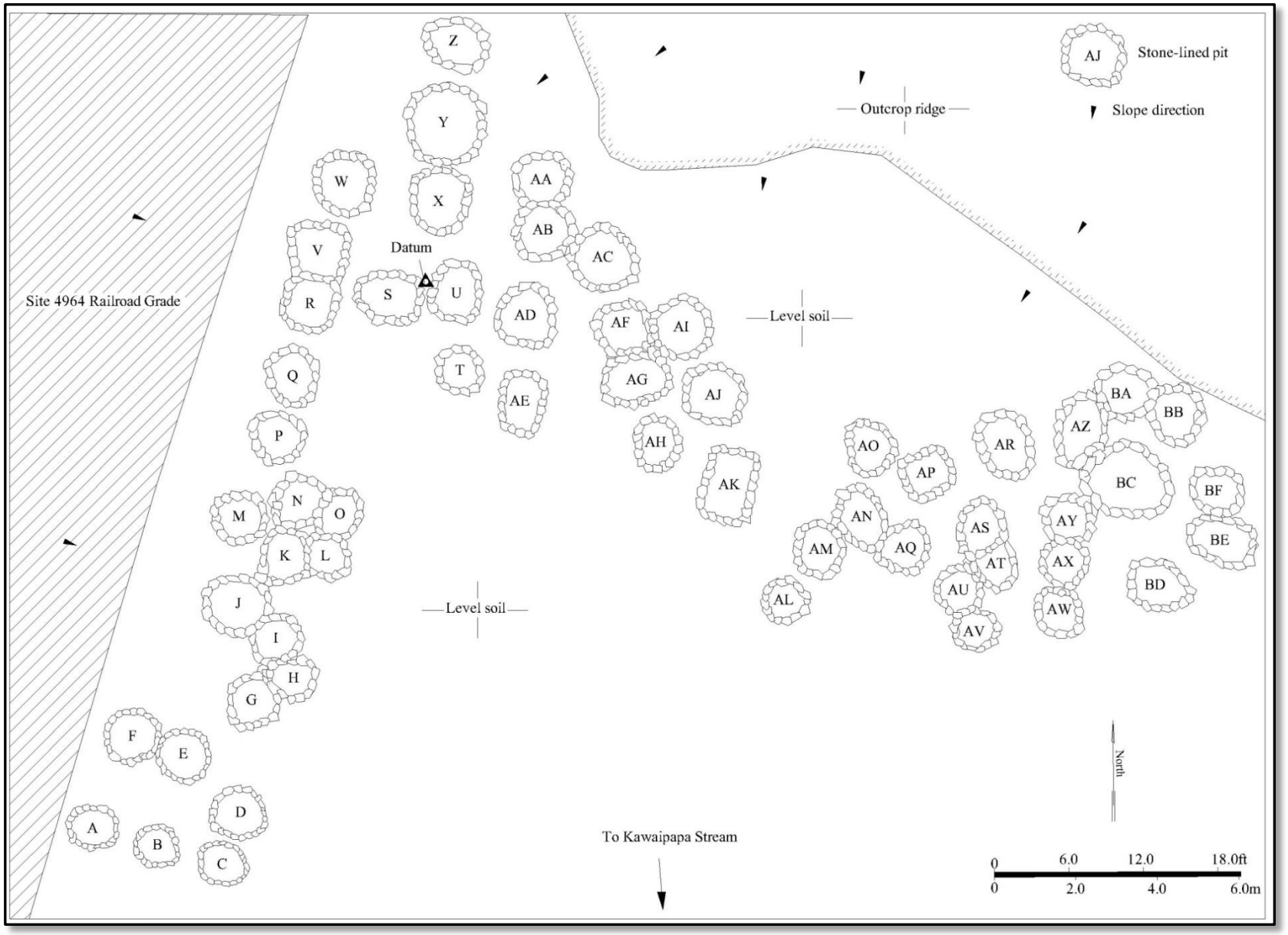


Figure 29. Site 6543 plan map

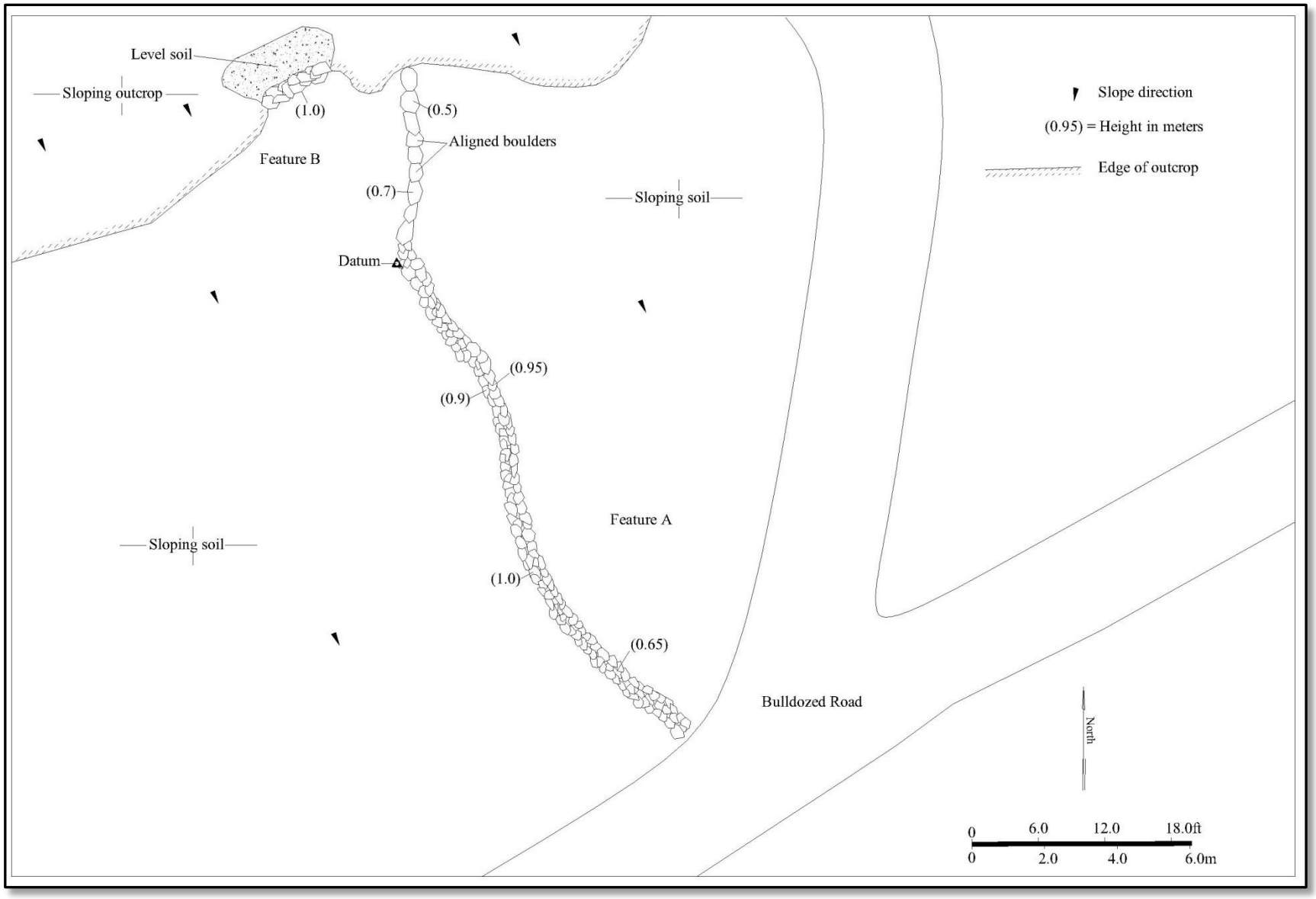


Figure 30. Site 6544 plan map

Site 6545

Site 6545 is a complex of two features located in the seaward portion of the study area, 22.0 m northeast of the Site 6544 complex. The site is located in an area of sloping soil and outcrops between approximately 169 and 173 ft elevation. The site is a pavement (Feature A) and a wall (Feature B) situated in an area 23.6 m long (northwest by southeast) by 15.9 m wide (*Figure 31*). The site is adjacent to a large bulldozer push pile to the north. This push pile parallels a dirt road.

The **Feature A** pavement is located at the northern end of the site, built on the surface of a gently sloping bedrock outcrop (see *Table 6*). The pavement is irregular in shape. It is 15.9 m long (northeast by southwest) and from 3.8 to 8.6 m wide. The edges of the pavement abut the surrounding outcrop and the surface is a level cobble and boulder pavement. No cultural remains are present on the surface.

A 0.5 by 0.5 m test unit (TU-2) was excavated into the southeastern portion of the pavement to verify the function of this large amorphous shaped structure. The excavation revealed two layers over bedrock (see *Figure 31*). Layer I is 0.11 to 0.25 m thick deposit of tightly packed cobbles and pebbles with no cultural remains present. Layer II is a 0.29 to 0.36 m thick deposit of black (10YR 2/1) silty loam with 20% cobble and pebble inclusions. Cultural remains from this deposit consist of 12 fragments of charcoal (1.3 grams), 3 fragments of burnt *kukui* nut shell (0.2 grams), a *conus sp.* shell (0.3 grams), two waterworn coral pebbles (0.4 grams), and a basalt adze flake (0.7 grams).

The **Feature B** wall originates 7.5 m southeast of Feature A, adjacent to the edge of the sloping bedrock outcrop. The wall is 7.3 m long (north-south) and from 0.5 to 0.7 m thick. The wall is constructed of roughly stacked and piled cobbles and small boulders and varies in height from 0.45 to 1.0 m. Portions of the wall have collapsed outward. The southern end of the wall is buried beneath a large bulldozer push pile that parallels a road cut. No evidence of the wall was noted to the southeast of the road.

Site 6545 is interpreted as a complex of permanent habitation features. The Feature A pavement likely served as the foundation for a roofed structure based on formal type, substantial construction (paved surface) and large area (99.5 sq m). The Feature B wall may have served to delineate the boundary of an associated activity area, based its close proximity to Feature A. The Feature B wall is altered by the construction of the road cut, and the remaining portions of the site are in poor to fair condition. The site is assessed as significant for its information content.

Site 6546

Site 6546 is a road located in the seaward one-third of the project area between approximately 185 and 205 ft elevation (*see Figure 10*). The road is 247m long. The northern end originates in the central portion of the project area along the eastern side of the Site 4964 railroad grade. It extends to the southeast from the railroad grade for 51.0 m, then angles to the southwest for 50.0 m. It then turns to the west-northwest for 50.0 m where it crosses over the railroad grade again. The road continues past the grade to the southwest for 49.0 m, then angles to the south for 47.0 m where it terminates along the northwest side of the railroad grade.

The road's construction method varies by terrain. Portions of the road were cut into the surrounding soil and bedrock, often to depths of more than 2.0 m (*Figure 32*). In other places, the road bed is elevated as it crosses over low spots, supported by retaining walls built of stacked and faced cobbles and small boulders (*Figure 33*). These elevated sections range in height from 0.5 to 1.5 m. The road ranges in width from 3.5 to 5.0 m although the majority of it averages 4.5 m. No cultural remains are present. Site 6546 is interpreted as an historic transportation route through the project area based on its formal type and appearance. This transportation route likely utilized the northern portion of the Site 4964 railroad grade, which has been cleared of ties and rail; however because the southern portion of the

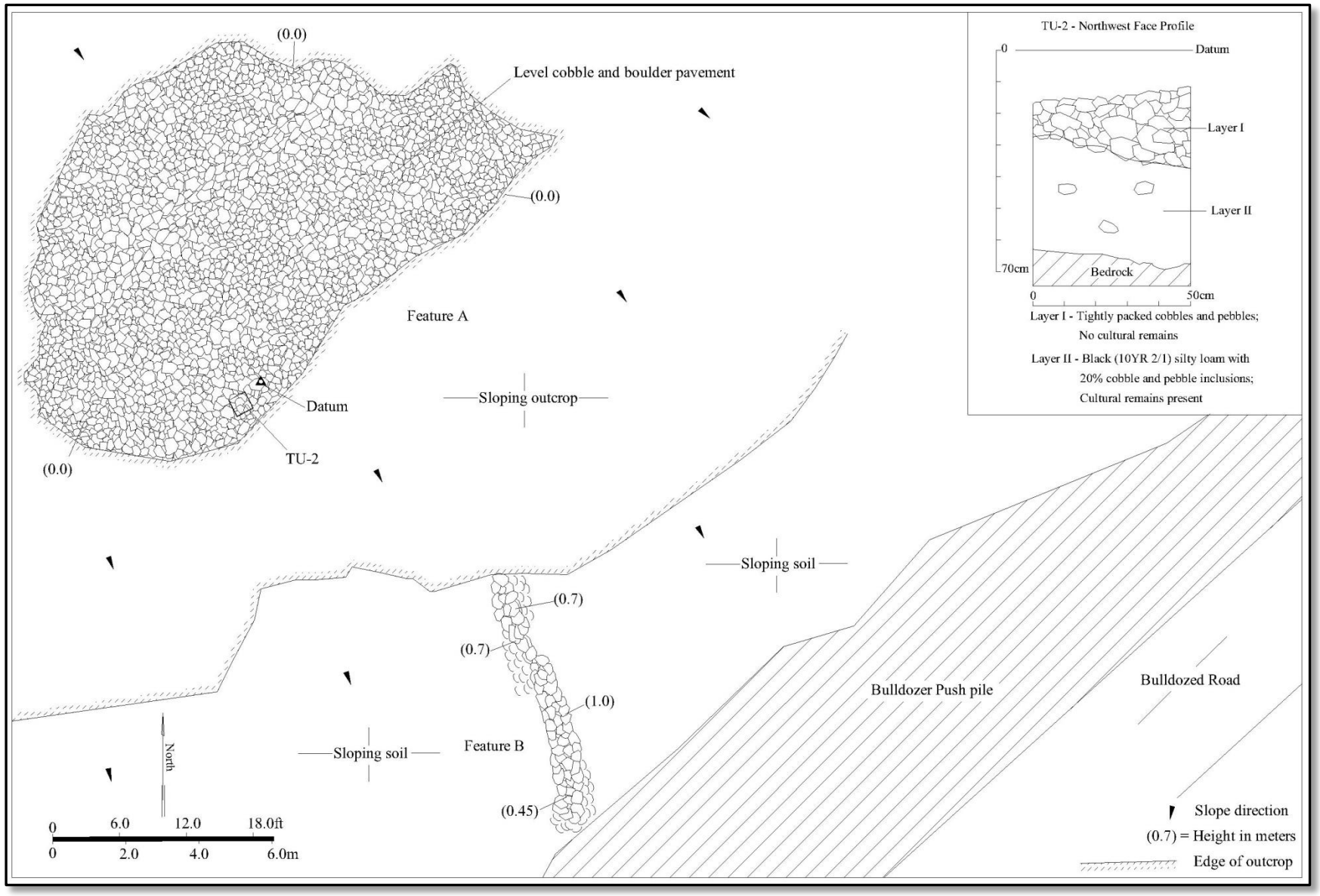


Figure 31. Site 6545 plan map and TU-2 northwest face profile

Figure 32. Site 6546 road cut, view to north

Figure 33. Site 6546 retaining wall supporting road, view to east

railroad grade is too narrow for vehicular traffic, the Site 6546 road was constructed to bypass these narrow areas. The site is unaltered and in fair to good condition and is assessed as significant for its information content.

Site 6547

Site 6547 is a discontinuous section of stone wall located in the northeastern portion of the project area at approximately 182 ft elevation. The wall parallels the Site 4964 railroad grade along the northeastern side and is located 17.5 m southwest of the Site 6548 wall complex. The wall is 12.2 m long (northwest by southeast) with the intact sections measuring 0.5 to 0.7 m in thickness and in height from 0.6 to 0.8 m (see *Table 7* and *Figure 34*). The intact portions are constructed of stacked and faced cobbles and small boulders with a core-filled cobble interior. Portions of the wall are collapsed. No cultural remains are present at the site.

Site 6547 is interpreted as a livestock control feature based on its height and method of construction. It is possible that the wall was used to prevent livestock from accessing the railroad grade based on its close proximity. Alternatively, the wall may have been part of the nearby Site 6548 complex, discussed below. The site is unaltered and in poor to fair condition. It is assessed as significant for its information content.

Site 6548

Site 6548 is a complex of four large core-filled stone walls situated in the seaward portion of the project area between approximately 161 and 184 ft elevation. The walls are located in a mechanically cleared area 140.0 m long (east-west) and 47.0 m wide (*Figure 35*). No cultural remains are present in association with the site. The walls are summarized in *Table 7* and are described below.

The **Feature A** wall extends through the central portion of the site in a roughly northeast by southwest direction a distance of 104.7 m. It originates at the southeast end of the Feature B wall and extends 46.2 m to the east-northeast where it is truncated by a dirt road. The wall continues on the opposite side of the road and extends 38.7 m to the northeast where it is truncated by a second dirt road. It continues to the northeast from the road for another 10.5 m where it terminates at the northern end of the Feature D wall. Feature A is constructed of stacked cobbles and small boulders. Portions of the wall have collapsed, although intact faced sections are still present. The wall ranges in thickness at the base from 1.75 to 2.0 m, from 1.1 to 1.5 m at the top and 1.1 to 1.7 m in height.

The **Feature B** wall originates at the southwest end of Feature A and has an overall length of 59.6 m. It extends 42.6 m from the western end of Feature A in a northwest by southeast orientation, then angles to the east-northeast (11.2 m) then to the southeast (5.8 m) forming a partially enclosed space. The wall is constructed of stacked and faced cobbles and small boulders and ranges in thickness from 1.4 to 1.7 m at the base, from 1.0 to 1.3 m at the top and from 1.1 to 1.4 m in height. Portions of the wall have collapsed.

The **Feature C** wall originates against the northwest side of the Feature A wall. It extends 14.5 m to the west-northwest where it terminates in a mechanically cleared area. The wall is constructed of stacked and faced cobbles and small boulders and it ranges in thickness at the base from 1.4 to 1.7 m, at the top from 1.0 to 1.4 m and in height from 1.0 to 1.4 m. The **Feature D** wall originates at the northeast end of Feature A and extends 38.0 m to the south-southeast where it terminates. It is built of stacked and faced cobbles and small boulders and ranges in width at the base from 1.9 to 2.0 m, in width at the top from 1.5 to 1.7 m and in height from 1.2 to 2.1 m. The wall is generally intact though collapsed areas are present.

Site 6548 is interpreted as a livestock control site, with the individual walls functioning to restrict the movement of cattle. This is based on the feature's formal type, wall height and method of construction. The site has been altered by mechanical clearing and is in poor to fair condition. It is assessed as significant for its information content.

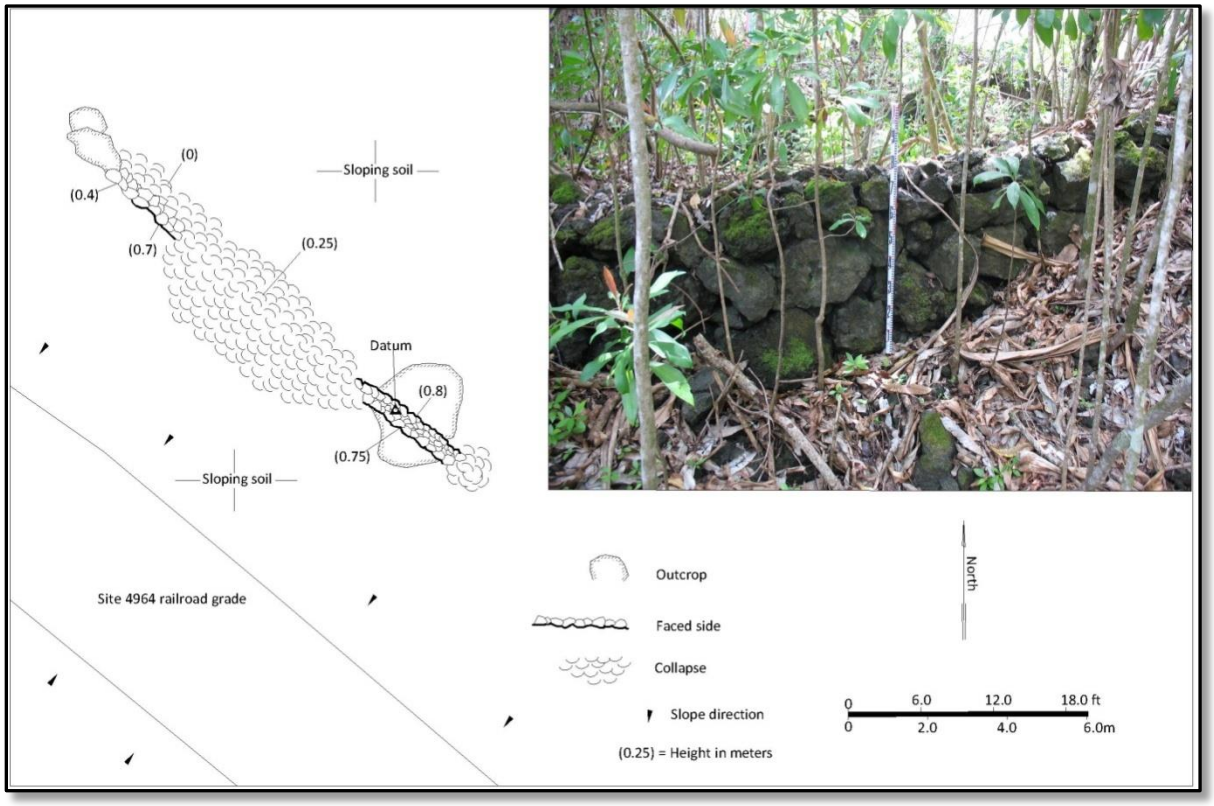


Figure 34. Site 6547 plan map and photograph (view to northeast)

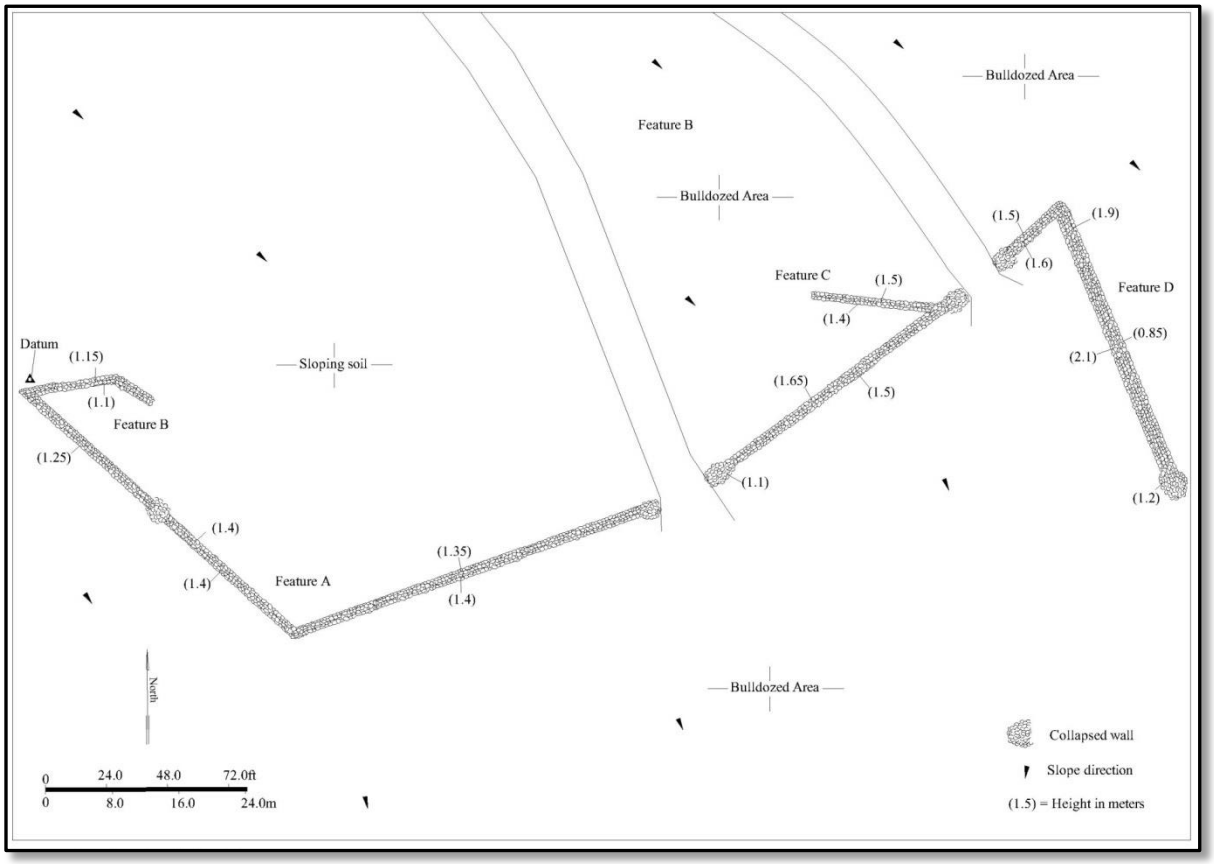


Figure 35. Site 6548 plan map

Site 6549

Site 6549 is a complex of two features situated in the southeastern corner of the project area at c. 118 to 130 ft elevation in a mechanically cleared area. The site is located just north of Kawaipapa Stream and encompasses an area 29.8 m long (east-west) and 8.2 m wide (*Figure 36*). Feature A is an enclosure and Feature B is a pavement.

The **Feature A** enclosure is located at the western end of the site. It is partially collapsed and has been impacted by mechanical clearing. It is 7.6 m in length (east-west) and 5.7 m wide (see *Table 6*). The walls vary in thickness from 1.3 to 1.95 m and in height from 0.3 to 0.8 m. There is no apparent entrance into the interior. Portions of the exterior east and south sides of the structure are faced. The interior floor of the feature is level soil. Modern beer and wine bottles are scattered around the feature and a red brick is present on top of the north wall.

The **Feature B** pavement is located 10.0 m east of Feature A. The feature was impacted by mechanical clearing. It is irregular in shape and is 12.4 m long (east-west) by 2.1 to 6.4 m wide. The sides of the feature are level with the surrounding ground surface. The surface is comprised of a level cobble and boulder pavement with several waterworn basalt stones present on the surface. Cut mango logs are present on the surface of the feature. No cultural remains are present.

Site 6549 is interpreted as a complex of permanent habitation features. These features potentially served as the foundation for roofed structures based on formal type, substantial construction (Feature A = faced side, Feature B = paved surface) and area (Feature A = 43.3 sq m, Feature B = 52.7 sq m). The site is altered and in poor condition. The site is assessed as significant for its information content.

Site 6550

Site 6550 is a small, crudely constructed terrace located in the southeastern corner of the project area at approximately 121 ft elevation. The terrace is roughly oval in shape and is 2.2 m long (east-west) by 1.0 m wide, with a roughly stacked and piled cobble and small boulder retaining wall extending along the southern side (*Figure 37*). This wall is 0.15 to 0.4 m thick and is 0.35 to 0.55 m in height on the exterior side. The surface of the terrace is level soil with no cultural remains present. A mango tree is growing adjacent to the terrace to the west and the stump of a coconut palm is located to the east.

Site 6550 is assigned an agricultural function based on its formal type and insubstantial construction. The site is unaltered and in fair condition and is assessed as significant for its information content.

Site 6551

Site 6551 is a complex of 56 features located along the eastern project area boundary between approximately 142 and 162 ft. The features are located in an area 161.0 m long (north-northwest by south-southeast) and 31 m wide. The features consist of 38 stone-lined pits, nine walls, four terraces, a scatter of historic artifacts, a concrete foundation, a concrete basin and two concrete troughs. The area immediately inland of the complex has been impacted by bulldozer activity. The overall extent of the 56 features is depicted in *Figure 38.*

Site 6551 contains both a prehistoric and historic component. The prehistoric elements of the site are the stone-lined pits, the terraces and seven of the nine walls. The seven remaining features are historic in origin and consist of the four concrete structures, the historic artifact scatter and two walls (*Figures 39, 40* and *41*).

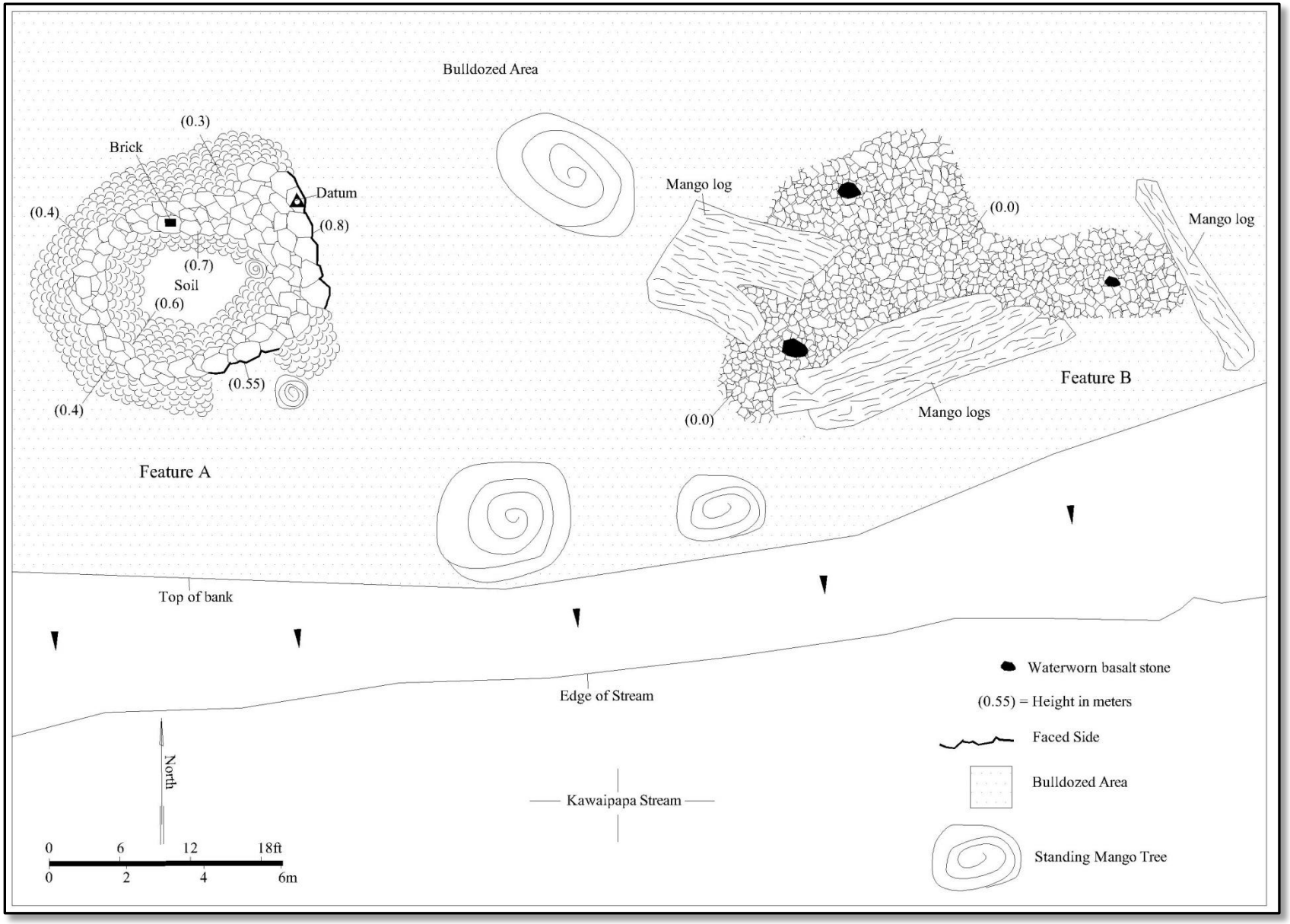


Figure 36. Site 6549 plan map

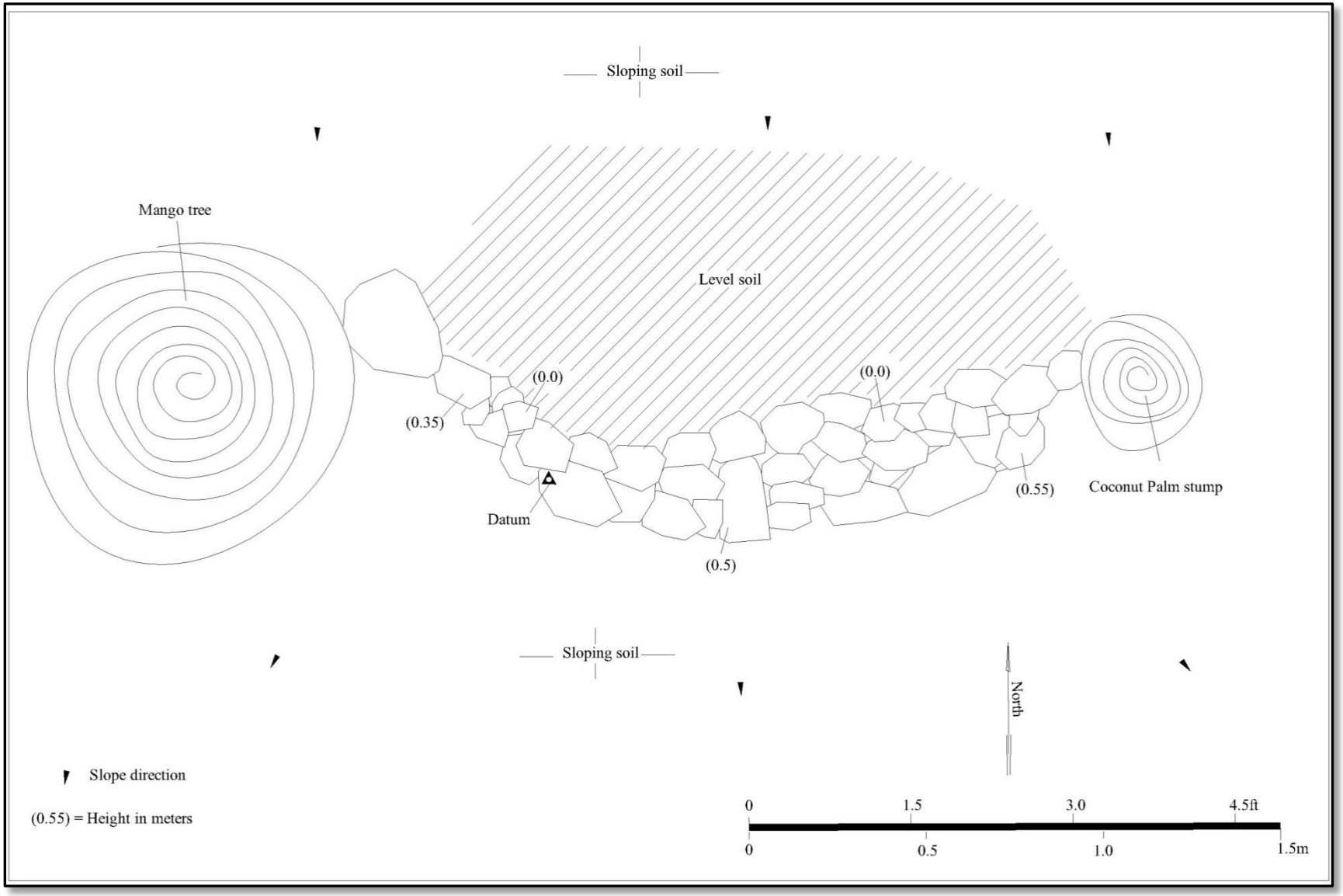


Figure 37. Site 6550 plan map

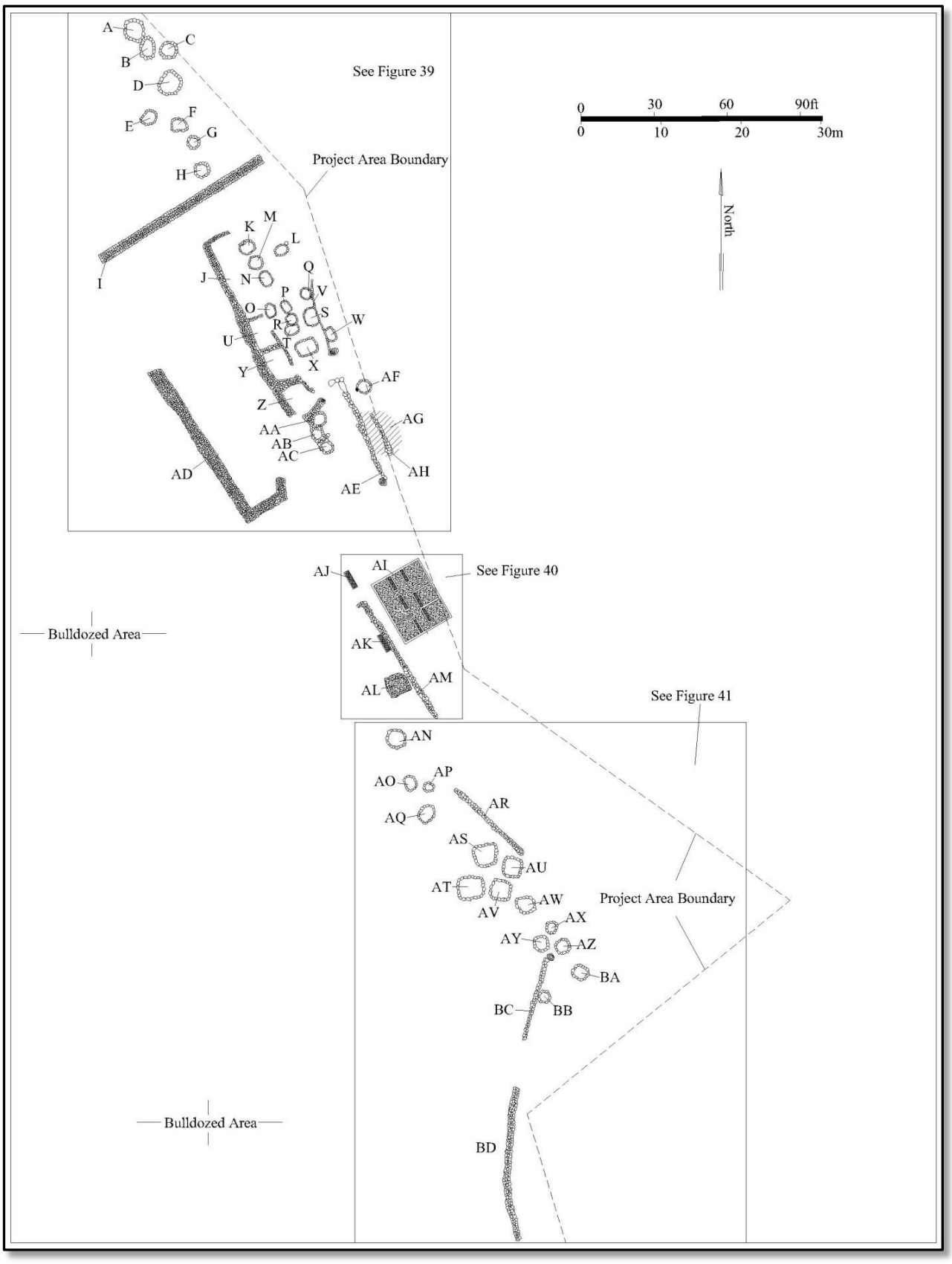


Figure 38. Overall Site 6551 plan map

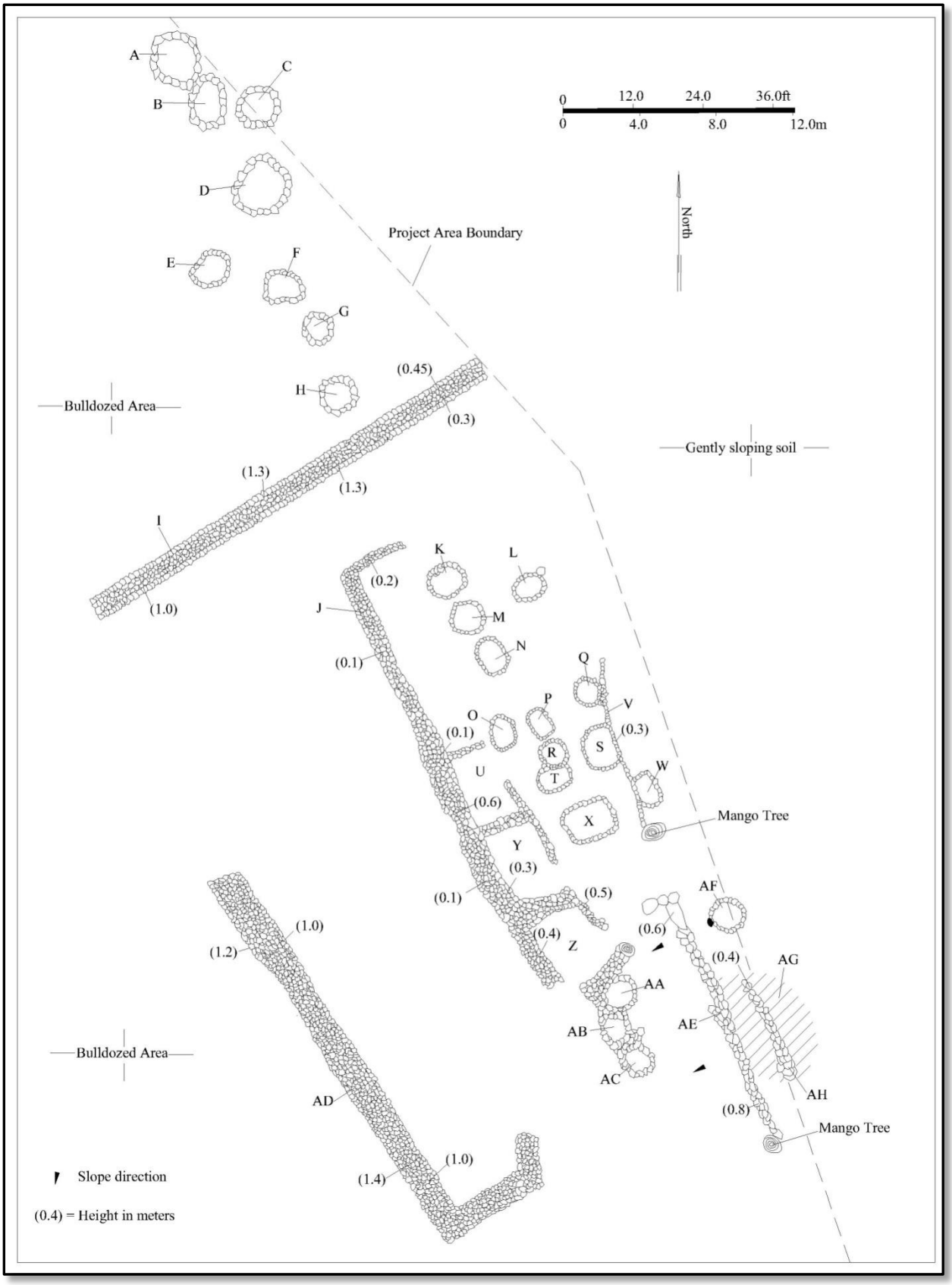


Figure 39. Site 6551, Feature A through AH plan map

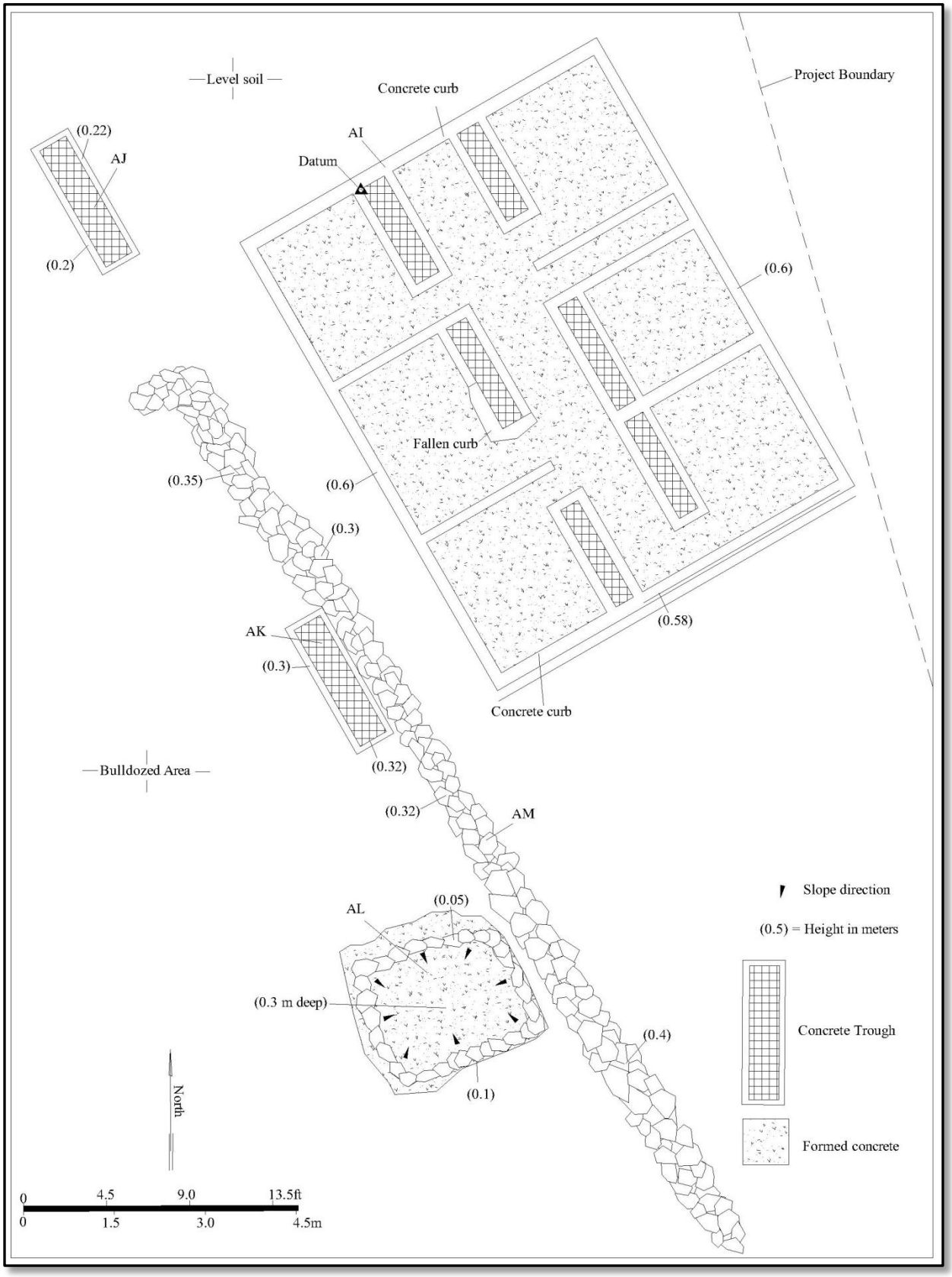


Figure 40. Site 6551, Feature AI through AM plan map

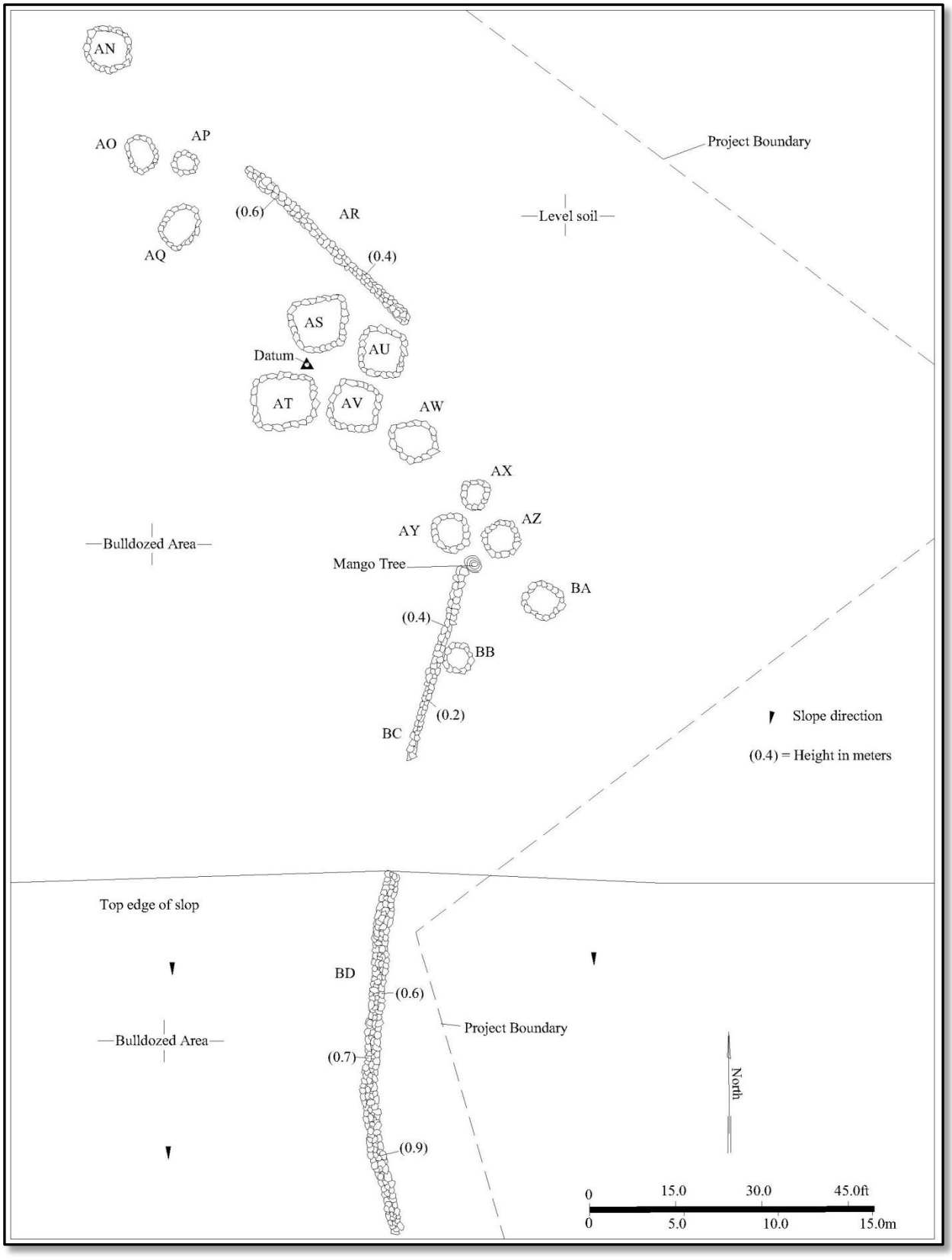


Figure 41. Site 6551, Feature AN through BD plan map

Prehistoric Features

The 38 stone-lined pits are summarized in *Table 4* and their locations are illustrated in *Figures 39* and *41.* The pits range in length from 0.96 to 2.94 m (average of 1.74 m), in width from 0.81 to 2.55 m (average 1.41 m) and in depth below the surrounding ground surface from 0.3 to 1.1 m (average 0.57 m). No cultural remains were found in association with the pits. An example of a Site 6551 pit is depicted in *Figure 42.*

The nine walls are designated Features I, V, AD, AE, AH, AM, AR, BC and BD. Of these, Features I and AD are interpreted as historic livestock walls and are discussed below. The remaining seven walls are interpreted as traditional Hawaiian agricultural features (see *Table 5* and *Figures 39, 40* and *41*). The seven walls vary in length from 5.75 to 19.6 m (average of 12.61 m) in width from 0.4 to 0.85 m (average 0.71 m) and in height from 0.3 to 0.9 m (average 0.56 m). Of the seven walls, two are constructed of piled cobbles and small boulders (Features V and AM) and the rest are built of roughly stacked and piled cobbles and small boulders. No cultural remains are present. An example of an agricultural wall is illustrated in *Figure 43.*

The four terraces (Features J, U, Y and Z; see *Table 5* and *Figure 39)* are built adjacent to each other and are constructed of roughly stacked and piled cobbles. The terraces range in length from 4.5 to 11.4 m (average of 7.02 m), in width from 3.2 to 4.2 m (average 3.76 m) with retaining walls that vary in height from 0.2 to 0.6 m (average 0.4 m). The terrace surfaces are level soil with no cultural remains present.

Historic Features

The historic features at Site 6551 consist of the four concrete structures (Features AI, AJ, AK and AL), the historic artifact scatter (Feature AG) and the two remaining stone walls (Features I and AD – see *Table 7.)* The four structures built of concrete are situated in the approximate center of the complex (see *Figure 40*). The main feature is a rectangular-shaped foundation that is 8.5 m long (northwest by southeast), 6.8 m wide and 6.0 m in height (**Feature AI**). This feature is a pig pen with six interior stalls and several recessed troughs built of formed concrete (*Figure 44*). The walls of the foundation average 10.5 m wide and the recessed troughs are 0.22 m deep below the slab floor. A variety of modern debris consisting of wooden pallets, rice sacks, beer cans and bottles, barbed wire and a garden hose is scattered on and around the features.

The **Feature AJ** and **AK** troughs are located adjacent to the Feature AI foundation. These features consist of rectangular concrete boxes that are similar to those incorporated into Feature AI. They are 2.38 to 2.45 m long, 0.7 m wide and 0.22 to 0.32 m in height. The walls are 10.2 m thick and the interior concrete floors are 0.17 to 0.18 m deep. The **Feature AL** basin is located 3.5 m to the south of Feature AI. It is a roughly rectangular, bowl-shaped basin that is bordered by basalt cobbles and that is partially coated in a concrete veneer. The basin floor is formed concrete. The basin measures 2.9 m long (east-west), 2.55 m wide and 0.1 m in height above the surrounding ground surface. The center of the basin is 0.3 m in depth below the edges. No cultural remains are present at the feature.

The **Feature AG** artifact scatter is located in the northern portion of the site, on the eastern project area boundary. It consists of a concentration of glass bottles and jars, glazed ceramics, rusted metal fragments and several concrete blocks located in an area 6.4 m long (north-northwest by south-southeast) and 4.2 m wide. The scatter is located adjacent and around the Feature AE and AH agricultural walls. There are approximately 20 clear glass “canning” type jars and approximately 75 green, brown and clear glass bottles at the feature. Several of the bottles have the mark of the Hazel Atlas Glass Company of Wheeling West Virginia (Fike 1998). This mark began to be used in 1923 and was abandoned by the early 1960s. Several of the other bottles are marked with an “I” within a diamond, which was a mark used by the Illinois Glass Company of Alton, Illinois. The mark was used from c. 1915 to 1929 (Fike 1998).

Figure 42. Site 6551, Feature AW stone-lined pit, view to east

Figure 43. Site 6551, Feature AE wall, view to east

Figure 44. Site 6551, Feature AI concrete foundation, view to east

Figure 45. Site 6551, Feature I wall, view to south

The two historic stone walls (**Features I** and **AD**) are located in the northern portion of the site (see *Figure 39*). These walls are well-built and more substantially constructed that the seven other walls at the site. They are similar to the massive stone walls present at the nearby Site 6548 complex located just inland (see *Figure 10*). Both walls are constructed of stacked and faced cobbles and small boulders and each has a cobble core-filled interior. The Feature I wall is 23.6 m long (northeast by southwest), 1.1 to 1.25 m thick with a maximum height of 1.3 m (*Figure 45*). The wall likely once extended to the northeast and to the southwest, but these areas have been bulldozed.

The **Feature AD** wall extends along the inland side of the site at the northern end (see *Figure 39*). This wall is L-shaped and has an overall length of 28.7 m. The long segment is 22.6 m l in length (northwest by southeast). The short segment extends to the northeast and north for an additional 6.1 m. It is 1.5 to 2.0 m thick with a maximum height of 1.4 m. No cultural remains were found at either of the historic walls.

Site 6551 is interpreted as complex of agricultural, animal husbandry, livestock control and historic habitation features with at least two episodes of use. The pits, terraces and seven of the nine walls are interpreted as prehistoric agricultural features based on formal type and insubstantial construction. A subsequent historic period of use is evidenced by the concrete features, historic artifact scatter and the two substantial walls. The concrete features are pig pens likely utilized by the occupants of houses located just outside the project area to the east. The condition of the concrete at these features suggests that they are at a minimum 50 years old. Several of the bottles noted at the Feature AG artifact scatter were manufactured no later than 1929, which suggests that these remains were deposited in the early to mid-1900's, also likely by the occupants of the adjacent structures.

Site 6551 has been altered by mechanical clearing along the inland side and by use of the area by adjacent landowners. The features of the site are in poor to good condition. The site is assessed as significant for its information content.

CONCLUSION

Discussion

The identified sites conform to the types expected based on previous archaeological work and historic documentary research. As expected prehistoric habitation and agricultural sites were documented during the survey. Three permanent habitation complexes were identified (Sites 6528, 6545 and 6459). Two of these sites are located in the seaward portion of the parcel (6545 and 6549) below approximately 173 ft elevation. The remaining site is located in inland at approximately 313 ft elevation.

As previously discussed, the most common functional feature type in the project area is an agricultural feature (n=145 or 86%). The most common agricultural feature is a stone-lined pit (112, 66%). The pits average 1.42 m long, 1.16 m wide and 0.57 m deep and are interpreted as agricultural cultivation pits based on their formal type and appearance.

Stone-lined pits were identified at five sites (Sites 6537, 6540, 6541, 6543 and 6551). Of these, four sites (6537, 6540, 6541 and 6543) are situated in the south-central portion of the parcel between approximately 181 ft and 262 ft elevation (see *Figure 10*). These sites are located in relatively close proximity to Kawaipapa Stream with three of them located within 25 m (Sites 6537, 6541 and 6543). Site 6540 is located approximately 100m north of the stream. The remaining site containing stone-lined pits is Site 6551, located along the eastern project area boundary, approximately 120 m north of the stream.

As expected, the remains of sugar cane plantation transportation infrastructure were identified. The Site 4964 railroad grade used to transport sugar cane from the fields to the mill in Hana. This railroad line was constructed before 1915 when the railroad track first appears on a map (see *Figure 7*). An historic road (Site 6546) was likely built after the abandonment of the railroad line, providing access around the narrow portions of the railroad grade. Other evidence of an historic use are historic walls likely associated with ranching in the seaward portion of the parcel (Sites 6547, 6548 and 6551). Recent pig pens and an historic trash dump were also noted at Site 6551.

Significance Assessments

Pursuant to DLNR (2003) Chapter 13-284-6, the initial significance assessments provided herein are not final until concurrence from the DLNR has been obtained. Sites identified and relocated during the survey are assessed for significance based on the criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR 2003: Chapter 284). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

1. Criterion “a”. Be associated with events that have made an important contribution to the broad patterns of our history;

2. Criterion “b”. Be associated with the lives of persons important in our past;

3. Criterion “c”. Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;

4. Criterion “d”. Have yielded, or is likely to yield, information important for research on prehistory or history; and

5. Criterion “e”. Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural

practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts--these associations being important to the group's history and cultural identity.

Recommended Treatments

Based on the above criteria all 26 sites within the project area are assessed as significant under Criterion "d" (*Table 8*). The sites have yielded information important for understanding historic land use in project area. Additionally, the Site 4964 railroad grade is assessed as significant under Criterion "a" for its contribution to the historic sugar cane industry on Maui.

Table 8. Site significance and recommended treatments

SIHP Number	Type	Function	Significance Criteria	Recommended Treatment
4964	Railroad Grade	Transportation	A, D	PR*
6527	Terrace	Agriculture	D	NFW
6528	Complex (5)	Permanent Habitation	D	DR/PR
6529	Mound	Agriculture	D	NFW
6530	Artifact Scatter	Historic Habitation	D	NFW
6531	Complex (2)	Agriculture	D	NFW
6532	Complex (3)	Agriculture	D	NFW
6533	Complex (2)	Agriculture	D	NFW
6534	Complex (2)	Agriculture	D	NFW
6535	Terrace	Agriculture	D	NFW
6536	Modified Outcrop	Agriculture	D	NFW
6537	Complex (6)	Agriculture	D	NFW
6538	Wall	Agriculture	D	NFW
6539	Wall	Agriculture	D	NFW
6540	Complex (12)	Agriculture	D	NFW
6541	Pit	Agriculture	D	NFW
6542	Terrace	Agriculture	D	NFW
6543	Complex (58)	Agriculture	D	NFW
6544	Complex (2)	Agriculture	D	NFW
6545	Complex (2)	Permanent Habitation	D	DR/PR
6546	Road	Transportation	D	NFW
6547	Wall	Livestock Control	D	NFW
6548	Complex (4)	Livestock Control	D	NFW
6549	Complex (2)	Permanent Habitation	D	DR/PR
6550	Terrace	Agriculture	D	NFW
6551	Complex (56)	Agriculture, Animal Husbandry, Livestock Control, Historic Habitation	D	NFW

PR* = Preservation of portion of site recommneded

The mapping, written descriptions and photography at 22 sites adequately document them and no further work or preservation is recommended (see *Table 8*). Three sites are recommended for mitigation through data recovery (Sites 6528, 6545 and 6549). The plans for data recovery would be detailed in a Data Recovery Plan prepared for DLNR-SHPD review and approval. Alternatively, the sites could be preserved in accordance with a Site Preservation Plan prepared for DLNR-SHPD review and approval. Representative sections of the remaining Site 4964 railroad grade are recommended for preservation, particularly at the southern end which is in good condition. The preservation of portions of Site 4964 would be guided by a Site Preservation Plan prepared for DLNR-SHPD review and approval.

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APPENDIX F-2
SHPD Letter dated March 31, 2014

614 Rec'd 4/1/14

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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LAND
STATE PARKS

HISTORIC PRESERVATION DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

March 31, 2014

Alan Haun, Ph.D.
Haun & Associates
73-1168 Kahuna Ao Road
Kailua-Kona, Hawaii 96740

LOG NO: 2014.00059
DOC NO: 1403MD55
Archaeology

Aloha Dr. Haun:

SUBJECT: **Chapter 6E-42 Historic Preservation Review-**
Draft Archaeological Inventory Survey for Hoeffken with 25 New Sites
Kawaipapa Ahupua'a, Hāna District, Island of Maui
TMK (2) 4-7-001:002; 4-7-002:004, 005 and 007 (all por.)

Thank you for the opportunity to review the draft report titled *Draft Archaeological Inventory Survey, TMK: (2) 1-3-04:001, Kawaipapa Ahupua'a; Hana District; Island of Maui* (Haun and Henry January 2014, Report No. 614-010314), which we received on January 6, 2014. We apologize for the delay in our reply. We previously reviewed an earlier 2013 draft of this report and requested revisions (*Log No. 2013.3648, Doc No. 1309CG04*).

This report was prepared at the request of Tom's Backhoe & Excavation Co., Inc. The project area is a 72.81-acre parcel. Proposed plans for this parcel include a 22-lot affordable housing subdivision in the seaward portion, inland of the Hana Highway. This parcel is bounded by Kawaipapa Stream to the south, by undeveloped land to the north and west and by houses and the Hana Highway to the east. Portions of the project area were previously mechanically cleared. Cleared areas consist of a network of dirt roads throughout the property and five areas in the seaward portion of the parcel. The combined extent of the roads and cleared areas is 13.4 acres.

Fieldwork was conducted between June 15-21 and August 11-16, 2008, under your direct supervision. The fieldwork took 42 person-days to complete, with a crew of four surveyors spaced at ten-meter intervals. The majority of the parcel contains a high tree canopy with minimal ground-obscuring vegetation; ground surface visibility in these areas was good. Areas with dense ground-covering vegetation were present in the parcel, resulting in poor ground surface visibility. These poor visibility areas are consistently located in the portions of the parcel that have been bulldozed.

Twenty-six sites were documented, including both pre-Contact and Historic-era sites containing 169 features. The features include 112 stone-lined pits, 19 walls, 12 terraces, six modified outcrops, five mounds, three enclosures, two artifact scatters, two platforms, two pavements, two concrete troughs and one each of the following: concrete basin, concrete foundation, railroad grade and road. Feature function includes agriculture (n=145), permanent habitation (nine), livestock control (seven), animal husbandry (four), transportation (two) and historic habitation (two). The sites were assigned state inventory of historic places (SIHP) 4964 and 6527 through 6551. One site, an historic railroad grade, was previously identified as SIHP 4964. Two test units were manually excavated at pre-Contact sites, one at SIHP 6528 and one at 6545.

All sites have been assessed as significant under Criterion "d" for having yielded information important to our understanding of Historic land use in the project area. Site 4964, the historic railroad grade, was additionally assessed as significant under Criterion "a." We concur with these assessments.

Twenty-two sites are adequately documented and no further work or preservation is recommended. Three sites are recommended for mitigation through data recovery (sites 6528, 6545 and 6549). Alternatively, the sites could be

preserved in accordance with a site preservation plan. Representative sections of the remaining site 4964 railroad grade are recommended for preservation, particularly at the southern end which is in good condition. We concur with these recommendations. We note that archaeological monitoring is neither recommended nor not recommended; this will have to be addressed at a later time, ideally following data recovery results.

All requested revisions have been addressed in the revised draft report. This archaeological inventory survey report meets the requirements of Hawai'i Administrative Rule 13-276 and is accepted as final. Please send one hardcopy of the final document, clearly marked FINAL, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library. We request that for the Final document, and for all future submittals, individual names of SHPD employees not be included in report and plan submittals.

Please contact me at (808) 243-4641 or Morgan.E.Davis@hawaii.gov if you have any concerns about this letter.

Mahalo,

Morgan E. Davis
Lead Archaeologist, Maui Section

cc: County of Maui
Department of Planning
Current Planning Division
2200 Main Street, Ste. #315
Wailuku, HI 96793

Development Services Administration
County of Maui
250 South High Street
Wailuku, Hawaii 96793

APPENDIX G
Cultural Impact Assessment Report

Report 1040 -101614

CULTURAL IMPACT ASSESSMENT

TMK: (2) 1-3-004:POR. 001

KAWAIPAPA AHUPUA‘A

HĀNA DISTRICT

ISLAND OF MAUI

HAUN & ASSOCIATES

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL RESOURCE MANAGEMENT SERVICES

73-1168 KAHUNA A‘O ROAD, KAILUA-KONA HI 96740

PHONE: 808-325-2402 FAX: 808-325-1520

CULTURAL IMPACT ASSESSMENT

TMK: (2) 1-3-004: POR. 001

KAWAIPAPA AHUPUA‘A, HĀNA DISTRICT,

ISLAND OF MAUI

By:

Alan E. Haun, Ph.D.,

Dave Henry, B.S.,

and

Solomon H. Kailihiwa, III, B.A.

Prepared for:

GTH Land Company LLC.
651 Papipi Rd.
Kula, Hawaii 96790

October 2014

HAUN & ASSOCIATES

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL RESOURCE MANAGEMENT SERVICES

73-1168 KAHUNA A‘O ROAD, KAILUA-KONA HI 96740

PHONE: 808-325-2402 FAX: 808-325-1520

SUMMARY

At the request of GTH Land Company LLC, Haun & Associates conducted a cultural impact assessment of a 6.7-acre portion of Tax Map Key (TMK): (2) 1-3-004:001, a 72.81-acre parcel located in Kawaipapa Ahupua'a, Hāna District, Island of Maui. The objective of the assessment is to identify any culturally significant resources or traditional cultural practices within the project area and its immediate vicinity. The assessment relies upon archival research focused on historical documents, previous archaeology studies, previous cultural impact assessment reports, and oral interviews. This assessment addresses potential cultural impacts that future development could have on any traditional cultural practices or resources following the framework set forth by the Hawai'i Supreme Court in the case of Ka Pa'akai O Ka 'Aina vs. the Hawai'i State Land Use Commission (LUC).

A 24-lot affordable housing subdivision is proposed for development in the seaward portion of TMK: (2) 1-3-004:001. Haun & Associates previously conducted an archaeological inventory survey in the parcel (Haun and Henry 2014). The survey identified 26 sites with 169 features. Of the 26 sites, two sites with 59 features are located within the proposed subdivision.

Four individuals, respected members of the Hāna community, shared their knowledge of Kawaipapa and spoke about the proposed development. The project area has been overgrown with dense vegetation for as long as anyone can remember and no traditional cultural practices take place within the project area. The consultants all spoke in favor of the proposed project and stated that it would not interfere with any traditional cultural activities. They also felt that the proposed development would be beneficial for Kawaipapa and possibly help control the mosquito population.

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INTRODUCTION

At the request of GTH Land Company LLC, Haun and Associates has conducted a cultural impact assessment (CIA) of a 6.7-acre portion of TMK: (2) 1-3-004:001, a 72.81-acre parcel located in Kawaipapa Ahupuaʻa, Hāna District, Island of Maui (**Figures 1** and **2**). The objective of the assessment is to identify any culturally significant resources or traditional cultural practices within the project area and its immediate vicinity. The CIA relies upon archival research focused on historical documents, previous archaeology studies, previous CIA reports, and oral interviews. This assessment addresses potential cultural impacts that future development could have on any traditional cultural practices or resources following the framework set forth by the Hawaiʻi Supreme Court in the case of Ka Paʻakai O Ka ʻAina vs. the Hawaiʻi State Land Use Commission (LUC). This CIA attempted to make specific findings concerning:

- The identity and scope of "valued cultural, historical and natural resources" in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;
- The extent to which those resources, as well as traditional and customary native Hawaiian rights, will be affected or impaired by the proposed action; and
- The feasible action, if any, to be taken by the agency to reasonably protect native Hawaiian rights, if they are found to exist.

The project landowner proposes to develop a 24-lot affordable housing subdivision in the seaward portion of the subject parcel, inland of the Hāna Highway (**Figure 3**). The CIA was conducted during July and August 2014. Described in this report are the project scope of work, field methods, background information, CIA findings, and any potential impacts to traditional cultural practices.

Scope of Work

In order to satisfy Act 50 of Ka Paʻakai O Ka ʻAina vs. Land Use Commission the following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct background review and research of existing ethnographic, historical, anthropological, sociological documentary literature relating to traditional cultural practices and resources in the project area and its immediate vicinity.
2. Identify and consult with individuals and organizations to identify knowledgeable individuals with expertise concerning the types of cultural resources, practices, and beliefs found in the vicinity of the project area
3. Conduct ethnographic/oral historical interviews with knowledgeable individuals; and
4. Prepare and submit a CIA Report

Project Area Description

The area surveyed by Haun and Henry (2014) is an irregularly shaped 72.81-acre parcel located in Kawaipapa Ahupuaʻa at elevations that range from approximately 120 to 320 ft (**Figure 4**). The parcel is bounded by Kawaipapa Stream to the south, by undeveloped land to the north and west and by houses and the Hāna Highway to the east. The soil throughout the project area is Malama extremely stony muck (3-25% slopes), which consists of a thin layer of black muck over *aʻa* lava (Foote et al. 1972:92). This soil type has a rapid permeability, a slow runoff and a slight erosional hazard and is used primarily for a water

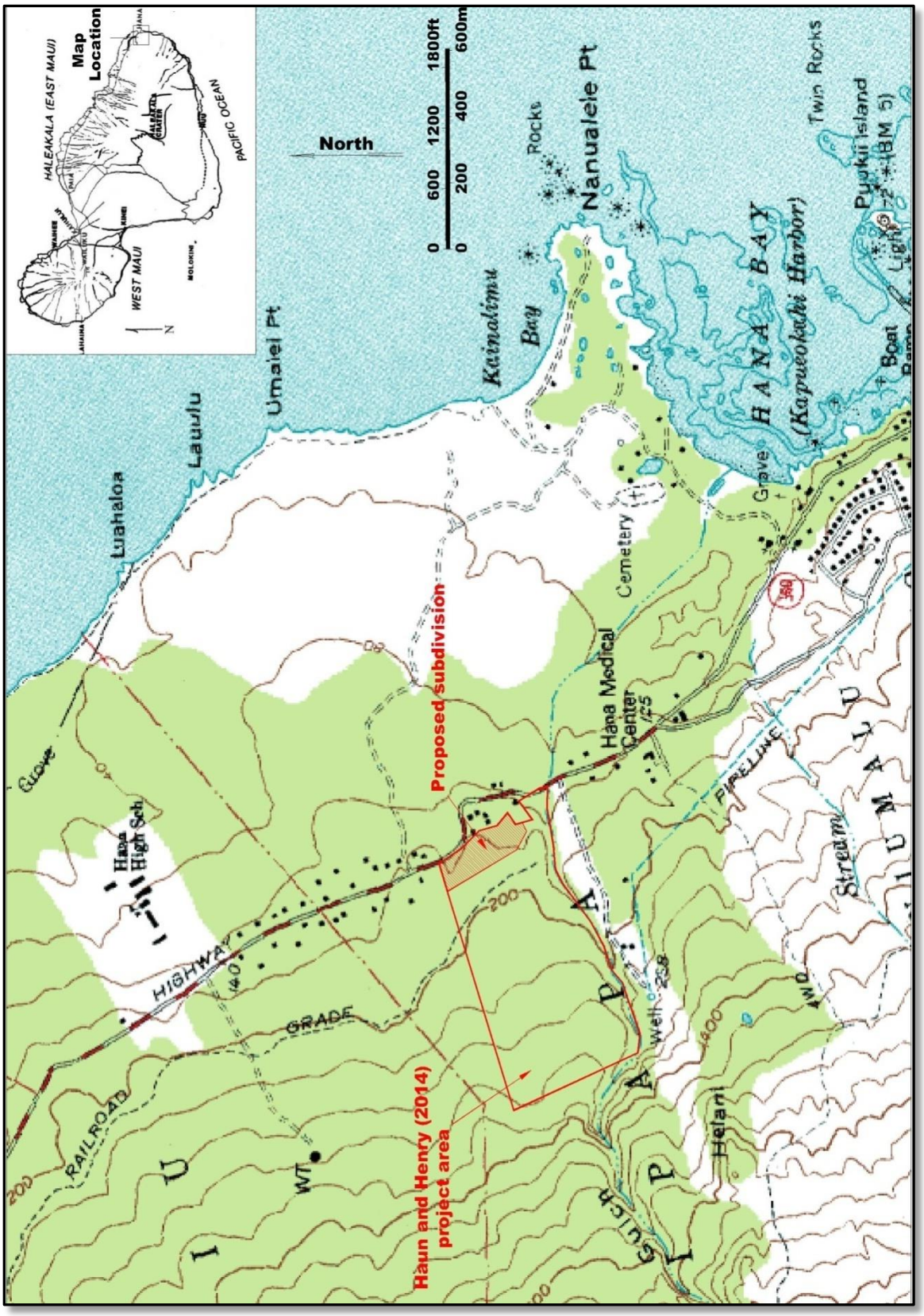


Figure 1. Portion of Hana 1983 USGS 7.5' quadrangle showing project area

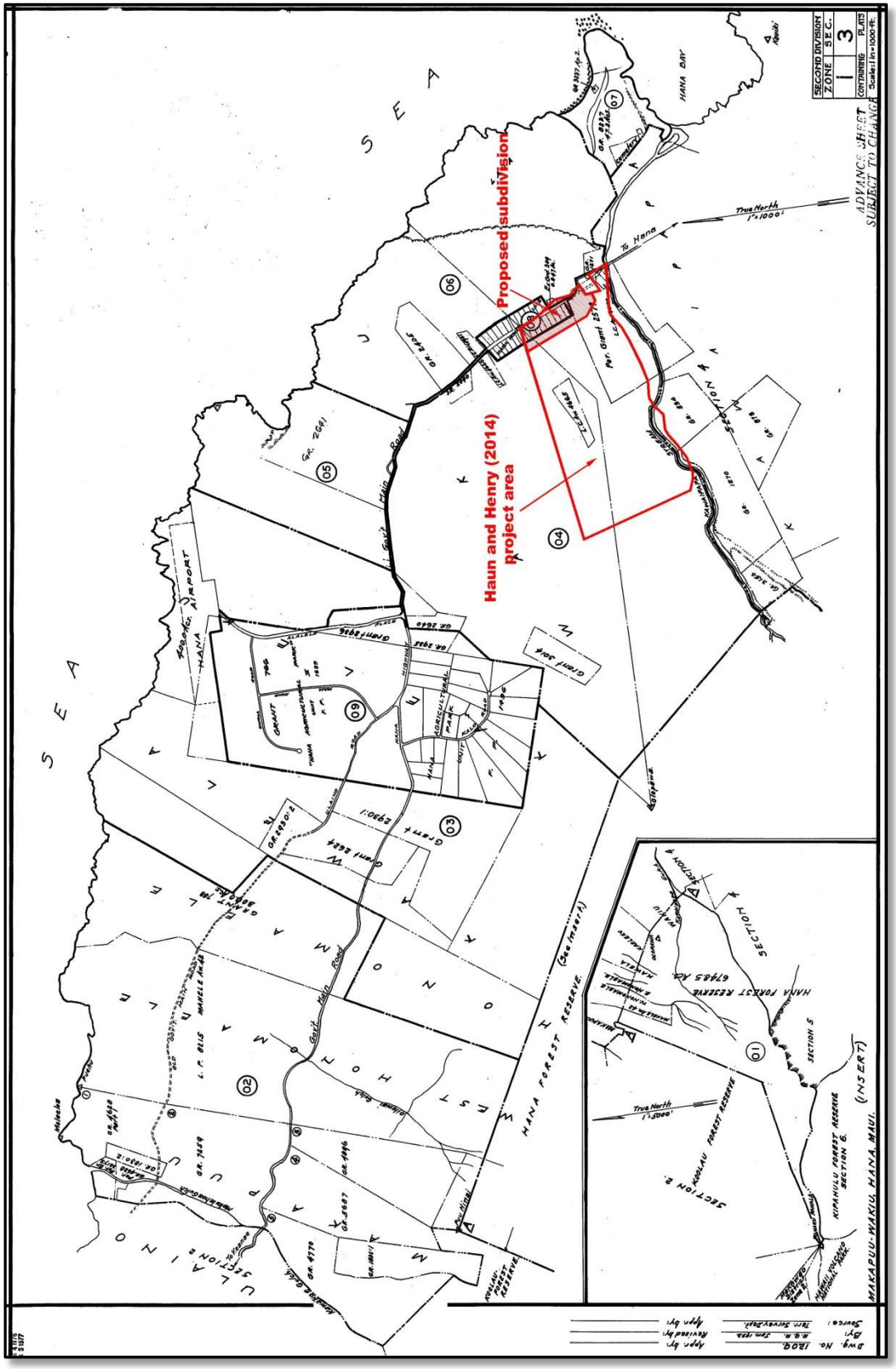


Figure 2. Tax Map Key 1-3-04 showing project area

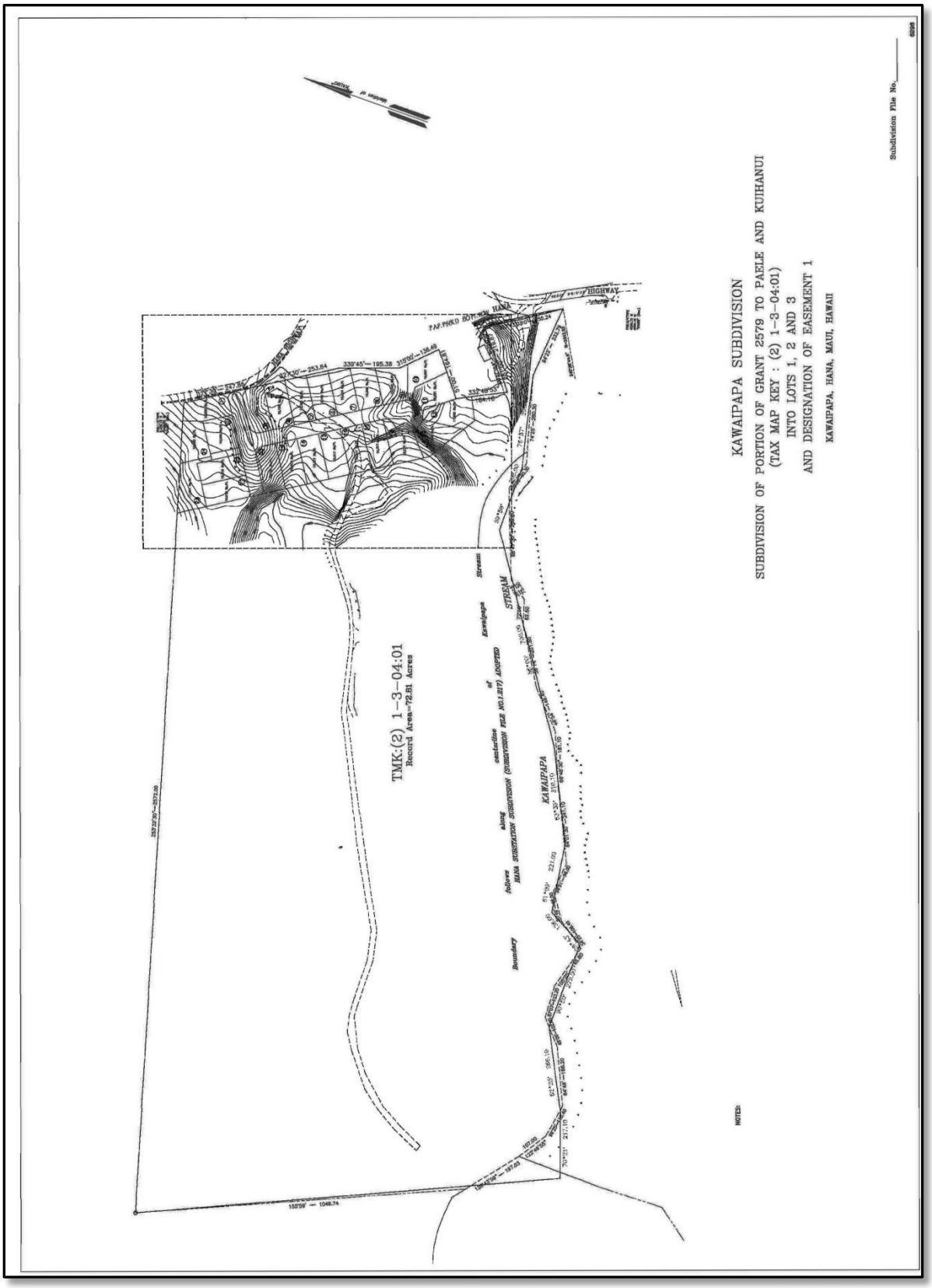


Figure 3. Proposed affordable housing development location.

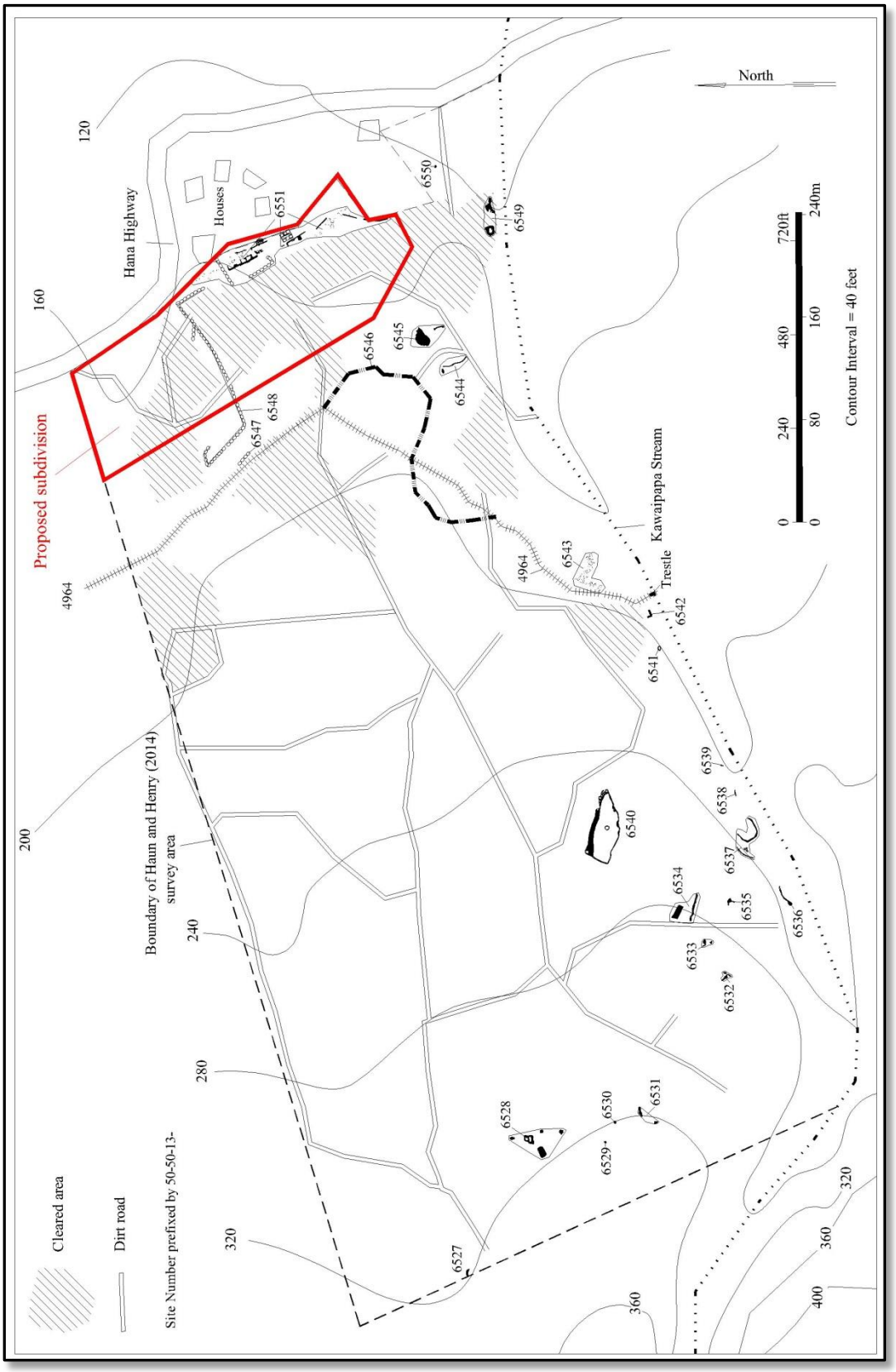


Figure 4. Haun and Henry (2014) site location map

source, with small areas classified as suitable for orchard crops and pasture. The proposed 6.7 acre subdivision is located in the seaward portion of the 72.81-acre parcel between approximately 120 to 180 feet.

Portions of the Haun and Henry (2014) project area have been mechanically cleared. Cleared areas consist of a network of dirt roads throughout the property and five areas in the seaward portion of the parcel. A total of 3,748.0 linear meters (2.3 miles) of dirt roads are present that average 5 m in width and cover an area of approximately 4.6 acres. The five cleared areas are located primarily in the seaward portion of the property, below approximately 220 ft elevation. These areas vary in area from 1,948.0 to 20,765 sq m and comprise a total of 35,548 sq m or approximately 8.8 acres. The combined extent of the roads and cleared areas is 13.4 acres (see **Figure 4**). One of the cleared areas is illustrated in **Figure 5**.

Figure 5. Project area overview showing cleared area, view to northeast

Much of the Haun and Henry (2014) survey area is characterized by secondary growth vegetation indicating previous impacts to the area. The introduced species are comprised of African tulip (*Spathodea campanulata*), avocado (*Persea cerospora*), bitter melon (*Momordica balsamina*), coconut (*Cocos nuciferia*), Heliconia (*Haleconia* spp.), koa-haole (*Leucaena leucocephala*), papaya (*Carica papaya* L.), silver oak (*Grevillea robusta*), plumeria (*Plumeria acuminata* Ait.), strawberry guava (*Psidium cattleianum* Sabine), miconia (*Miconia* calvescens) and royal palm (*Roystonea oleracea* Jacq.). Traditional cultigens and Indigenous species noted include breadfruit (*ulu, Artocarpus communis* Forst.), *hala* (*Pandanus* odoratissimus), *hala pepe* (*Dracaena* spp.), *kukui* (*Aleurites moluccana*), *ki* (*Cordyline fruticosa*), tree ferns (*hapu'u, Cibotium splendens* Gaud.), *noni (Morinda citrifolia*), *'awapuhi ko'oko'*o (torch ginger, *Phaeomeria magnifica*), *ohia* (*Metrosideros polymorpha*) and mango (*Mangifera indica* L.). **Figures 6** and **7** show examples of the vegetation.

Figure 6. Project area overview, view to west.

Figure 7. Project area overview, view to northeast

Methods

Archival research was conducted at the Hamilton Library Hawaii and Pacific Collection at the University of Hawaii-Manoa, the University of Hawaii-Hilo Hawaiian Collection, the Land Survey Office and the Archives Division of the Hawaii Department of Accounting and General Services, the Bishop Museum Archives, Hawai`i Children's Mission House Museum archives, State Historic Preservation Division library, State Survey Division, Maui Historical Society Archives at Bailey House Museum, Hāna Cultural Center archives, and the Hawaii State Public Libraries in Honolulu and Hilo.

Informal "talk story" interviews were conducted with knowledgeable individuals in a manner that allowed the individual to discuss the issues that were most important to them about the project area and the proposed project. The individuals that chose to participate in this CIA were all born and raised in Hāna and were knowledgeable about the area.

BACKGROUND

Historical Documentary Research

The project area is located in the *moku'aina* (district) of Hāna on the northeast coast of the island of Maui, in the *ahupua'a* (land division) of Kawaipapa (**Figure 8**). The District of Hāna or East Maui, is made up of five *moku'aina* (Kahikinui, Kaupo, Kīpahulu, Hāna, and Ko'olau) each radiating from a large rock called Palaha, on the northeast rim of the crater of Haleakala. Legendary accounts and traditional historical information concerning Hāna District are described in detail by Cleghorn and Rogers (1987), Orr (1990), and Sterling (1998). Legends concerning the deities Pele, Pu'uhele, Kane, Kanaloa, Maui, and Ku'ula figure prominently in Hāna's legendary history.

In Thrum's *Hawaiian Annual,* he recounts the legend of Ku'ula in which the first *loko* (fishpond) was invented and constructed in Hāna at Leho'ula (Thrum 1901:115). *Mo'olelo* (legends)*, mele* (songs)*,* '*olelo no'eau* (proverbs), and *oli* (chants) about events that took place in pre-contact times are revealing in that they illustrate that many of the battles of this period were relatively quickly contained by the opposing *ali'i* (see History of Kuali'i in Fornander 1917:IV: II: 364-434). These stories also illustrate the on-going inter-relationships between the people of the various islands.

In one account of the origin of Ka'uiki hill, on the south shore of Kapueoakahi (Hāna Bay), Kawaipapa was the location where Lalawalu brought her foster child (Ka'uiki) and subsequently became the caretaker of Ka'uiki.

> But according to the idea of some people it was Lalawalu who brought [Ka'uiki] from Kahiki; she brought it as her foster child, but because she was vexed at the child for constantly nipping her breast, therefore the mother made up her mind to leave it. She brought it along to Koloa, Kauai, and there she wanted to cast it away, but the child did not fancy staying there. She persevered in carrying the child until they arrived at Kaena; again the child did not desire to be left there, so it was brought along until they landed at Kawaipapa, Hana, East Maui, and it was left with him; and there it stands until this day. That was the idea of some olden people (Fornander 1919: 548).

One of Maui's most famous *ali'inui* during the late 1500s to early 1600s was Pi'ilani whose ancestors made Hāna their home (Orr 1990). As a ruler, Pi'ilani spent time at both Hāna and Lele/Lahaina. He was well known for his peaceful rule of Maui, Moloka'i and Lana'i. While he ruled, there were no wars

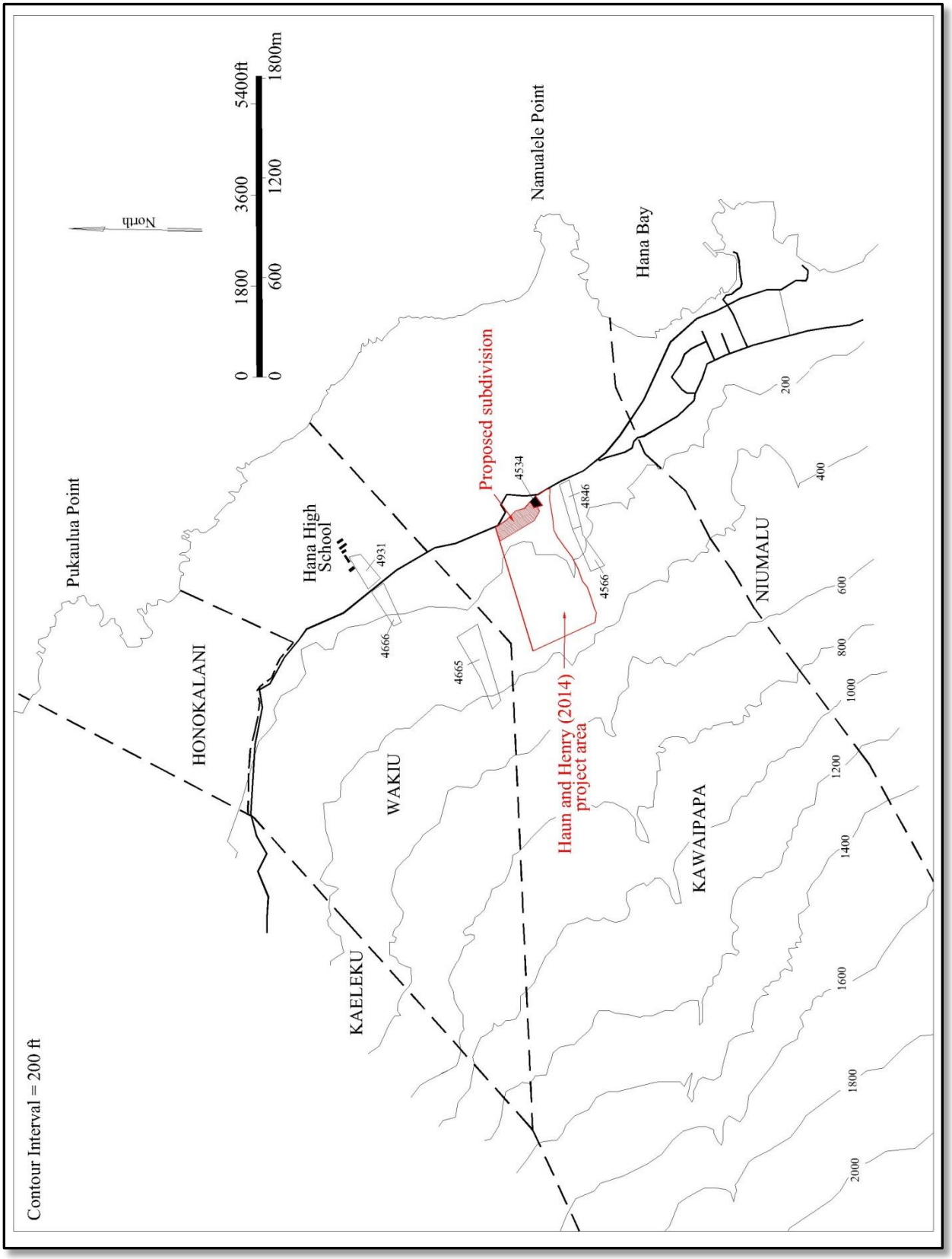


Figure 8. Ahupua'a boundaries and Land Commission Awards

between chiefdoms and island polities. Piʻilani met his second son Kiha-a-Piʻilani in Lele (now Lahaina). Kiha (ca. early 1600s) was raised on Oʻahu (Waikīkī) with his mother's family. As a young adult he grew tired of listening to his uncles and wanted to meet his father. A *moʻolelo* indicates that from the moment he met his father, Kiha was never satisfied with being a junior son to his older brother, Lono-a-Piʻilani.

After the death of Piʻilani in Lele, friction between the brothers escalated (Orr 1990). Kiha went to the Big Island to solicit the help of his sister Piʻikea and her husband, Hawaiʻi *aliʻinui* ʻUmi-a-Līloa, but not before he spent some time living in Hāna. After a year of building an army to challenge Lono-a-Piʻilani, Kiha and Umi traveled to Maui to find that Lono had recently died, presumably from fear of doing battle with his brother and brother-in-law.

In the *History of Kualiʻi*, the exploits of Kualiʻi (great-great grandson of Kakuhihewa, *aliʻinui* of Oʻahu) take him to every island and he eventually unites all the islands "from Hawaiʻi to Niʻihau" (Fornander 1917:IV: II: 406). Kualiʻi lives in the time of Maui *aliʻinui* Kamalalawalu and Kauhiokalani, sons of Kiha-a-Piʻilani by each of his two wives [Kumaka and Koleamoku] and Kauhiakama, son of Kamalalawalu (Kamakau 1992:56; McKenzie 1986).

Between 1650 and 1795, many wars took place between intra-island chiefdoms and inter-island kingdoms; the majority of these *aliʻinui* were related in various ways. In 1736, Maui *aliʻinui* Kekaulike died. He chose his *nīʻaupiʻo* son Kamehameha-nui to be his heir; although Kauhi was the oldest, he was of a slightly lower rank. Kamehameha-nui was the brother of Ka-lola, Ka-hekili, and Ku-hoʻoheihei-pahu. In 1737 and 1738 Kauhi-ʻaimoku-a-Kama (Kauhi), oldest son of Ke-kau-like rebelled against his younger brother, Kamehameha-nui. The fighting men of Kamehameha-nui were slaughtered. This prompted Kamehameha-nui to flee to his uncle's canoe, Hawaiʻi Island *aliʻinui* Alapaʻi-nui-a-Ka-uaua (Alapaʻi), who took him to Hawaii Island where they spent a year preparing for war. Alapaʻi was the half-brother of Kamehameha-nui's mother (Kamakau 1992:73-74).

When Kauhi heard that Alapaʻi was heading back to Maui, he enlisted the help of Pele-io-holani, Kauai *aliʻinui* who was also ruling chief of Oʻahu and the son of Kualiʻi; Pele-iʻo-holani was also father of Keʻeaumoku and cousin of Alapaʻi (McKenzie 1986:23). Alapaʻi attacked Maui (1738), drying up the streams of Kauaʻula, Kanaha and Kahoma near Lahaina Luna, destroying the taro patches. His men kept guard over the streams of Olowalu, Ukumehame, Wailuku and Honokowai. "When Pele-iʻo-holani heard that Alapaʻi was in Lahaina he gathered all his forces at Honokahua and at Honolua. At Honokowai an engagement took place between the two armies, and the forces of Alapaʻi were slaughtered and fled to Keawawa" (Kamakau 1992:74). Pele-iʻo-holani had 640 men to Alapaʻi's 8,440. However, the cousins once again came face to face in Puʻunēnē and decided to once more opt for peace between the families. Kamehameha-nui ruled Maui in peace, Pele-iʻo-holani retired to Molokaʻi for a while, and Alapaʻi went back to rule Hawaiʻi Island.

Around 1759, High Chief Kalaniʻōpuʻu from the Island of Hawaiʻi made war on East Maui and conquered Hāna from *aliʻinui* Kamehameha-nui, brother of Kalola, Kalaniʻōpuʻu's wife. Kalaniʻōpuʻu (father of Kīwalaʻō and grandfather of Keōpūolani, sacred wife of Kamehameha I) took control of Hānaʻs prominent Puʻu Kaʻuiki as his fortress. He appointed one of his chiefs, Puna, as "governor" of Hāna and Kipahulu. Puna was later tricked by Mahihelelima into going back to Hawaiʻi Island, thereby leaving Mahihelelima in control of Hāna. Mahihelelima was an independent chief of Hāna, Kipahulu and Kaupo, whose ancestors, grandparents, and parents had been chiefs of the districts (Kamakau 1992:81-82).

Kamehameha-nui relinquished Hāna and lived in peace in west Maui. In 1766 the peaceful Maui *aliʻinui* died. After ruling Maui for 29 years, Kamehameha-nui was taken ill at Kawaipapa on a journey about the

island. There in Hāna he ceded his lands to his younger brother Kahekilinui‘ahumanu (Kahekili), a fierce warrior and “manipulator” [and biological father of Kamehameha I] (Kamakau, 1992:82-84, 188). During this period, Ka‘ahumanu, daughter of Ke‘eaumoku and NamaHāna, was born at Mapuwena, Paliuli, in a cave at the base of Pu‘u Ka‘uiki, (she would later become queen and favorite wife of Kamehameha I, unifier of the Hawaiian Islands and nephew of Kalani‘ōpu‘u). “Her afterbirth was taken and buried at Kani-a-mako in Kawaipapa above Pihele” (Kamakau 1992:309).

In 1775, Kalani‘ōpu‘u, son of Ka-lani-nui-i-a-mamao and his forces in Hāna raided and severely destroyed the neighboring Kaupo district, before continuing several more raids on the islands of Moloka‘i, Lana‘i, Kaho‘olawe and parts of West Maui. He returned again in 1776 and for several years later, raiding and treating the *maka‘ainana* cruelly. In 1777 when very young, her parents took Ka‘ahumanu and their whole family to Hawai‘i to get away from the war between Kalani‘ōpu‘u and Kahekili (Silverman, 1987:iii, 5-6; Kamakau, 1992:310).

In January 1778 Cook landed in Waimea, Kaua‘i and the culture of old Hawai‘i began its spiraling change (see Day 1992). Cook left Hawai‘i for several months, but returned later in the year. Captain Cook’s ship *Resolution* stood off Hāna’s shore for four days in November 1778 (Barrow 1993). They “saw people on several parts of the shore, and some houses and plantations. The country seemed to be well wooded and watered.” (1993:404). The Hawaiians traded cuttlefish, breadfruit, potatoes, taro, bananas, and small pigs for nails and iron tools.

Kalani‘ōpu‘u was fighting Kahekili’s forces in Wailua, Maui on November 19, 1778 when Cook’s ship was sighted on his return trip to the islands. Kalani‘ōpu‘u visited Cook on the *Resolution,* while Kahekili visited Clerke on the *Discovery* (Kuykendall and Day 1976:16). When Cook sailed into Kealakekua Bay on January 17, 1779, Kalani‘ōpu‘u was still fighting Kahekili on Maui. At this time Kaeo was ruling chief of Kaua‘i; Ka-hahana of O‘ahu and Moloka‘i; Kahekili of western Maui, Lana‘i and Kaho‘olawe; and Kalani‘ōpu‘u of Hawai‘i Island and Hāna (Kamakau, 1992:84-86, 92, 97-98). On January 25th Kalani‘ōpu‘u visited Cook again at Kealakekua Bay, presenting him with several feather cloaks. In February, Cook’s scheme to kidnap Kalani‘ōpu‘u as a hostage was thwarted and Cook was killed following a skirmish over a stolen cutter (Kuykendall and Day 1976:18).

The warring between the Hawai‘i and Maui forces continued. When Kahekili heard about the death of Kalani‘ōpu‘u, he was determined to retake East Maui [Hāna District]. The chiefs of Hāna, bastioned at the fortress of Ka‘uiki, were Mahi-hele-lima, Kaloku-o-ka-maile, Nae-‘ole, Malua-lani, Kaloku, a grandson of Keawe and other chiefs of Hawai‘i who “liked to live there” [in Hāna] as well as some native Hāna chiefs “who with some commoners, took the side of Hawai‘i” (Kamakau 1992:115). Kahekili split his forces and sent them through the southeastern Kaupo Gap and the northeastern Ko‘olau Gap into Hāna in 1781. After being thwarted Kahekili sent for Ku-la‘a-hola who advised him.

> The fortress of Ka‘uiki depends upon its water supply. Cut that off and Ka‘uiki will surrender for want of water…. Let the chiefs, guards, and fighting men cut off the springs of Punahoa, Waka‘akihi, Waikoloa [Kawaipapa], and the ponds from Kawaipapa to Honokalani on the Ko‘olau side of the hill…. When the people are dying of thirst and can get no water, then they may be slaughtered (Kamakau 1992:116).

After damming and diverting the supply of spring water to Pu‘u Ka‘uiki, the Hawai‘i chiefs were finally defeated, and the Maui *ali‘inui* regained control of Hāna in 1782. The corpses of the defeated Hawai‘i forces were burned at two *luakini heiau* (war/human sacrifice temple), Kuawalu and Honua‘ula; *heiau* that

King Hua was supposed to have built during his infamous reign in Hāna (Kamakau, 1992:84-86; 115-116; Fornander 1917: Vol II 146-7, 150, 216). Both *heiau* were destroyed during the sugar plantation era and on their sites, Catholic and Protestant churches now stand (Walker 1931:186; see also Sterling, 1998:133). Kahekili reclaimed Hāna, then through war and trickery went on to gain control of all the islands except Hawai'i Island (Kamakau 1992:116, 128-141).

By 1790 Kamehameha I had gained enough control of the island of Hawai'i that he could leave to join the war parties on Maui. The canoe fleet "beached at Hāna and extended from Hāmoa to Kawaipapa" to battle Kalanikupule, son of Kahekili, and ruling chief of Maui while his father ruled O'ahu. After several battles along the East Maui coast, Kamehameha's force reached Wailuku where the "great battle" took place. This would be the beginning of the end of independent ruling chiefs because of the inequity of battle strategy. Kamehameha had brought a cannon from the *Eleanor* along with her captain, Isaac Davis, and crewmember John Young, now his *aikane punahele* (favorites) and advisors (Kamakau 1992:147-148).

In October 1819, seventeen Protestant missionaries set sail from Boston to Hawai'i. Earlier that year, on May 8, 1819, Kamehameha I died. Following his death, his son and heir Liholiho banished the *kapu* system on the advice of his queen mother Keōpūolani and queen regent Ka'ahumanu (Kamakau, 1992:210, 222). The missionaries arrived in Kailua-Kona in 1820. They quickly started missions on all of the islands, including a station in Hāna. In 1828 a group of Protestant missionaries made a trip to Hāna where they "found nearly a thousand scholars" on the plain of Hāna (Forster 1959:18). In 1837 Rev. Conde brought his wife and baby to Hāna, establishing its first permanent mission station--they were the "first European woman and baby ever seen by the local inhabitants." Conde estimated there were about 6,000 Hawaiians living in the district at that time. Later a missionary report of 1839 stated, "31 schools existed in the [Hāna] district with 1,523 pupils" (Forster 1959:17-19, see also McGregor 1996:355).

The first sugar venture in Hāna was established in 1849 when 60 acres of land in the heart of Hāna was cleared and planted by a refugee of the whaling industry (Youngblood 1992:44). The Hāna Plantation, later called the Ka'elekū Sugar Company, was first established in 1851. "The acquisition of lands by the plantations created a new population distribution in the district. For the first time, dwellings were moved to the sea coast and the hinterland was completely given over to the raising of sugar" (Forster 1959:22).

The 1840s also heralded other changes as well. The Hawaiian government, with the aid of the missionaries, encouraged the sugar industry as well as other enterprises such as coffee, cotton, rice, potatoes, and silk worms (Speakman 2001: 93). Disease had a devastating effect on the population and the landscape, killing *ali'i* and *maka'ainana* alike; measles epidemics in 1848 and 1849, were followed by a severe smallpox epidemic in 1853. "The whole population was wiped out from Wakiu, the uplands of Kawaipapa, Palemo, and *mauka* of Waika'akihi in the Hāna district, and so for Kipahulu and Kaupo…ten thousand [all toll] of the population are said to have died of this disease [in Hawai'i]" (Kamakau, 1992:418).

The Waihona 'Aina database (2000); which is a compilation of data from the Indices of Awards (Indices 1929), Native Register (NR n.d.), Native Testimony (NT n.d.), and Foreign Testimony (FT n.d.); lists 17 parcels claimed by eight individuals within Kawaipapa and the adjacent Wakiu in the mid-1800s during the Mahele (**Table 1**). The locations of the awarded parcels are shown on **Figure 8.** Six parcels were awarded to six claimants. The Land Commission Award (LCA) parcels are situated inland along the Government Road. Land use described in the LCA claim testimony is very limited. Three claims mention *kīhapai* (cultivated patch), one consisted of a potato patch, and another had coconuts. The LCA claim testimony

Table 1. Summary of Land Commission Awards

LCA	Claimant	Apana claimed	Apana awarded	Section No.	Ahupua'a	Ili	Land Use	Boundary Mauka	Boundary Koolau	Boundary Makai	Boundary Kipahulu	Date Rec'd	Giver	Acreage	Royal Patent	Sources	Comment
4534	M. Ulunahele	1	1		Kawaipapa	Poliokane	kihapai, coconuts	Miki	Kaneke	road		1843	Lonoaukai	0.70	none	NR 177v6, FT 252v8, NT 387v5	
4566	Waihineaa	2	1		Kawaipapa	Kaneaumoku	N/A					Kaahu-manu's birth	Kealawaa	5.19	7604	NR 184v6, FT 239v8, NT 373v5	
				1				Puoo	Kahua	Kaholokai	Kapawa						
				2				Kepiipahaia	stream	Pueo	Kaholokai						
4665	Pua Lau	2	1		Wakiu	Kamoku	Gov't Road to east					1833	Kaahaaina	11.90	7126	NR 188v6, FT 263v8, NT 400v5	probably awarded Section 1 (no awarded claims next to sea)
				1				Popeakau	Kamai	Manui	Aki						
				2			potato patch	Kama	Hepa	sea	Kuaana						
4666	Puhake	1	1		Wakiu	Puakamalii		waste land, forest	Kupuka	Gov't Road	Kamai	1835	Aki	5.14	6566	NR 189v6, FT 399v5, NT 399v5/263v8	
4844	Kuana	2	0		Wakiu	Oiolikea, Kalaualaea	N/A	N/A	N/A	N/A	N/A	N/A	Makua	0.00	none	NR 206v6	
4846	Kaholokai	3	1		Kawaipapa							1819	Lonoaukai	7.00	6447	NR 207v6, FT 276v8, NT 413v5	
				1		Nehali	N/A	Piipii	Kaneihalau	Kahina	Kahina						
				2		Puohou	kihapai	konohiki	konohiki	konohiki	konohiki						
				3		Onehali	N/A	Kapawa	Wahineaea	konohiki	Memehu						
4931	Kaahina	1	1		Wakiu	Haliiea		Gov't Road	trail to sea	Kolokolo	hala grove	1819	N/A	5.00	none	NR 222v6, FT 262v8, NT 399v5	also awarded house lot in Hana
5149	Kahinawa	2	0		Kawaipapa	Pouhai	N/A					1835	Kanianaupio	0.00	none	NT 413v5	
				1				Amaumau	Lono	Kuhaimano	Kapakahawai						
				2			kihapai	Kamaka	Kamaka	Kamaka	Kamaka						
5185B	Kaholokai	3	0		Kawaipapa							1819	Lonoaukai	0.00	none	NT 413v5	awarded under LCA 4846
				1		Nehali	N/A	Piipii	Kaneihalau	Kahina	Kahina						
				2		Puohou	kihapai	konohiki	konohiki	konohiki	konohiki						
				3		Onehali	N/A	Kapawa	Wahineaea	konohiki	Memehu						

also mentions a *hala* grove, a trail to the sea, the Government Road, and forest. The awarded parcels range in area from 0.7 to 11.9 acres with an average of 5.73 acres.

McCall (1940) describes the early development of commercial sugar cane cultivation in Hāna. The Hāna Plantation was managed by George W. Wilfong in 1851 with 60 cultivated acres. In 1852, he brought laborers from China. The small mill only produced syrup, which was sold to whale ships. Wilfong left the plantation after the mill burned and he could not obtain credit to rebuild.

The lands of the Hāna Plantation passed through a succession of owners until the partnership of Thomas E. Cooke, William G Needham, and August Unna, a native of Denmark, controlled them in 1861 (Conde and Best 1973). Needham left the partnership soon after it was formed and Cooke left in 1867. In 1868, Unna imported workers from Japan. Unna is credited with the development of the railroad system that was put in service in 1883. Unna died in 1895. Flumes were developed to provide water to the mills and to transport cane from the fields.

Correspondence reviewed at the State Archives included a letter dated June 3, 1893 from M.H. Reuter to Minister of Interior J.A. King that refers to the recent return of lease land in Kawela, Honomaʻele, and Kaʻelekū to the government. Reuter offers to pay an annual lease of $100 for fifteen years. A letter dated January 8, 1894 from August Unna to Minister of Interior E.O. Hall transmits $50 to pay lease rent on government lease land in Kawela, Honomaʻele, and Kaʻelekū for the two years ending August 26, 1872. The letter states Unna did not release the land in 1873 because he purchased 600 acres in Kaʻelekū. Unna offers to pay an annual lease of $25, which was the amount paid previously, for ten years. The lease area extends from the government road to the ocean. A letter dated January 8, 1894 from Unna to Minister of Interior L.G. Wilder transmits $25 to pay lease rent for the year of 1880.

In 1883, the Reciprocity Sugar Company was founded and by 1888, the company owned 2,800 acres with 600 acres in cultivation and 240 employees (McCall 1940). In 1888, the Hana Sugar Company consisted of 5,000 acres with 700 in cultivation. The company had 250 employees and 250 head of working stock. M.S. Grinbaum formed the Hana Plantation Company in 1889, combining the lands of the Hāna and Reciprocity Sugar Companies with lands at Hāmoa (Conde and Best 1973).

The Kaʻelekū Sugar Company was established in 1905 (McCall 1940). The company took over the Hāna Plantation lands, which consisted of 886 acres in fee and 13,184 in leasehold. In 1913, 300 acres were leased from the Hamoa Agricultural Company. Additional acreage was leased from the Haneoʻo Agricultural Company bringing the total acreage to 15,407 acres. Only about 20% of the land could be cultivated because of gulches and rocky areas. The Kaʻelekū Sugar Company eventually included the lands of six former plantations (McCall 1940). Only two plantations, Hāna and Reciprocity, had mills and piers.

A map surveyed by W.E. Wall and traced by H.E. Newton in 1915 (**Figure 9**) shows a cluster of houses near Pāʻiloa Bay. A plantation railroad parallels the Government Road within the project area. A 1928 US Coastal and Geodetic Survey (USCGS) map based on surveys between 1923 and 1925 (**Figure 10**) also shows a plantation railroad track extending through the area. The map shows a series of structures along the road to the coast at Pāʻiloa Bay where a cemetery is shown.

In 1927 a 55-mile highway to Hāna built by prisoners--compliments of the Territorial Government, was completed allowing easier access to Hāna. Until then, "the settlements along the Hāna Coast were only accessible by ocean or along rugged horse and mule trails" (Youngblood 1992:96-7). By 1930, in the Hāna District--from Keʻanae to Kahikinui--there were only "2,436 people living in this area, out of whom 1,117 or 48 per cent were Hawaiian" (McGregor 1996:353-354).

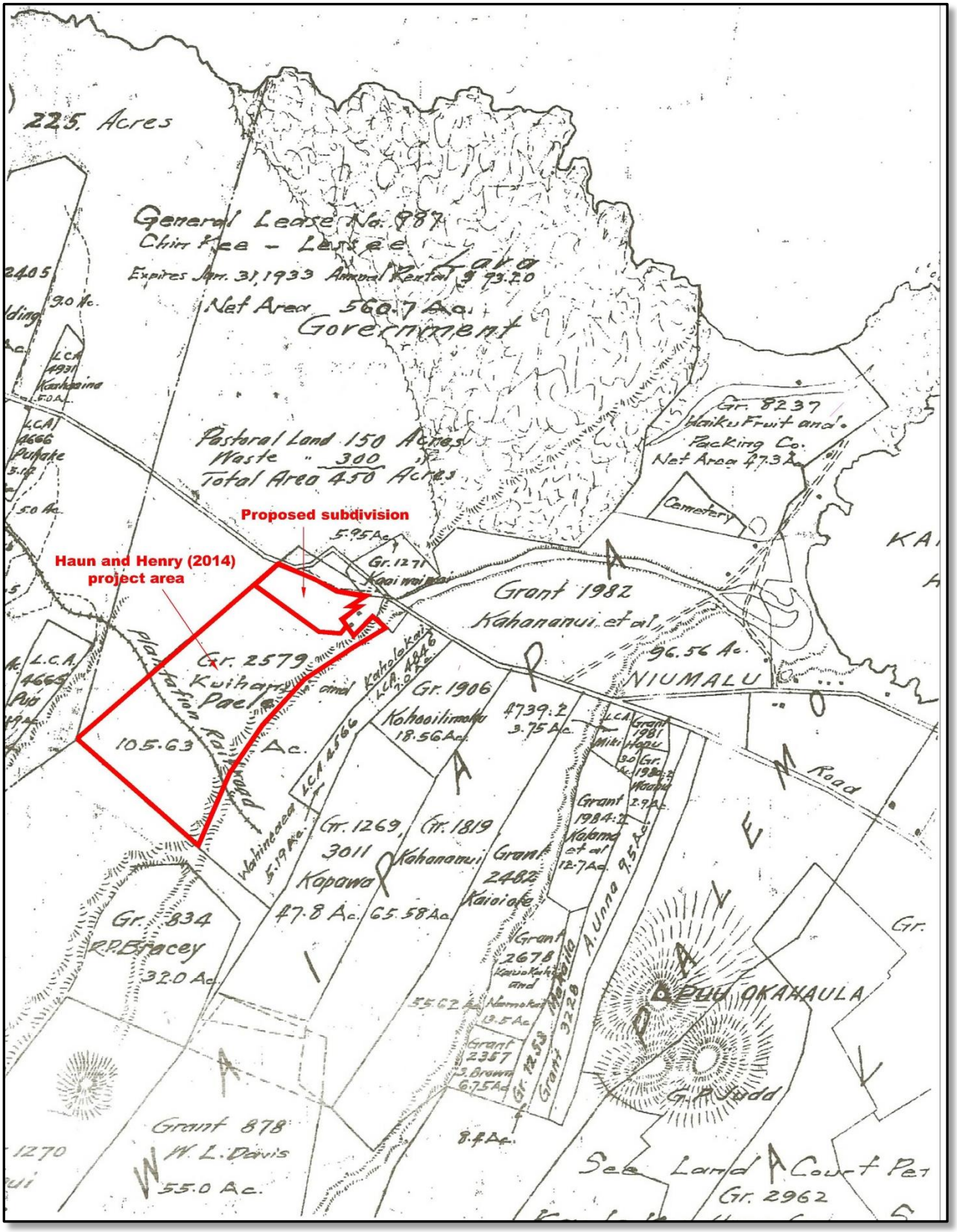
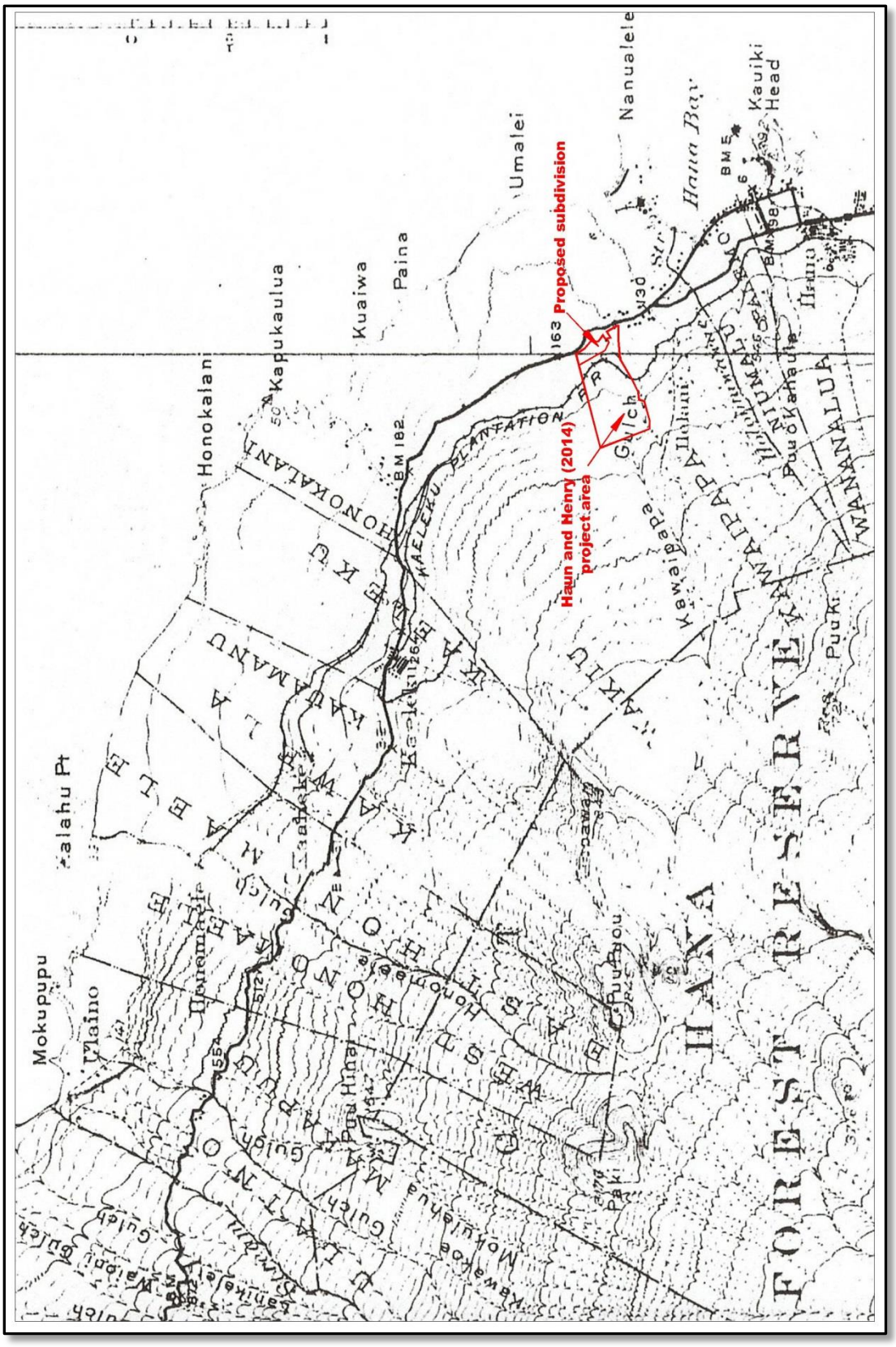


Figure 9. Portion of Wall's 1915 map of Hāna


Proposed subdivision
Haun and Henry (2014) project area
Umalei
Nanualele
Haun Bay
Kauiki Head
Kapukaulua
Kuaiwa
Paina
Honokalani
Honokalani Gulch
Kawaipapa
Kawaipapa Gulch
Kawaipapa Point
Kalahu Pt
Mokupupu
Waiohue
Hana
Hana Bay
Hana Airport
Hana Forest Reserve
Waiohue Forest Reserve
Kaumanu
Kaeleku Plantation
Kaeleku
Kaeleku Gulch
Kaeleku Hill
Kaeleku Hill 1264
Kaeleku Hill 1268
Kaeleku Hill 1270
Kaeleku Hill 1272
Kaeleku Hill 1274
Kaeleku Hill 1276
Kaeleku Hill 1278
Kaeleku Hill 1280
Kaeleku Hill 1282
Kaeleku Hill 1284
Kaeleku Hill 1286
Kaeleku Hill 1288
Kaeleku Hill 1290
Kaeleku Hill 1292
Kaeleku Hill

Handy and Handy (1972) report the Hāna area was used to cultivate taro, yams, bananas, *wauke*, and *olonā* (*Touchardia latifolia*). They report a coastal settlement at Hāmoa in the 1930s where people raised sweet potatoes and obtained fish from the sea and a fishpond. Taro and bananas were cultivated in inland gardens. They also report a sizable settlement at Honokalani situated above the sea cliffs and fresh water caves of Waiʻanapanapa. A small valley below Puʻu Olopawa at 1,500 ft elevation was previously used to grow taro in the dry season. Dry taro was also cultivated in Helani, a moderately sloping forested land in Kawaipapa. A *hala* forest covered the coastal plain formed by recent lava flows between ʻUlaʻino and Hāna.

Hāna's sugar industry was declining by the 1930's, when Paul Fagan bought the Kaʻelekū Sugar Company. The Kaʻelekū Sugar Company (previously known as Hāna Plantation), the last sugar plantation in Hāna, shut down operations in August, 1945 at the "high noon" whistle, signifying "death" of the Company, and the "end of plantation life of about 400-500 employees and their families" (Okano, nd:16). Many of the plantation laborers were relocated to other parts of Maui (Youngblood 1992:60, 67-70). In 1945, Fagan converted his sugar holdings to cattle ranching and the visitor industry (Youngblood 1992:67).

The plantation town of Hāna changed to become the *paniolo* or "cowboy" town of Hāna, with first-class accommodations at the Kaʻuiki Inn, which later became Hotel Hāna-Maui, for visitors who could afford to fly in to the grassy runway of Hāmoa. The gentle Hāna slopes were modified once again as sugar cane was cleared and alien grasses planted to accommodate the newly converted grazing lands. Hāna's population declined to about 500 people in the 1950's, but started to increase again after the State paved the Hāna highway in the 1960's, making Hāna more accessible (Youngblood 1992:70-7). The economy picked up as visitors "discovered" Hāna's beauty and charm, and wealthy Mainlanders invested in hideaway property.

Previous Archaeological Research

A search of State Historic Preservation Division (SHPD) archaeological report database and the Office of Environmental Quality Control website which maintains an online library of Environmental Impact Assessments (http://oeqc.doh.hawaii.gov), identified 28 reports for Hāna District between ʻUlaʻino and Hāmoa. **Figure 11** shows the locations of 21 survey projects and **Table 2** summarizes the projects. Not included in the figure and table are the general studies by Thrum (1901), Walker (1931), Nakkim (1970), Ashdown (1971), and Orr (1990), which focus on major sites, primarily *heiau* and fishponds, throughout Hāna District, and a walk through survey by Sterling (1969) in Hāna Town. Other site-specific studies not included are inspections of a lava tube system, Kaʻelekū Caverns, by Estioko-Griffin (1988) and Donham (1996). Burials are reported for the cave, but were not identified by the inspections. Kam (1980) conducted an inspection of areas surrounding Hāna Airport with negative results, as did Chun and Dillon (2007) during an examination of a small lot with Hāna Town. Dixon (1998) reported the discovery of an apparently isolated human cranium from a cinder quarry at the base of Puʻu Olopawa.

Orr (1990) reviewed previous studies by Walker (1931), Ashdown (1971), Nakkim (1970), and others in her report on *heiau* of Hāna. She lists 34 *heiau* in the eleven miles of Hāna's shoreline between Keaʻa Beach to the north and Puʻuiki to the south. Many of the sites have been destroyed. The data indicate that 12 were medium-sized, *mapele*, *heiau*; six were large, possible *luakini*, *heiau;* six were shrines, *koʻa*; and two were places of refuge, *puʻuhonua*. The distribution of these sites is not uniform within Hāna District. The majority of *heiau*, 30 sites, are situated near Hāna Town and along the coast to the south of town. Of these, roughly two-thirds are situated on the coast and the remainder are situated at the base of the lower mountain slopes.

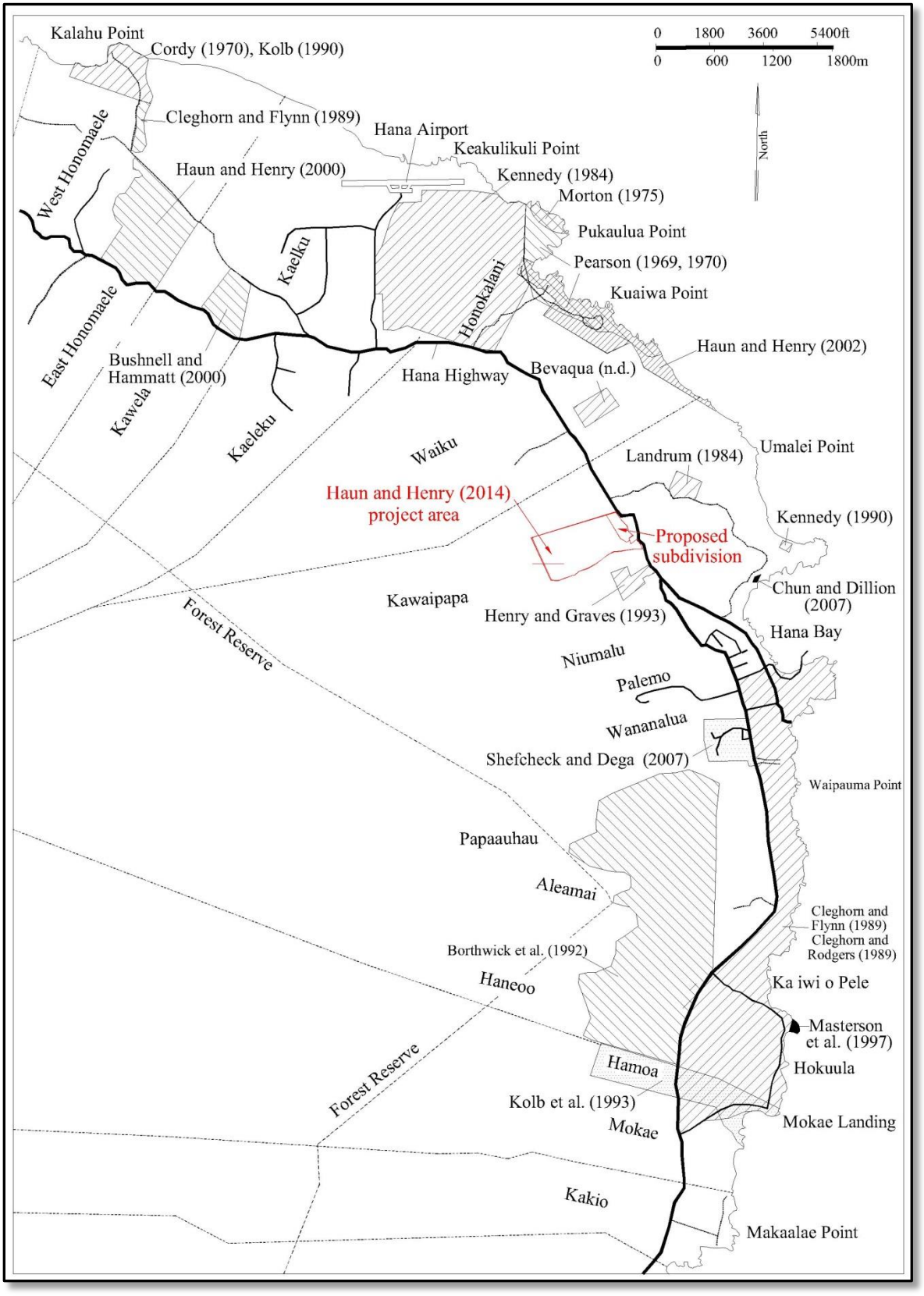


Figure 11. Previous archaeological work.

Table 2. Summary of previous archaeological work

Author	Year	Location	Ahupua'a	Study Type*	Area (ac)	Elev. (ft)	Prior Use	No. Sites	Hab Feas	Ag Feas	Burial Feas.	Ritual Feas.	Fish Pond	Historic Feas
Cordy/ Kolb	1970/ 1990	Coastal	Honomaele	IS	9	0-40	Pasture	13	6		3+	22+		2+
Pearson	1970	Coastal	Honokalani, Wakiu	IS	83	0-40	Pasture	5	14	4?	Many	1		4
Bevacqua	1972	Coastal Plain	Wakiu	RS	16		?	1	1					
Morton & Lum Ho/ Kennedy	1975/ 1984	Coastal-Coastal Plain	Wakiu, Kaeleku	RS	364	0-200	Pasture ?	1			Many	1		
Landrum	1984	Coastal	Kawaipapa	RS	14	70-90	?	0						1
Cleghorn and Rogers (Cleghorn and Flynn)	1987	Coastal, Lower Slopes	Haneoo to Wananalua	RS	581	0-200	Cane & Pasture	57	17	14+	Many	25	8	11+
Cleghorn & Flynn	1989	Coastal Plain	Honomaele	RS	126	0-70	Cane & Pasture	14	3	24+	5+	1+		1+
Kennedy	1990	Coastal	Kawaipapa	IS	1	0-10	?	1				1		1?
Borthwick et al.	1992	Lower Slopes	Haneoo, Aleamai, Papaauhau Oloewa	IS	400	200-760	Cane & Pasture	51	16	15+	6?	1		42+
Henry and Graves	1993	Lower Slopes	Kawaipapa	IS	10	160-200	Cane & Pasture	4		1				7
Kolb	1993	Coastal/ Lower Slopes	Hamoa	IS	51	0-440	Cane & Pasture	18	2	63+	1+	4		1
Masterson et al.	1997	Coastal	Haneoo	IS	1.5	0-20	?	5	1		6+	1	2	2
Bushnell and Hammatt	2000	Lower Slopes	Kaeleku	IS	34	150-350	Cane & Pasture	0						
Haun and Henry	2000	Lower Slopes	East Honomaele	IS	125	80-480	Cane & Pasture	4			1			6
Haun and Henry	2002	Lower Slopes	Honokalani, Waiku, Kawaipapa	IS	72.8	0-40	State Park	59	69	6	2	16		5
Chun and Dillon	2007	Coastal	Kawaipapa	AS	0.06	0-10	Parking area & Beach access	0						
Shefcheck and Dega	2007	Coastal	Wananalua	IS	37	80-480	Pasture	1						1
				Total	**1816**			**234**	**60**	**128+**	**20+**	**73+**	**10**	**78+**

*IS=Inventory Survey, RN=Reconnaissance Survey, AS=Assessment

Walker (1931) described Ohala Heiau (Site 104) as a 4 ft high platform that was 110 ft long and 75 ft wide. He noted numerous pits on the *heiau* and reported that informants said the sound of drums could be heard on certain nights coming from the site. Pearson (1970) conducted a survey of Wai'anapanapa State Park in Honokalani and Wakiu. The survey covered an area of approximately 83 acres between the coast and approximately 40 ft elevation. The survey identified 34 features that were grouped into five complexes of related features: a *heiau* and caves, fishing shelters (caves), markers (*ahu*) and a coastal stepping-stone trail, inland permanent house sites and enclosures, and graves or cemeteries. Pearson also identified a pictograph rendered in red ochre. A network of walls enclosing what were reported to be historic house sites was not recorded. No excavations were conducted. The sites were interpreted to be prehistoric to historic period in age. Haun and Henry (2002) returned to Wai'anapanapa and relocated the sites noted by Pearson (1970) along with a number of newly identified sites and features. This study documented 59 sites with 119 features within the park.

The survey reports in **Table 2** cover over 1,800 acres of Hāna District identifying 234 sites. The survey locations are categorized as "Coastal", "Coastal Plain", and "Lower Slopes". The coastal plain is defined here as the broad gently sloping plain between the shoreline and the lower mountain slopes between 'Ula'ino and Hāna Town. South of Hāna Town the coastal zone borders the lower slopes. To aid in reconstructing settlement patterns, features were quantified by probable age and function. Traditional Hawaiian features were categorized as habitation, agricultural, burial, ritual, and fishpond. Historic features were not segregated by function. Features not clearly assignable to these categories were omitted. The following discussion summarizes the studies beginning in the north and proceeding south.

Several studies have been conducted in the coastal and coastal plain portions of West Honoma'ele (Cordy 1970, Kolb 1990, Cleghorn and Flynn 1989). Cordy (1970) cleared and mapped Pi'ilanihale Heiau and surveyed the surrounding area. The survey identified two house platforms, a house site, three graves, a

circular pit, three walls, a complex consisting of a wall, platform and enclosure; and a large enclosure, which formerly contained a number of houses. Other identified features, which were not recorded, consist of a post-1950s house site and a cemetery with at least 14 historic graves. The house site and cemetery are situated on top of the cliff at Kalahu Point. The cemetery and Pi'ilanihale Heiau were also described by Nakkim (1970).

Kolb (1990) conducted excavations at Pi'ilanihale Heiau, which he says is the largest *heiau* in Hawai'i. The excavations identified ritual and habitation areas and four major building episodes. Four radiocarbon age ranges span the period between A.D. 1270 and the mid-1900s. Kolb suggests that the complex may also have served as a chiefly residence.

Cleghorn and Flynn (1989) conducted a survey of Kahanu Gardens, which surrounds the area surveyed by Cordy. The report also describes nine sites recorded on Hāna Ranch lands south of Hāna Town. At Kahanu Gardens, the survey identified a boulder with cobbles piled on top, a retaining wall, an upright stone, two stone alignments in a stream bank, a low wall, two terraces, a buried stone alignment, a C-shape wall, and four feature complexes. One complex, Site 50-Ma-A10-23, consists of an L-shaped, linear mound, pavement, and overhang associated with hammerstones, cores, and flakes. Site 50-Ma-A10-24 consists of three modified boulders on a rocky beach. One boulder has indentations believed to be an unfinished *papamu*, one has four depressions thought to be bait cups, and the other boulder has a petroglyph of a human form. Site 50-Ma-A10-25 consists of three platforms believed to be graves or a shrine. Site 50-Ma-A10-26 consists of a modified outcrop, a wall, and an enclosure. A hammerstone and basalt core and flake were collected from the site. No other interpretations are offered and no excavations were conducted.

Haun and Henry (2000) conducted an inventory survey of a 125 acre parcel situated between 80 ft and 480 ft elevation in East Honoma'ele. The survey identified four sites with seven features consisting of two complexes of historic sugar cane plantation railroad features, a historic road, and a burial. The skeletal remains represent an isolated late prehistoric to early historic burial. The railroad features were constructed before 1915 and abandoned by the 1920s. The roadbed was probably constructed after the 1920s, possibly as late as the 1960s.

Bushnell and Hammatt (2000) conducted an inventory survey of a 34-acre parcel in Kawela between the Hāna Highway and 'Ula'ino Road. Their project area ranges in elevation from 150 ft to 300 ft. No sites were identified, although piles of stone were noted throughout the area. The absence of sites and piles of stone are attributed to plantation-era cultivation.

Kennedy (1984) conducted a survey of approximately 364 acres between the coast and 200 ft elevation in Kawela and Wakiu Ahupua'a. One site, a large complex of burial features, was recorded, which was previously identified by Pearson (1970). The survey identified 364 features consisting of filled crevices, platforms, *ahu*, incomplete graves, and a possible religious structure, a multi-tiered platform with upright stones. No counts for feature types are given and the features are not numbered on the site map. The cemetery is presumed to have been used between 1600 and the late 1800s. No excavations were conducted. Morton and Lum Ho's (1975) hand-written notes and maps appear to describe the seaward portion of the burial site.

Bevacqua (1972) conducted a survey of approximately 16 acres situated between 40 ft and 100 ft elevation in Wakiu. Only one site, a partially destroyed habitation, was identified. Landrum (1984) conducted a reconnaissance survey of 14-acre parcel in Kawaipapa situated between 70 ft and 90 ft elevation. The only site identified was a segment of the old government road. Kennedy (1990) conducted a reconnaissance survey of an approximately 1.6 acre parcel next to the coast in Kawaipapa. The survey

identified Kauleiula Heiau, which was previously described by Walker (1931). A portion of the *heiau* was previously used for a historic house. No excavations were conducted.

Henry and Graves (1993) conducted a survey of a 10-acre parcel situated between 160 ft and 200 ft elevation in Kawaipapa. The survey identified two historic ranch walls and two complexes of features. One complex consisted of two enclosures, an L-shaped alignment, a terrace, and a platform. Excavations were conducted in several features at the site. The excavations produced food remains and historic artifacts indicating a historic habitation use for the site. The other complex consisted of a historic wall and an agricultural terrace.

Cleghorn and Rogers (1987) conducted background research for Hāna Ranch lands seaward of the coastal highway between Hāna Town and Hāmoa. The project area of 581 acres ranges from sea level to approximately 200 ft elevation. Thirty-two sites were identified through background research, examination of aerial photographs, and field inspections. At least 12 of these sites, mostly *heiau* identified by Walker (1931), had been destroyed. A subsequent survey of the "coastal fringe of the Hāna Ranch lands" (Cleghorn and Flynn 1989:5) identified nine additional sites. It is unclear from the reports whether the entire 581-acre area was systematically covered. The sites include eight fishponds, at least 25 ritual features, numerous burials, more than 14 agricultural features, and at least 17 habitation features. The habitation features include temporary shelters, primarily in caves, and probable permanent habitations represented by enclosures and platforms. Probable agricultural features consist of terraces, pits, walls, and mounds. Historic features included burials, habitations, and plantation infrastructure. No excavations were conducted.

Borthwick, Robins, Folk, and Hammatt (1992) conducted a survey of 400 acres of Hāna Ranch land between approximately 200 ft and 760 ft elevation. The survey identified 51 sites consisting of at least 80 features. Most features consisted of ranch and sugar cane plantation remains including walls, enclosures, platforms, terraces, roads, and a railroad grade. Probable traditional Hawaiian sites included habitations, agricultural features, a *heiau*, and burials. Most traditional sites were described as remnants disturbed by historic activity. Two intact habitation sites were interpreted to be temporary habitations associated with agricultural activity. Probable traditional agricultural features included terraces, pits, walls, enclosures, and mounds. Excavations were conducted at several sites. Three radiocarbon samples produced age ranges of A.D. 1345-1650, 1425-1950, and 1640-1950.

Masterson, McDermott, and Hammatt (1997) conducted a survey and subsurface trenching in a 1.5-acre parcel on the coast in Haneo'o. The five recorded sites consist of Haneo'o Fishpond Complex, historic graves, a historic house site, a ranch wall, and a hearth. Excavations yielded food remains and artifacts consisting of both historic and traditional Hawaiian types.

Kolb (1993) reports research conducted in the *ahupua'a* of Hāmoa. The research included survey of 51 acres inland of the highway and an unspecified acreage between the highway and the coast. The survey identified 18 sites consisting of more than 70 features. The majority of features were agricultural terraces, walls, and pits assigned an indeterminate "prehistoric/historic" age. Ritual sites consisted of three named *heiau* and a notched enclosure. Habitation features consisted of a cultural deposit in a sand dune and a rectangular enclosure. Excavations at several sites produced seven charcoal samples that yielded age ranges spanning the 1200s to mid-1900s.

Shefcheck and Dega (2007) conducted a survey of a 37-acre parcel in Wainanalua Ahupua'a and excavated a series of seven stratigraphic trenches. They identified one site with seven features consisting of a historic trash dump and a wall, two enclosures, a terrace, a foundation, and a portion of railroad track.

Haun and Henry (2014) conducted a survey of the current project area which included the entire 72.81-acre parcel of land. The survey identified 26 sites with 169 features (see **Figure 4**). The features include 112 stone-lined pits, 19 walls, 12 terraces, 6 modified outcrops, 5 mounds, 3 enclosures, 2 artifact scatters, 2 platforms, 2 pavements, 2 concrete troughs and one each of the following; concrete basin, concrete foundation, railroad grade, and road. Feature function includes agriculture (n=145), permanent habitation (9), livestock control (7), animal husbandry (4), transportation (2) and historic habitation (2).

Of the 26 sites in the Haun and Henry (2014) project area, only 2 are located within the boundaries of the proposed subdivision (Sites 6548 and 6551 - see **Figure 4**). Site 6548 is a complex of four walls between approximately 161 and 184 ft elevation. The walls are located in a mechanically cleared area 140.0 m long and 47.0 m wide. Only Features C and D, and portions of A are in the proposed subdivision (**Figure 13**).

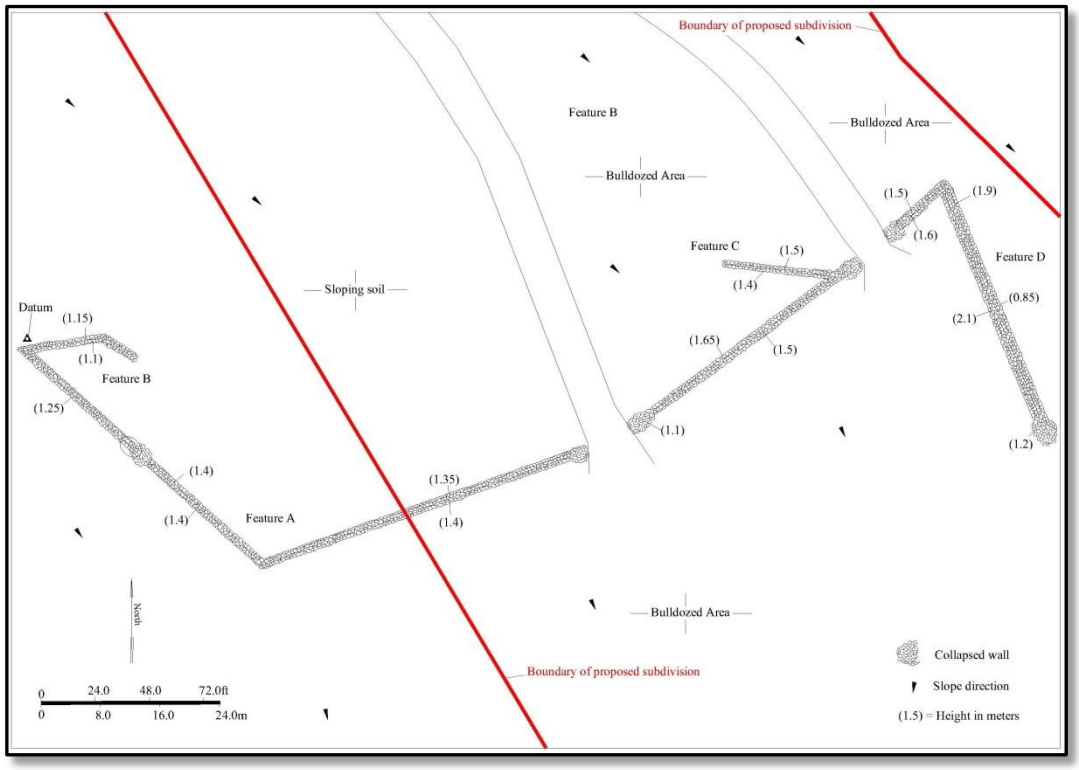


Figure 12. Site 6548 plan map

Site 6551 is a complex of 56 historic habitation, livestock control, animal husbandry, and agricultural features located along the eastern boundary of the Haun and Henry (2014) survey area, between approximately 142 and 162 ft. The features are located in an area 161 meters long (north-northwest by south-southeast) and 31 meters wide and consist of 38 stone-lined pits, nine walls, four terraces, a scatter of historic artifacts, a concrete foundation, a concrete basin and two concrete troughs (**Figure 14**).

Summary of Land Use

Overall, the archaeological surveys conducted in Hāna District have identified a relatively small sample of the traditional Hawaiian sites that were formerly present. The massive impacts of sugar cane cultivation and ranch-related pasture improvement and infrastructure have obliterated much of the pre-contact cultural landscape. Numerous *heiau*, burial sites, and fishponds along the coast attest to the presence of a substantial pre-contact population. Radiocarbon dating results indicate settlement by at least the 1200s

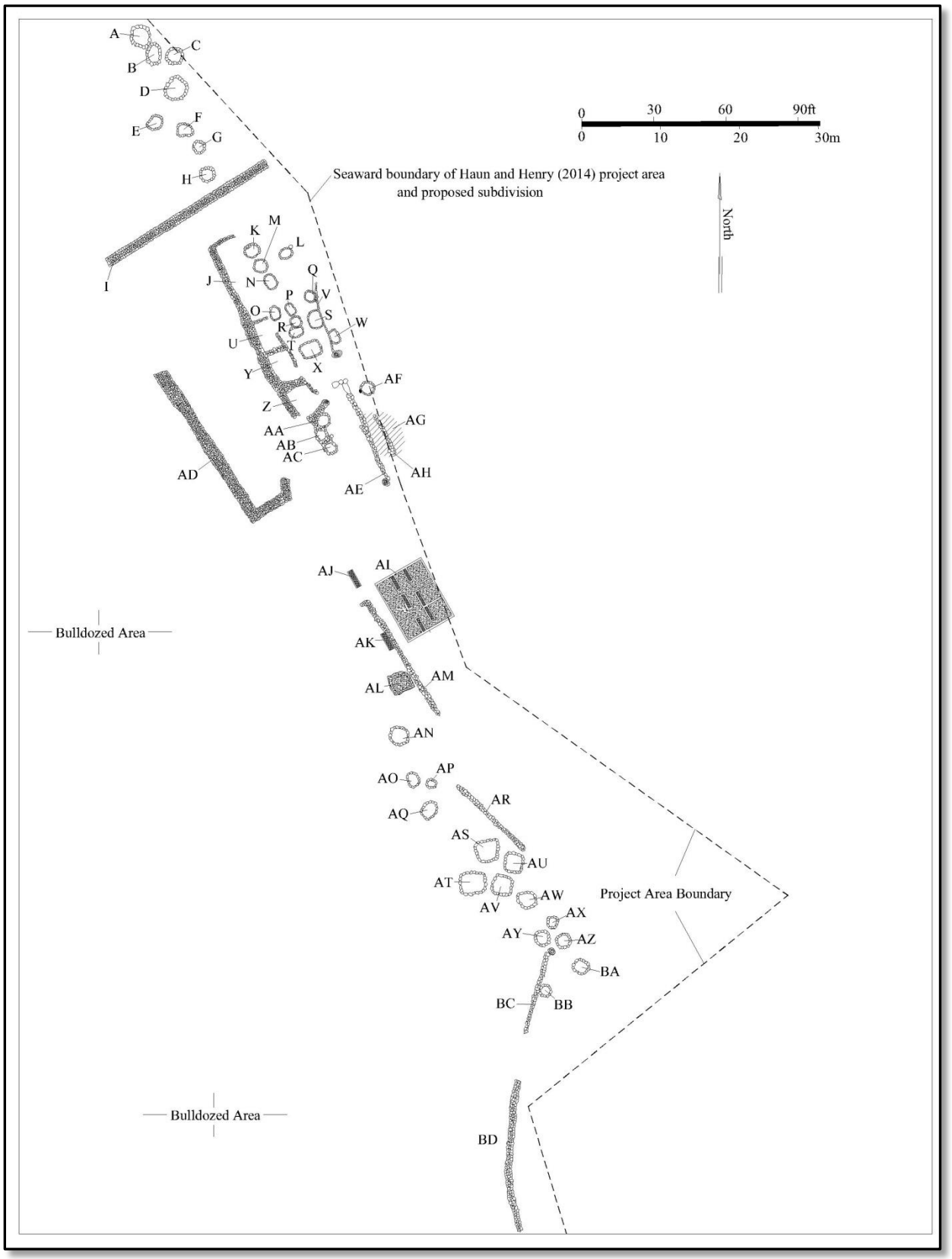


Figure 13. Site 6551 plan map

with most results post-dating the mid-1400s. The first and largest building episode of Piʻilanihale Heiau in West Honomaʻele dates to between 1270 and 1440 and indicates the presence of a substantial supporting population.

Habitation sites, both temporary and permanent, are present along the coast. Temporary habitations consist of caves, overhangs, and simple walled structures. Permanent habitations are represented by walled enclosures and platforms. Inland habitation sites on the lower mountain slopes are primarily temporary occupations, probably associated with agricultural activity.

Agricultural sites consist of terraces, walls, mounds, pits, and alignments. Typically, these features are only found in rocky areas that were not affected by sugar cane cultivation. The agricultural features represent a pattern of informal agricultural plots and not formal fields. Opportunistically placed, informal plots are typical in agriculturally marginal, rocky areas elsewhere in Hawaiʻi. The absence of formal fields may be a bias resulting from historic modification of the more productive areas. Alternatively, conditions may not have required or resulted in the development of formal fields bounded by walls and terraces. The ample rainfall and soil of the district made agricultural use readily productive. Historic accounts attest to the bounty of agricultural produce, primarily grown without irrigation. Cultigens included breadfruit, taro, sweet potatoes, yams, *olonā, wauke, ʻawa*, and bananas. Upland areas above 1,000 ft elevation were cultivated when seasonal droughts affected the lowlands.

The distribution of heiau and fishponds along Hāna's coast between Keaʻa Beach and Puʻuiki shows a marked increase in density from Hāna Town south. The northern coast from Hāna Town to ʻUlaʻino has relatively few *heiau*. The area differs environmentally from the southern coast. It is characterized by a broad coastal plain derived from relatively recent lava flows. Unlike the south coast, the coastal settlements are separated from the lower mountain slopes by a broad gently sloping plain up to 6,000 m in width. There are only three major drainages crossing the plain at ʻUlaʻino, Honomaʻele and Kawaipapa. If the better-watered lower mountain slopes were the most productive agricultural area, then the greater distance from the coast may have made the northern coast a comparatively less favored area of occupation. LCA claims appear to support a difference between the north and south. The Waihona ʼAina database (Waihona ʼAina Corp. 2000) lists 14 LCA claims (eight awarded) in the nine *ahupuaʻa* from Nahiku to Kawaipapa. There were 72 claims (42 awarded) in the twelve *ahupuaʻa* from Niumalu to Puʻuiki.

Legendary and traditional accounts document the importance of Hāna District as a seat of social and political power, especially in relations between the chiefs of Maui and Hawaiʻi Islands. This prominence continued into early historic times. Historic habitations and burial sites were scattered along the coast.

Small areas of subsistence agriculture apparently continued in use into the 1900s; however, for nearly 100 years between the 1840s and 1940s sugar cane cultivation was the dominant form of land use. Nearly all readily cultivated areas of the lower mountain slopes and coastal plain were put into production by up to six plantations. Cartographic and documentary evidence illustrate the aggressive acquisition of land for cultivation and development of plantation infrastructure. Roads, flumes, and a railroad system were developed by the plantations. Mill operations, harbor facilities, and a series of laborer camps were established.

The original government road, Okaka Puʻu Road in Kaʻelekū, Kawela, and Honomaʻele followed the route of today's ʻUlaʻino Road. The upper Government Road, today's Hāna Highway west of the junction with ʻUlaʻino Road, was constructed between 1894 and 1900. By 1915, a small settlement was present at the junction of the roads. The first railroad tracks in the area are shown on a map dating to 1915. In the

waning years of the plantation, cultivation was focused in areas closest to the transportation system (McCall 1940). After 1945, the former sugar cane lands were converted to pasture for Hāna Ranch.

Previous Ethnographic Research

Orr (2003) conducted an in-depth CIA for the nearby Waiānapanapa State Park in which she interviewed six individuals with a history in, and a knowledge of Honokalani. Due to the proximity of Honokalani to Kawaipapa, information pertinent to this study was also shared.

Jimmy Puuwai Perry, who was born and raised in Honokalani recalls collecting seeds for *lei* making. People would go down to the beach in Kawaipapa to gather *kāʻeʻe* (*Mucuna gigantea*) seeds—also known as *pēkaʻa*—after big storms washed the seeds down Kawaipapa stream from the mountain.

> Another thing that [Mom] used to make us do was go find all kinds of seeds for seed-leis... Red seeds, black seeds--there's one that they call the White Heart. It's a small black seed with the shape of a heart on it. And there's still some in Waiānapanapa. It's a red one with a black dot. The other one like a sheep-eye is the *kāʻeʻe*; there was the striped *kāʻeʻe* and the regular color and one with tiger stripes. All of this used to be in Waiānapanapa. That was fun collecting. We got that [sheep-eye] at Kawaipapa. So when that stream run, then the guys go on the beach and look for 'em cause that thing grow way up in the mountain (Jimmy Perry in Orr (2003: 74-75).

Ben Perry—brother of Jimmy Perry— described the trail present along the nearby section of coast.

> You want to walk the King's Trail at Honokalani, go towards Waikaloa [Kawaipapa]—it's a good walk; you cannot lose the trail, the trail is wide open. I cannot say well-maintained, but you know it's the trail. There's a segment in there, I don't know if you've seen it. You know the round stones are all set in place like a pace apart. That begins at this place we call I'eme [near Paina Pt.] which is just past here…(looking at map). But through the years the high seas come and slowly those stones are losing their place. Today the high water mark during the high seas is almost at the heiau's stone wall. It was an interesting era that we lived in to see all these different changes (Ben Perry in Orr 2003: 84)

Orr (2003) goes on to summarize the associations of important historical figures—such as Piʻilani and Kaʻahumanu— with Kawaipapa.

> Pi`ilani [was] famous as a very peaceful and productive ruler. He built and maintained fishponds in Kawaipapa, was a noted water manager--creating many complex *`auwai* in the Hāna district, and started the famous stone-paved King's Trail which made trekking to Hāna much easier (Orr 2003: 105).

Kaʻahumanu, favored wife of Kamehameha I, was born during turbulent times at a cave located at the base of Kaʻuiki. She resided at the refuge Puʻuhonua Kaniomoku in Kawaipapa before she and her parents Nāmāhānaikaleleokalani and Keʻeaumoku were forced to flee to Hawaiʻi Island (Orr 2003: 106).

Orr (2003: 107) also describes traditional land use for the region north of Kapueokahi:

> Kawaipapa was known for the *ʻalā* stones used in war implements, stone paths and other structures. An extensive *hala* forest from Kawaipapa, through Wakiu, Honokalani to ʻUlaino was a tremendous resource and a place where people hid at times. The *hala* was used to craft canoe sails, baskets, mats, and hats---a craft that continued to the lifetime of the consultants.

FINDINGS

The Hāna Cultural Center, the Office of Hawaiian Affairs (OHA), prominent cultural practitioners, and noted members of the Maui community were contacted in order to identify persons with an intimate knowledge of the project area and its vicinity. A public notice was also posted in the July issue of *Ka Wai Ola* (**Appendix A**); no individuals responded to the public notice. Four individuals, all respected *kupuna* (elders) and residents of Hāna, agreed to discuss and share their knowledge of Kawaipapa.

Consultants

Francis Oliveira (age late 50s) was born and raised in Hāna and his family lives in Kawaipapa.

Howard Manaois (age 68) was born and raised in Hāna. He is a former ranch hand for the Hāna Ranch. Howard stopped working for the ranch and led horseback tours throughout Hāna until he retired.

Bullets Kahula (age 58) was born and raised in Hāna, and currently resides in Hāmoa. He is a part owner and operator of Hana Trucking & Equipment Company. His company's base yard is adjacent to the project area.

Solomon "Bully" Hoopai (age 75) was born and raised in Hāna. He is a retired and respected rock wall mason. His spouse Kathleen Street participated in part of the interview.

Traditional Agriculture

Francis Oliveira stated that nothing happens anymore within the property. The area has been overgrown with dense vegetation for as long as he can remember. He is aware of the rock walls and archaeological sites in the area. According to Francis, potato and taro were traditionally cultivated within the parcel, but are no longer grown today.

Howard Manaois' father, Sam Kalalau Jr., had a *loʻi* in Kawaipapa on the south side of Kawaipapa Gulch, but no one tends to it today.

Use of Native and Non-Native Plants

Bullets Kahula was raised in Hāmoa and traveled through Kawaipapa in his youth visiting friends in Wākiu to Kaʻelekū. He recalled that the area was always heavily vegetated. He and his friends would walk along the railroad grade (Site 4964) through the property and harvest guava. Bullets stated that the area always had *kukui* nut trees and that he and his family would harvest the *kukui* nuts to make *kukui* nut *lei*.

Mango trees grow along the southern boundary of the property and people harvest the mangoes. Bullets knows that the area as utilized for more than *kukui* and mango. He bulldozed a road to assist the efforts of controlling miconia adjacent to the north side of the project area. He stated that the vegetation that grew back in his bulldozed road was all *māmaki* (*Pipturus* spp.), which led him to believe that there must have been *māmaki* in abundance before it was choked out by non-native plants.

The Aliʻi

Bully admitted that he did not spend much time in Kawaipapa; he is more familiar with Kaʻelekū and the northern region of Hāna, although he did state that Kawaipapa was a home to many of the *aliʻi*. Keʻeaumoku and his daughter, Kaʻahumanu, briefly resided at Puʻuhonua Kaniomoku in the uplands of Kawaipapa. Kathleen did relate that Kaniomoku has been destroyed.

All of the consultants were aware of the trail constructed by Kihapiʻilani, but stated that it is not present within the project area; the trail is closer to the ocean.

Plantation Era

All of the consultants mentioned the railroad grade that extends through the property. Howard Manaois stated that it brought the sugarcane and pineapples from as far as ʻUlaʻino down to Hāna Bay.

The consultants briefly spoke about the "Honey Bee Camp" that was present along the eastern boundary of the project area. Howard stated that it was used in the 1930s by plantation workers. None of the consultants could remember any specifics of the camp other than its location. The Honey Bee Camp was most likely Site 6551 as this was the location the consultants indicated.

Proposed Affordable Housing

All of the consultants spoke in favor of the proposed affordable housing project. Francis Oliveira stated that the proposed development would not impact any cultural activities in the project area because none take place there. Howard Manaois and Bullets Kahula both spoke about that region of the project area as being completely infested with mosquitoes. Howard thinks that the proposed development may help the area by getting rid of the mosquitoes.

CONCLUSION

The objective of this CIA is to identify any culturally significant resources or traditional cultural practices that occurred within the project area and its immediate vicinity. The CIA was conducted following the framework set forth by the Hawai'i Supreme Court in the case of Ka Pa'akai O Ka 'Aina vs. the Hawai'i State Land Use Commission (LUC).

The landowner proposes to develop a 6.7-acre area in the seaward portion of the Haun and Henry (2014) survey area, for the development of a 24-lot affordable housing subdivision (*see Figure 3*). As discussed, an AIS was conducted in the project parcel (Haun and Henry 2014), identifying 26 sites with 169 features (*see Figure 4*). The interpreted functions of the features included agriculture, permanent habitation, livestock control, animal husbandry, transportation, and historic habitation. Two of the 26 sites, a complex of four walls (Site 6548) and a historic habitation and agricultural complex (Site 6551), are located within the boundaries of the proposed subdivision (*see Figures 13 and 14*). In the AIS, these two sites were recommended for no further work or preservation and SHPD concurred with this recommendation in a March 31, 2014 letter from the SHPD Maui Lead Archaeologist to Dr. Alan Haun (Log No.2014.00059, Doc No. 1403MD55).

Previous ethnographic research showed that an extensive *hala* forest grew from Kawaipapa to 'Ula'ino and the forest was utilized as a resource for weaving and refuge. *Kā'e'e* was gathered along the beach at the mouth of Kawaipapa gulch after big storms washed them down the mountain.

Four individuals, all respected members of the Hāna community, shared their knowledge of Kawaipapa. The project area has been overgrown with dense vegetation for as long as anyone can remember. Taro and sweet potato were cultivated prehistorically in Kawaipapa. *Kukui* nuts were gathered for *lei* making, and mangoes are harvested in the present day. The railroad grade was used to transport sugarcane and pineapple to Hāna Bay. The Honey Bee Camp was located within the project area, but no one could remember any specifics about the camp. Kawaipapa was a childhood home for Ka'ahumanu and her father, Ke'eaumoku.

The consultants all spoke in favor of the proposed project and stated that it would not interfere with any traditional cultural activities within the area, because none take place there anymore.

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APPENDIX A - *Ka Wai Ola* Public Notice

APPENDIX H

SUP2 2014/0002 Approval Letter dated July 29, 2015

ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI

DEPARTMENT OF PLANNING

July 29, 2015

Mr. Keone Ball, Chairman
and Members of the Maui Planning Commission
250 South High Street
Wailuku, Hawaii 96793

Dear Chair Ball and Members:

SUBJECT: A STATE LAND USE COMMISSION SPECIAL USE PERMIT (SUP) FOR MINING AND RESOURCE EXTRACTION ON A TWELVE (12) ACRE PORTION OF A 72.8 ACRE PARCEL, LOCATED IN THE STATE AGRICULTURAL DISTRICT, HANA, ISLAND OF MAUI, HAWAII; TMK (2) 1-3-004:001 (por.) (SUP2 2014/0002)

The Application is for a State Land Use Commission SUP for mining and resource extraction on a twelve (12) acre portion of 72.8 acre parcel in the State Agricultural District, Tax Map Key (TMK) No. (2) 1-3-004:001 (por.), Hana, Island of Maui, Hawaii.

A public hearing was held before the Hana Advisory Committee (HAC) on March 9, 2015 at the Old Hana School Cafeteria, 5091 Uakea Road, Hana, Island of Maui, Hawaii. The HAC unanimously voted to defer the project to as short a period as possible, but with time enough for a site visit. The HAC unanimously voted that HAC Members Hoopai-Waikoloa, Crawford, and Mardfin be selected for the investigative group to meet with the Applicant and do a site visit of the subject property. The HAC unanimously voted to RECESS the meeting until Tuesday, March 17, 2015.

On March 17, 2015, the site visit of the HAC was held at approximately 2:17 p.m. at the driveway entrance to 4356 Hana Highway. Present were Vice Chairperson Ward Mardfin and Committee members Ed Cashman, Ian Ballantyne, and Scott Crawford. The HAC unanimously voted to dissolve the temporary investigative group. The HAC meeting reconvened at the Old Hana School Cafeteria.

The HAC voted to recommend approval of the Department of Planning's (Department) Report and Recommendation dated August 11, 2015 with the following conditions:

1. That the State Land Use Commission SUP shall be valid for three (3) years from the date of the Maui Planning Commission (Commission) approval, subject to extension by the Planning Director (Director) upon a timely request for extension filed at least ninety (90) days prior to its expiration. The Director may forward the time-extension request to the Commission for review and approval and may require a public hearing on the time extension by the Commission.

2. That the subject State Land Use Commission SUP shall not be transferred without the prior written approval of the Director. However, in the event that a contested case hearing preceded issuance of said State Land Use Commission SUP, a public hearing shall be held by the appropriate Commission upon due published notice, including actual written notice to the last known addresses of parties to said contested case and their counsel.

3. That the Applicant, its successors and permitted assigns, shall exercise reasonable due care as to third parties with respect to all areas affected by subject State Land Use Commission SUP and shall procure at its own cost and expense, and shall maintain during the entire period of this State Land Use Commission SUP, a policy or policies of comprehensive liability insurance in the minimum amount of ONE MILLION AND NO/100 DOLLARS ($1,000,000.00) naming the County of Maui and State of Hawaii as an additional insured, insuring and defending the Applicant, County of Maui and State of Hawaii against any and all claims or demands for property damage, personal injury and/or death arising out of this permit, including but not limited to: (1) claims from any accident in connection with the permitted use, or occasioned by any act or nuisance made or suffered in connection with the permitted use in the exercise by the Applicant of said rights; and (2) all actions, suits, damages and claims by whomsoever brought or made by reason of the non-observance or non-performance of any of the terms and conditions of this permit. Proof of a policy naming County of Maui as an additional insured shall be submitted to the Department within ninety (90) calendar days from the date of transmittal of the decision and order. The proof of insurance and all subsequent certifications of insurance coverage shall include the applicable TMK and permit numbers.

4. That full compliance with all applicable governmental requirements shall be rendered.

5. That the Applicant shall submit to the Department two (2) copies of a detailed report addressing its compliance with these conditions. The Compliance Report shall be submitted to the Department with the request for time extension.

6. That the Applicant shall develop the property in substantial compliance with the representations made to the Commission in obtaining the SUP. Failure to develop the property as represented may result in the revocation of the permit.

7. That the Applicant is willing to operate within the hours of 7:30 a.m. to 4:30 p.m., Monday through Friday, to address the noise and dust control.

8. That the Applicant is willing to retain an archaeological monitor to be on site in the event that historic properties, including concentrations of artifacts, human

skeletal remains, subsurface cultural deposits, or structural remnants over fifty (50) years of age, are identified during construction activities, all work in the vicinity of the find must cease, the find must be protected from additional disturbance, and the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), Maui Island Section, shall be contacted immediately at (808) 243-1285;

9. That the uses and structures permitted on the property shall be limited to single-family dwellings, duplex dwellings, and Bed and Breakfast (B&B) homes, subject to the provisions of Section 19.64.030 of the Maui County Code (MCC).

Transmitted for your review and consideration are the following:

1. The Department's Report to the HAC dated March 9, 2015;
2. The Department's Recommendation to the HAC dated March 9, 2015;
3. Draft Minutes of the March 9, 2015 HAC meeting;
4. Draft Minutes of the March 17, 2015 HAC meeting; and
5. Letters and testimony distributed at the March 9, 2015 and March 17, 2015 HAC meeting.

Thank you for your cooperation. Should additional clarification be required, please contact Staff Planner Sybil Lopez at sybil.lopez@mauicounty.gov or at (808) 270-5529.

Sincerely,

WARD MARDFIN, Vice-Chairperson
Hana Advisory Committee on the
Maui Planning Commission

Attachments
xc: Clayton I. Yoshida, AICP, Planning Program Administrator (PDF)
Hana Advisory Committee members (letter only) (PDF)
Sybil K. Lopez, Staff Planner (PDF)
Tom Hoeffken, Tom's Backhoe, Applicant
Project File
General File

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APPENDIX I
Draft 201H Exemption List

201H Exemption Requests
for the proposed
100% Affordable Hana Housing Project

The project is 100% affordable single family housing. The project is seeking the following exemptions pursuant to Section 201H-38, Hawaii Revised Statutes.

These exemptions will automatically terminate if the Hana Affordable Housing project has not commenced construction within four (4) years of the date of the 201H Approval. For this purpose construction commencement will be defined as when the owner has obtained grading permits and has executed a construction contract for the project. Extensions to this termination will be granted at the discretion of the County Council and passed by Resolution.

As a 100% affordable housing project the project will seek to reduce fees as per Chapter 2.96.20 of the Maui County Code.

A. **Exemption from Title 2, Maui County Code (MCC) Administration and Personnel**

1. An exemption from Section 2.80B, MCC, General Plan and Community Plans, shall be granted to permit the project without obtaining a Community Plan Amendment

B. **Exemption from Title 8, MCC, Health and Safety**

1. An exemption from Section 8.04, MCC, Refuse Collection and Landfills, shall be granted to exempt the project from construction waste disposal permit and fees during the construction phase of the project but not long term ongoing operations.

C. **Exemption from Title 12, Streets, Sidewalks and Public Places**

1. An exemption form Chapter 12.08, MCC, Driveways, shall be granted to exempt the project from driveway permit and inspection fees.

2. Exemption from Section 12.24A.070D MCC, Planting of street trees, shall be granted to delete the requirement for street trees.

*Note: The proposed project site road will be connected to Hana Highway. The right-of-way width will be 44 feet wide and 20 feet of pavement. Within the project site there will be no curb, gutters, or sidewalks and the road shoulders will be grassed. The cul-de-sacs will have an edge of pavement radius of 43 feet and a right-of-way radius of 50 feet.

D. Exemption from Title 14, MCC, Public Services

1. An exemption from Section 14.07.050, MCC, Water Service, shall be granted to allow the project to be exempt from water meter fees**.**

2. An exemption from Section 14.34, MCC, Wastewater Assessment Fees for Facility Expansion of Kihei Regional Wastewater Treatment System, shall be granted to allow the project to be exempt from paying wastewater assessment fees**.**

3. An exemption from Section 14.68, MCC, Impact Fees for Traffic and Roadway Improvements in Hana Maui, Hawaii, shall be granted to exempt the project from traffic impact fees.

E. Exemptions from Title 16, MCC, Buildings and Construction

1. The project shall conform to Sections 16.04C, Ordinance 4232, Fire Code, 16.18B, Electrical Code, 16.20B, Plumbing Code, and 16.26B, Building Code, as stated at the time of the filing of the 201H-38 application, despite any subsequent amendments to Sections 16.04C, Ordinance 4232 16.08A, or 16.26B, MCC, or any updates to the Fire Code, Residential Code, or Building Code adopted prior to the issuance of the last building permit for the project. This does not pertain to future renovations of buildings or units, only to new construction.

F. Exemptions from Title 18, MCC, Subdivisions

1. An exemption from Section 18.04.030, MCC, Administration, and related land use consistency and conformity requirements of Title 18, shall be granted to exempt the project from obtaining a change in zoning or Community Plan Amendment to enable subdivision approval.

2. An exemption from Section 18.20.140 MCC, Utility lines and facilities, shall be granted to allow for proposed above ground utility lines (electric, telephone, street lighting, cable television, and other utilities, if any) on the project site to be installed above ground.

G. Exemptions from Title 19, MCC, Zoning

1. An exemption from Section 19.02A, MCC, Interim Zoning Provisions, shall be granted to exempt the project from the Interim District development standards. The project will be built in accordance with the Residential District development standards.

H. Exemptions from Title 20, MCC, Environmental Protection

1. An exemption from Section 20.08.090, MCC, Grubbing and Grading Permit Fees shall be granted to exempt the project from payment of grading, grubbing, and excavation permit fees, as well as inspection fees.

H. Exemption from Section 237-29, Hawaii Revised Statutes (HRS)

An exemption from Section 237-29, HRS, State General Excise Tax, shall be granted to exempt the project from State General Excise Tax (GET) during development and construction. The County of Maui does not object to the Developer seeking an exemption under Section 201H-37, HRS. Section 201H-37, HRS allows for exemption from Section 237-29 HRS for affordable housing projects.