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SEP 2 3 2021

DAVID Y. IGE
GOVERNOR

CURT T. OTAGURO
COMPTROLLER

AUDREY HIDANO
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P O BOX 119, HONOLULU HAWAII 96810-0119

(P)21.158

SEP 1 5 2021

MEMORANDUM

TO: Mary Alice Evans, Director
Environmental Review Program
Office of Planning and Sustainable Development

FROM: Christine L. Kinimaka
Public Works Administrator

SUBJECT: Final Environmental Assessment and Finding of No Significant Impact for Pahoa Public Library Site Selection, Puna, Island of Hawaii, Hawaii
DAGS Job Number 11-36-6553

With this letter, the State of Hawaii, Department of Accounting and General Services (DAGS) hereby transmits the Final Environmental Assessment and Finding of No Significant Impact (FEA-FONSI) for the Pahoa Public Library Site Selection project, situated at multiple Tax Map Key sites identified as (3) 1-5-007:017 portion, (3) 1-5-002:020 portion, and (3) 1-5-008:001 portion, in the District of Puna on the Island of Hawaii for publication in the next available edition of the Environmental Notice. We provide the following additional information:

1. DAGS has included copies of the comments and responses that it received during the 30-day public comment period on the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI).

2. Per the Hawaii Administrative Rules 11-200.1-20(d)(1), we have prepared Table 7-2 in the FEA-FONSI which groups substantive comments under the topic headings that identify each commenter.

3. Attached is the Environmental Review Program Publication Form.

4. Simultaneous with this letter, Environmental Review Program Publication Form as a MS Word file, project location map (shapefile), and a PDF copy (searchable) of the FEA-FONSI has been submitted via an upload through the Environmental Review Program's online submittal form.

22-034

If you have any questions on this matter, your staff may call Brian Isa of the Planning Branch at 586-0484.

BI:mo
c: Stacey Aldrich, Hawaii State Public Library System

From: webmaster@hawaii.gov
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice
Date: Thursday, September 16, 2021 9:25:08 AM

Action Name

Pāhoa Public Library Site Selection

Type of Document/Determination

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

HRS §343-5(a) Trigger(s)

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

Judicial district

Puna, Hawai‘i

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

(3) 1-5-007:017; (3) 1-5-002:020; (3) 1-5-008:001

Action type

Agency

Proposing/determining agency

Department of Accounting and General Services

Agency contact name

Brian Isa

Agency contact email (for info about the action)

brian.s.isa@hawaii.gov

Agency contact phone

(808) 586-0484

Agency address

1151 Punchbowl Street
Honolulu, HI 96813
United States
Map It

Was this submittal prepared by a consultant?

Yes

Consultant

G70

Consultant contact name

Kawika McKeague

Consultant contact email

kawikam@g70.design

Consultant contact phone

(808) 441-2120

Consultant address

111 South King Street
Suite 170
Honolulu, HI 96813
United States
Map It

Action summary

Currently, the Puna region is served by three libraries, all of which are co-located with school campuses. The properties where the libraries are located are Executive Ordered for the use of the Hawai'i State Public Library System (HSPLS). Due to both the nature of school security issues, as well as the large amount of growth in the Puna region, the HSPLS is looking to consolidate facilities off of DOE land and create new libraries to support this region. The library will also play an important role in providing community access to broadband and will utilize available marginal or nonessential agricultural lands for appropriate urban use, which helps support the use of lands in the State Agricultural District in alignment with HRS §226-104(B)(2). The proposed construction of the library will include 8,000 square feet (SF) of enclosed, air-conditioned, interior space and 1,000 SF of indoor-outdoor entry lanai activity area.

Reasons supporting determination

Please see Chapter 5: Findings Supporting Anticipated Determination of the FEA.

Attached documents (signed agency letter & EA/EIS)

- DAGS-ltr-to-ERP.Pahoa-PL9-15-2021.pdf
- Pahoa_Library_Site_Selection_FEA_September2021_rev.pdf

Shapefile

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

Action location map

- PahoaLib_PojectAreas.zip

Authorized individual

Thomas Pi'ilani Smith

Authorization

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

Pāhoa Public Library Site Selection

Puna, Island of Hawai‘i, Hawai‘i

TMKs (3) 1-5-007:017 por., (3) 1-5-002:020 por., and (3) 1-5-008:001 por.

Final Environmental Assessment/ Finding of No Significant Impact

Proposing and Determining Agency:
State of Hawai‘i
Department of Accounting and General Services
1151 Punchbowl Street
Honolulu, HI 96813

DAGS Job No. 11-36-6553

Prepared By:

G70

September 2021

Pāhoa Public Library Site Selection

Puna, Island of Hawaiʻi, Hawaiʻi

TMKs (3) 1-5-007:017 por., (3) 1-5-002:020 por., and (3) 1-5-008:001 por.

Final Environmental Assessment/ Finding of No Significant Impact

This environmental document is prepared in accordance with the requirements of Chapter 343, HRS, Hawaiʻi Administrative Rules, Title 11, Department of Health

Proposing and Determining Agency:
State of Hawaiʻi
Department of Accounting and General Services
1151 Punchbowl Street
Honolulu, HI 96813

Prepared By:

G70

111 South King Street Suite 170

Honolulu, Hawaiʻi 96813

September 2021

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LIST OF ABBREVIATIONS

BMPs	Best Management Practices
CDP	Community Development Plan
CWRM	Commission on Water Resource Management
CZM	Coastal Management Zone
DHHL	Department of Hawaiian Homelands
DLNR	Department of Land and Natural Resources
DMV	Department of Motor Vehicles
DOFAW	Division of Forestry and Wildlife
EA	Environmental Assessment
EO	Executive Order
FEA	Final Environmental Assessment
FIRM	Flood Insurance Rate Map
HAR	Hawaiʻi Administrative Rules
HDOT	State of Hawaiʻi Department of Transportation
HELCO	Hawaii Electric Light Company, Inc.
HFD	Hawaiʻi Fire Department
HRS	Hawaiʻi Revised Statutes
HSPLS	Hawaiʻi State Public Library System
HWY	Highway
IBC	International Building Code
IFA	Hawaiʻi Institute of Astronomy
LID	Low Impact Development
LUPAG	Land Use Pattern Allocation Guide
mph	Miles per hour
MSL	Mean Sea Level
ROD	Rapid ʻŌhiʻa Death
SF	Square Feet
SHPD	State Historic Preservation Division
SLUD	State Land Use District
SMA	Special Management Area
TMK	Tax Map Key
USGS	United States Geological Survey

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1.0

Description of the Proposed Action

1 DESCRIPTION OF THE PROPOSED ACTION

This Final Environmental Assessment (FEA) has been prepared in accordance with the requirements of Chapter 343, Hawaiʻi Revised Statutes (HRS), Hawaiʻi Administrative Rules (HAR), Title 11, Department of Health. The proposed action involves the use of State or County land and funding toward the construction of a new Pāhoa Public Library.

1.1 PROJECT INFORMATION SUMMARY

Type of Document:	Final Environmental Assessment (FEA)/Finding of No Significant Impact
Project Name:	Pāhoa Public Library Site Selection
Proposing and Determining Agency:	State of Hawaiʻi Department of Accounting and General Services 1151 Punchbowl Street Honolulu, HI 96813
CH. 343, HRS Trigger:	Use of State or County Lands and Funding
Project Location:	Pāhoa, Puna District, Island of Hawaiʻi
Final Candidate Sites: *(Figure 1.2)*	**Site 1** – Fire Station / DMV **Site 2** – Pāhoa District Park **Site 3** – Highway 130 Mauka
Tax Map Key: *(Figures 1.3, 1.4, 1.6)*	**Site 1:** (3) 1-5-007:017 por. **Site 2:** (3) 1-5-002:020 por. **Site 3:** (3) 1-5-008:001 por.
Fee Landowner:	**Site 1:** State of Hawaiʻi (Executive Order No.4073 to County of Hawaiʻi) **Site 2:** County of Hawaiʻi **Site 3:** State of Hawaiʻi (Department of Land and Natural Resources [DLNR])
Project Area:	**Site 1:** Approximately 5 Acres **Site 2:** Approximately 5 Acres **Site 3:** Approximately 5 Acres
State Land Use District: *(Figure 1.7)*	**Site 1:** Agricultural District **Site 2:** Agricultural District **Site 3:** Agricultural District
County of Hawaiʻi General Plan Land Use Pattern Allocation Guide (LUPAG): *(Figure 1.8)*	**Site 1:** Extensive Agriculture **Site 2:** Urban Expansion **Site 3:** Extensive Agriculture

Puna Community Development Plan: *(Figure 1.9)*	**Site 1:** Agricultural/ "Regional Town Center" **Site 2:** County Park and Master Plan **Site 3:** Agricultural
County of Hawai'i Zoning: *(Figure 1.10)*	**Site 1:** A-1a, Agricultural – minimum one acre **Site 2:** A-1a, Agricultural – minimum one acre **Site 3:** A-20a, Agricultural – minimum 20 acres
Special Management Area (SMA):	**Site 1:** Outside SMA **Site 2:** Outside SMA **Site 3:** Outside SMA
Flood Zone: *(Figure 2.2)*	**Site 1:** Zone X (area outside floodplain) **Site 2:** Zone X (area outside floodplain) **Site 3:** Zone X (area outside floodplain)
Lava Hazard Zone: *(Figure 2.3)*	**Site 1:** Lava Hazard Zone 2 **Site 2:** Lava Hazard Zone 2 **Site 3:** Lava Hazard Zone 3
Determination:	Finding of No Significant Impact (FONSI)

1.2 PURPOSE AND OVERVIEW OF THE PROPOSED PROJECT

Currently, the Puna region is served by three libraries, the Kea'au Public and School Library, the Mountain View Public and School Library, and the Pāhoa Public and School Library. All three of these libraries are co-located with school campuses. The properties where the libraries are located are Executive Ordered for the use of the Hawai'i State Public Library System (HSPLS). The model of co-located schools and public and school libraries was a design strategy in the 1960s, when these libraries were built. However, due to both the nature of school security issues, as well as the large amount of growth in the Puna region, the HSPLS is looking to consolidate facilities off of DOE land and create new libraries to support this region.

The library will also play an important role in providing community access to broadband, in alignment with HRS §226-10.5A. In addition, the Project will utilize available marginal or nonessential agricultural lands for appropriate urban use, which helps support the use of lands in the State Agricultural District in alignment with HRS §226-104(B)(2).

Three initial community focus group meetings (one each in Kea'au, Mountain View, and Pāhoa) were held in October 2015, in order to gauge public interest in the desired uses and services provided by a new regional library. Based on the focus group meetings feedback, the HSLPS determined that two new libraries will be planned for Puna, one in Pāhoa and the other in Kea'au, in order to adequately serve the growing needs of the Puna district.

The proposed construction of the new Pāhoa Public Library will include 8,000 square feet (SF) of enclosed, air-conditioned, interior space and 1,000 SF of indoor-outdoor entry lanai activity area. The enclosed space will include the following function areas:

Public Space

- Central hub – self service area, news zone, co-working zone, Friends of Library space
- Quiet zone – study areas and computer stations
- Busy zone - lounge area and computer stations
- Keiki area – unique activity space and computer stations
- Restroom and maintenance

Staff Area

- Open workroom/lounge
- Manager's office
- Storage/maintenance
- Circulation and support

Community Use Space

- Multi-purpose room/dividable meeting room

The new library will also include exterior spaces which may include a community garden, non-book collection, a courtyard, bookmobile area, food truck/concessions, drop-off area, outdoor lockers, and approximately 30 parking spaces.

According to comments received during the Draft EA 30-day public comment period, a resident and an organization suggest the following amenities for the new library.

- Design a library that is multi-purpose, an outdoor theater/stage area can be used for both book reading groups and outdoor events. Indoor auditorium for author presentations and movies (Ben 3/17/2021).
- An area for Friend's book sales (Friends of Pāhoa Library 3/18/2021)
- More computers and fast wifi, a good sized meeting room, and good parking - it would be possible to have actual community classes, events and meetings. (Friends of Pāhoa Library 3/18/2021)

These amenities will be considered during the design phase once a final site has been selected.

The hours of operation for the new Pāhoa library are anticipated to be Monday 10:00 am–8:00 pm and Tuesday-Friday 10:00 am – 5:00 pm.

A site selection study was prepared in April 2018. Six Candidate Sites selected by the HSPLS as shown in *Figure 1.1* were evaluated based on the criteria shown in *Table 1-1*. A rating summary tabulation for all Six Candidate Sites is presented in *Table 1-2*. Sites that were selected as "Final Candidate Sites" were the top three sites that received the highest "Good" ratings, as well as the lowest "Poor" ratings, as described below.

1. Site 1 – Fire Station / DMV (17 "Good", 5 "Fair", 3 "Poor")
2. Site 2 – Pāhoa District Park (13 "Good", 9 "Fair", 3 "Poor")
3. Site 3A – Highway 130 Mauka (10 "Good", 11 "Fair", 4 "Poor")

Site 1 Fire Station / Department of Motor Vehicles (DMV) received the most "Good" ratings, and was selected as the "Preferred Site". Site 1 scored well for most criteria except for adequacy of

water and pedestrian access, as there are currently no sidewalks off Highway 130. More detailed studies were thus prepared for Site 1, the Preferred Site, in this EA.

Site 2 Pāhoa District Park had the second highest "Good" ratings. It is the only site to score "Good" rating for pedestrian access, as it is connected to an established pedestrian walkway system on Pāhoa Village Road.

Site 3A Highway 130 Mauka had the third highest "Good" ratings. Site 3B will be referred to as Site 3 in this EA.

It should be noted that all six Candidate Sites were rated Poor for adequacy of water and wastewater system.

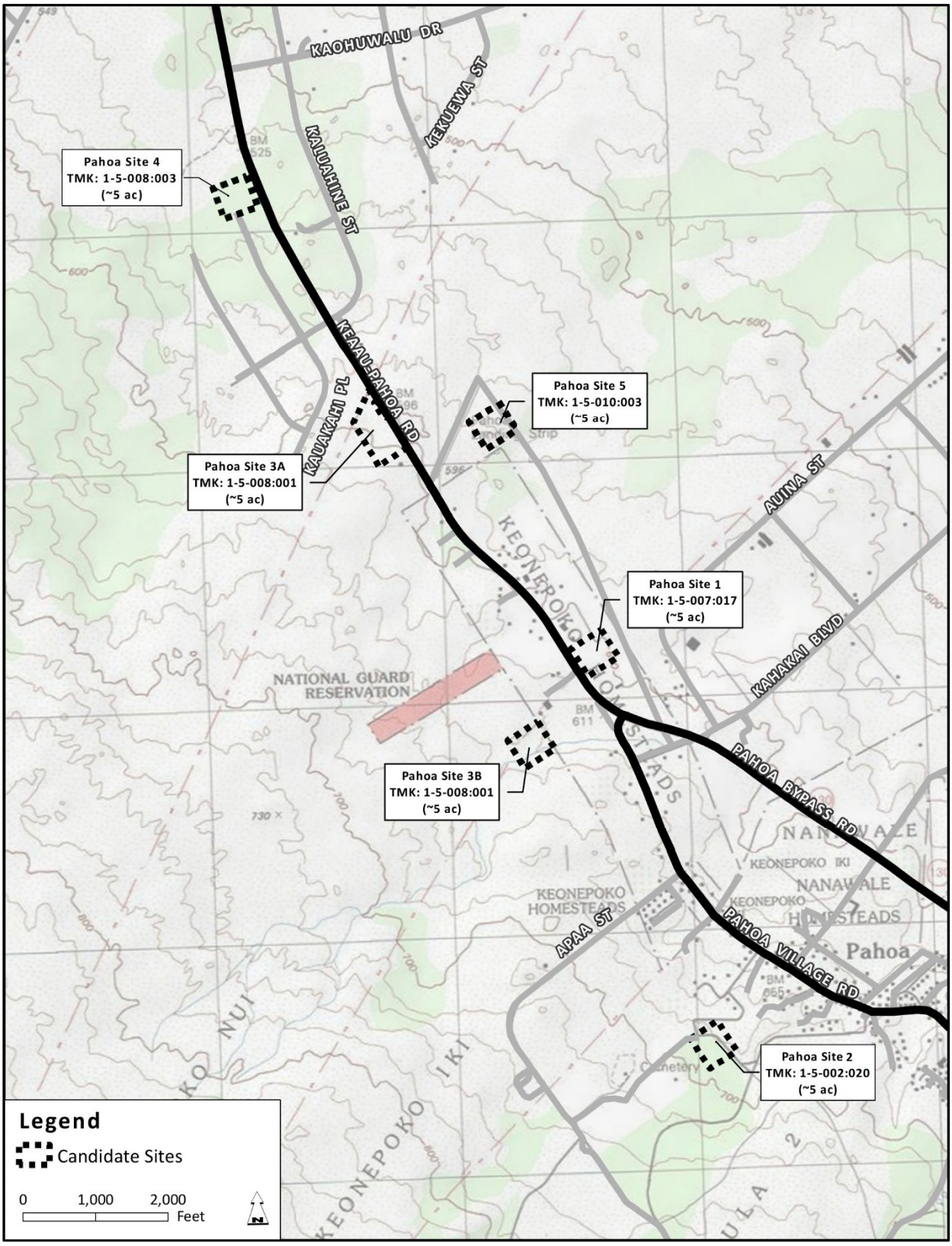

Figure 1.1: Pāhoa Public Library Six Candidate Sites

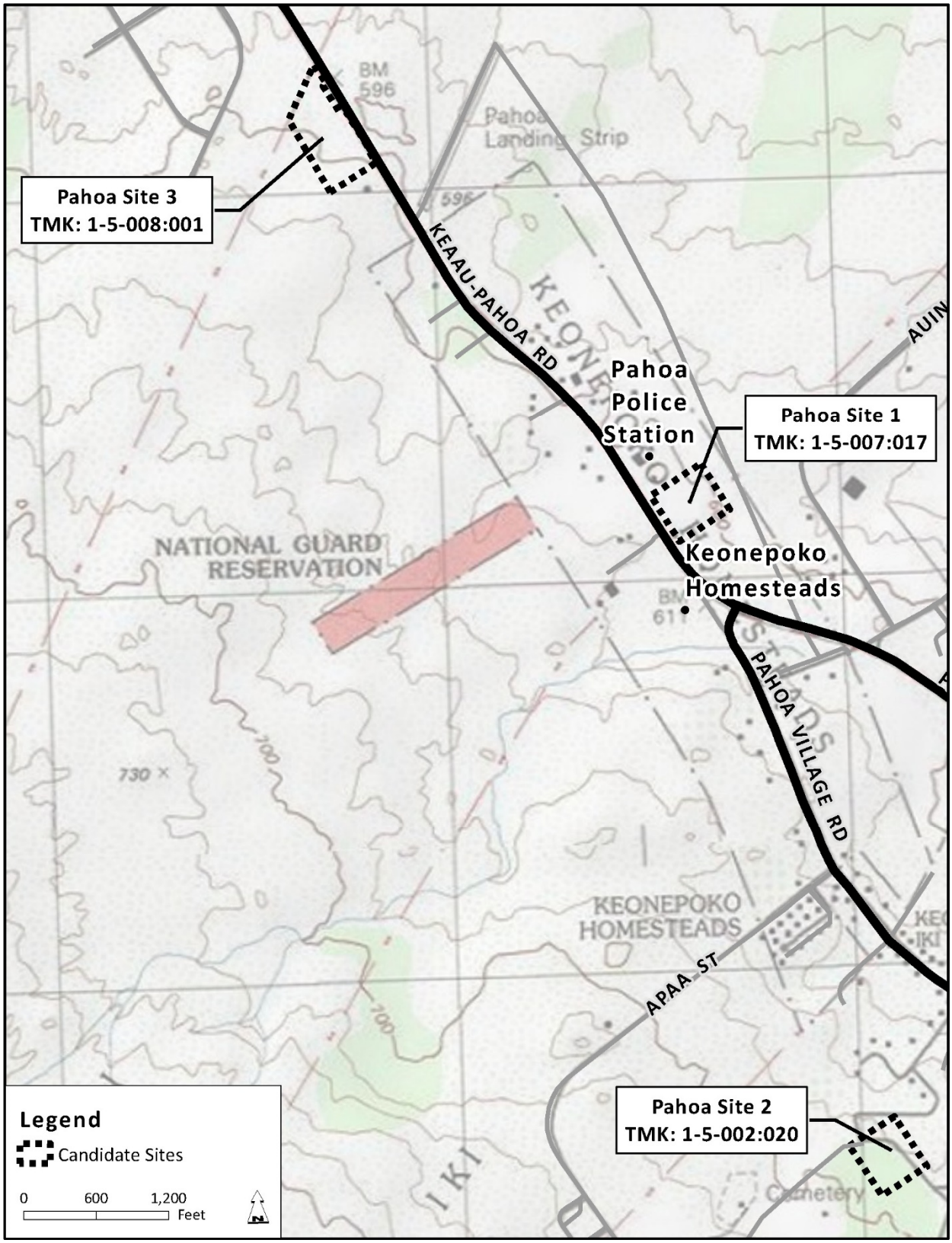

Figure 1.2: Pāhoa Public Library Final Candidate Sites

Table 1-1 Evaluation Criteria Summary			
Building Site Criteria: This set of criteria evaluates physical site characteristics, availability of infrastructure, access and environmental characteristics. These parameters address site development constraints and opportunities.			
A. Site Characteristics	**B. Utilities**	**C. Access**	**D. Environment**
1. Site Acquisition Feasibility	6. Adequacy of Water Service	10. Automobile Access	13. Botanical and Wildlife Resources
2. Site Size / Buildable Area	7. Adequacy of Wastewater System	11. Pedestrian Access	14. Historical / Archaeological
3. Slope	8. Adequacy of Drainage	12. Public Bus Service	15. Air Quality / Industrial / Ag
4. Lot Configuration	9. Power and Communications		16. Lava and Wildfire Hazards
5. Scenic Value			17. Hazardous Materials
			18. Flood and Tsunami Hazards
Community Criteria: This set of criteria is used to evaluate the potential for development of the site in terms of State and local land use designations, existing use and land ownership, and compatibility with surrounding land, as well as proximity to population activity and civic services.			
A. Planning and Zoning		**B. Community Effects**	
19. State Land Use District (SLUD)		23. Interference with Institutions	
20. LUPAG		24. Proximity to Pāhoa Town	
21. Puna Community Development Plan (CDP)		25. Aesthetics and Setting	
22. Hawai'i County Zoning			
Costs Considerations – This section reviews the considerations associated with on-site costs and possible off-site improvements necessary for development.			
26. On-Site Costs		27. Off-Site Considerations	

Table 1-2 Evaluation Ratings Summary

SITE EVALUATION CRITERIA	Site 1- Fire Station / DMV (TMK 1-5-007:017 por.)	Site 2- Pāhoa District Park (TMK 1-5-002:020 por.)	Site 3A- Highway 130 Mauka (TMK 1-5-008:001 por.)	Site 3B- Rear of Pāhoa Marketplace (TMK 1-5-008:001 por.)	Site 4- Ainaola (TMK 1-5-008:003 por.)	Site 5- Keonepoko Standpipe Adjacent (TMK 1-5-010:003 por.)
Building Site Criteria						
A. Site Characteristics						
1. Site Acquisition Feasibility	G	F	F	F	F	F
2. Site Size/Buildable Area	G	F	G	G	G	G
3. Slope	G	F	G	F	G	G
4. Lot Configuration	G	G	G	G	G	G
5. Scenic Value	G	G	G	G	G	G
B. Utilities						
6. Adequacy of Water Service	P*	P*	P*	P*	P*	P*
7. Adequacy of Wastewater System	P	P	P	P	P	P
8. Adequacy of Drainage	G	G	P	P	P	P
9. Adequacy of Power and Communications	F	F	F	F	F	F
C. Accessibility						
10. Automobile Access	G	F	G	P	G	F
11. Pedestrian Access	P	G	P	F	P	P
12. Public Bus Service	G	F	G	F	G	G
D. Environment						
13. Botanical and Wildlife Resources	G	P	F	F	F	F
14. Historical/ Archaeological Resources	G	G	F	F	F	F
15. Air Quality/Industrial and Agricultural Nuisances	G	G	G	G	G	G

Table 1-2 Evaluation Ratings Summary

SITE EVALUATION CRITERIA	Site 1- Fire Station / DMV (TMK 1-5-007:017 por.)	Site 2- Pāhoa District Park (TMK 1-5-002:020 por.)	Site 3A- Highway 130 Mauka (TMK 1-5-008:001 por.)	Site 3B- Rear of Pāhoa Marketplace (TMK 1-5-008:001 por.)	Site 4- Ainaola (TMK 1-5-008:003 por.)	Site 5- Keonepoko Standpipe Adjacent (TMK 1-5-010:003 por.)
16. Lava / Wildfire Risk	G	F	F	P	F	F
17. Hazardous Materials	G	G	G	G	G	G
18. Flood & Tsunami Hazards	G	G	G	G	G	G
Community Criteria						
E. Government						
19. SLUD	F	F	F	F	F	F
20. LUPAG	F	G	F	G	F	F
21. Within Puna CDP Town Center Designation	G	G	F	F	P	F
22. Hawai‘i County Zoning Designation	F	F	F	F	F	F
F. Community Effects						
23. Interference with Institutions	G	G	G	F	G	G
24. Proximity to Pāhoa Town	F	G	F	G	P	F
25. Aesthetics and Setting	G	G	F	F	F	F
Cost Considerations						
Improvement Cost Estimate	$9,668,400	$10,856,400	$9,932,400	$9,974,400	$9,968,400	$10,040,400
EVALUATION RATINGS POINTS TOTAL	**G= 17 F= 5* P= 3***	**G= 13 F= 9* P= 3***	**G= 10 F= 11* P= 4***	**G= 8 F= 12* P= 5***	**G= 10 F= 9* P= 6***	**G= 9 F= 12* P= 4***

**Due to new information received during the early consultation process from the County Water Department, all six candidate sites' rating for adequacy of water has been revised from what was presented in the 2018 Site Selection Study as "Fair" to "Poor". It should be noted that this change does not affect the ranking of the top three Final Candidate Sites.*

1.3 PROJECT LOCATION AND SITE CHARACTERISTICS

Site 1 Pāhoa Fire Station/DMV

Site 1 is located on Tax Map Key (TMK) 1-5-007:017 to the north off Highway 130, approximately 1/4th of a mile before the Pāhoa Bypass Road roundabout (*Figure 1.3*). Currently owned by the State, the 19.5-acre parcel was set aside under Governor's Executive Order No. 4073 to the County of Hawai'i in 2004 for public safety, recreation, and other public purposes. Access to the site is provided off an existing driveway off Highway 130 that would be shared with the Fire Station and DMV. The Fire Station and DMV take up approximately 5 acres of the 19.5 acre site, with the remaining 14.5 acres currently unused. The southeastern quarter of the site is vacant and fronts Highway 130, in line with the current civic facilities Usage of a portion of the land from the EO would require approval from the County. The site is located at an elevation of 604 to 606 feet above mean sea level (MSL) with an average slope of 2.0% from southwest to northeast. Pāhoa Town is located approximately one (1) mile to the southeast.

Site 2 Pāhoa District Park

The Pāhoa District Park site is located on TMK 1-5-002:020 and owned by the County of Hawai'I (*Figure 1.4*). The 71-acre site is located to the south of the main Pāhoa urban commercial core, adjacent to a residential housing development off Kauhale Street. The parcel is located near the Pāhoa Community Center, with the surrounding lands to the west and south currently undeveloped. The site is located at an elevation between 700 and 704 feet above MSL and slopes from southwest to northeast at 2.0% to 4.0% grade. Ingress and egress from the site would be through existing roadways into the district park off Kauhale Street The parcel is currently a functioning County District Park. The addition of a library to the Project site could be situated at either the future Community Center location or near the third undeveloped baseball field area.

The Pāhoa Park Expansion Master Plan Final EA, prepared by PBR Hawaii in December 2013, describes a two-phase expansion plan for the district park facility (*Figure 1.5*). Phase I of the park was completed in 2017, and Phase II is currently undeveloped, with the future timing of Phase II completion currently unknown.

The HSPLS has identified the future Community Center location in Phase II of the Master Plan (Facility number 24) as the most ideal location for a library site within the Park Master Plan, as it fulfills a similar facility use and would have the least impact to other proposed Phase II Master Plan uses. If Phase II does not reach completion by the time of the library's implementation schedule, an alternate site could be considered adjacent to Phase I in place of the ball field Facility number 17 for purposes of cost savings for clearing, grubbing, and infrastructure development.

Site 3 Highway 130 Mauka (DLNR)

Site 3 is located mauka of Highway 130, approximately 0.4 miles to the northwest of the intersection of Niaulani Street and Highway 130 (*Figure 1.6).* Site 3 is a 5-acre highway-adjacent portion of a larger 5,125 acre DLNR-owned site, which is currently vacant. The site has slopes ranging from 1.0% to 2.0% with elevations ranging from 592 to 603 feet above mean sea level (MSL). Access to the site will be provided off Highway 130. A new driveway access would have to be constructed on the highway. Access and subdivision will need to be coordinated with DLNR to allow access to the rest of the parcel. The site is located 1.5 miles north of Pāhoa Town.

1.4 DEVELOPMENT SCHEDULE AND CONSTRUCTION COSTS

The improvements will be done in one phase and the completion date is still being determined. Total construction costs are estimated to be $10-11 million (2017 dollars). An annual escalation factor of 3% can be used to project estimated construction cost for future years.

1.5 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

This EA has been prepared in accordance with the requirements of HRS, Chapter 343, and Hawai‘i Administrative Rules (HAR), Chapter 11-200.1. This EA provides written evaluation of the technical, environmental, social and economic aspects of the proposed Project, as well as identifies the possible impacts of the proposed Project and their significance. Strategies to mitigate those potential impacts and possible alternatives to the proposed Project are also identified. This EA then compares all aspects and impacts against 13 significance criteria listed in §11-200-12.1 to provide determination as to whether an Environmental Impact Statement shall be required or not.

1.6 PERMITS AND APPROVALS REQUIRED

Several approvals are anticipated to be required to implement the proposed Project as shown in *Table 1-3*.

Table 1-3 Required Permits and Approvals

Permits/Approvals	Site 1	Site 2	Site 3
Executive Order to allow for land acquisition/library use	x	x	x
Special permit to locate non-agricultural facility in the State Land Use Agricultural District (County Planning Commission)**	x	x	x
County of Hawai’i General Plan LUPAG Amendment	x		x
Puna Community Development Plan Amendment			x
Special permit to locate community building within Agricultural Zone (County of Hawai’i) – for all three final candidate sites	x	x	x
Approval for individual wastewater system (State Department of Health)	x	x	x
Building Permit, Electrical Permit, Plumbing Permit, Driveway Permit, Grading Permit, Grubbing and Stockpiling Permit, Work to Perform on County Highway (Hawai‘i County Department of Public Works)	x	x	x
National Pollutant Discharge Elimination System (NPDES) Permit (State Department of Health)	x	x	x
Chapter 6E-8 Historic Preservation Review (State Historic Preservation Division [SHPD])	x	x	x

***A change of zone is not recommended, as the proposed Project area only encompasses a small portion of the entire parcel and change of zone is an extensive and costly process.*

1.7 AGENCIES AND PUBLIC CONTACTED IN PRE-CONSULTATION

Listed below are the agencies and other parties contacted regarding the proposed Project prior to the publication of the Final EA.

Federal Agency
United States Fish and Wildlife Service

State of Hawai'i Agencies
State Department of Accounting and General Services
State Department of Agriculture
State Department of Business, Economic Development and Tourism
State Department of Business, Economic Development and Tourism – Energy Division
State Department of Business, Economic Development and Tourism – Office of Planning
State Department of Defense
State Department of Education
State Department of Hawaiian Homelands
State Department of Health
State Department of Human Services
State Department of Labor and Industrial Relations
State Department of Land and Natural Resources
State Department of Land and Natural Resources-State Historic Preservation Division
State Department of Transportation
Hawai'i Housing Finance and Development Corporation
Office of Hawaiian Affairs
Pāhoa High and Intermediate School
Pāhoa Elementary School
University of Hawai'i Institute of Astronomy

County of Hawai'i Agencies
County of Hawai'i Department of Environmental Management
County of Hawai'i Fire Department
County of Hawai'i Department of Parks and Recreation
County of Hawai'i Department of Planning
County of Hawai'i Department of Public Works
County of Hawai'i Department of Research and Development
County of Hawai'i Department of Transportation
County of Hawai'i Department of Water Supply
County of Hawai'i Office of Housing and Community Development
County of Hawai'i Police Department
Office of the Mayor

State of Hawai'i Legislature
Senator Russell E. Ruderman (D) – District 2
Representative Joy Buenaventura (D) - District 2

Hawai‘i County Council Members
Valerie T. Poindexter, Council Chair
Eileen O’Hara, Ph.d., Puna District (eastern)
Jen Ruggles, Puna District (western)

Community/Civic Groups
Puna Community Development Action Committee
Friends of the Pāhoa Library
Maku‘u Farmers’ Association

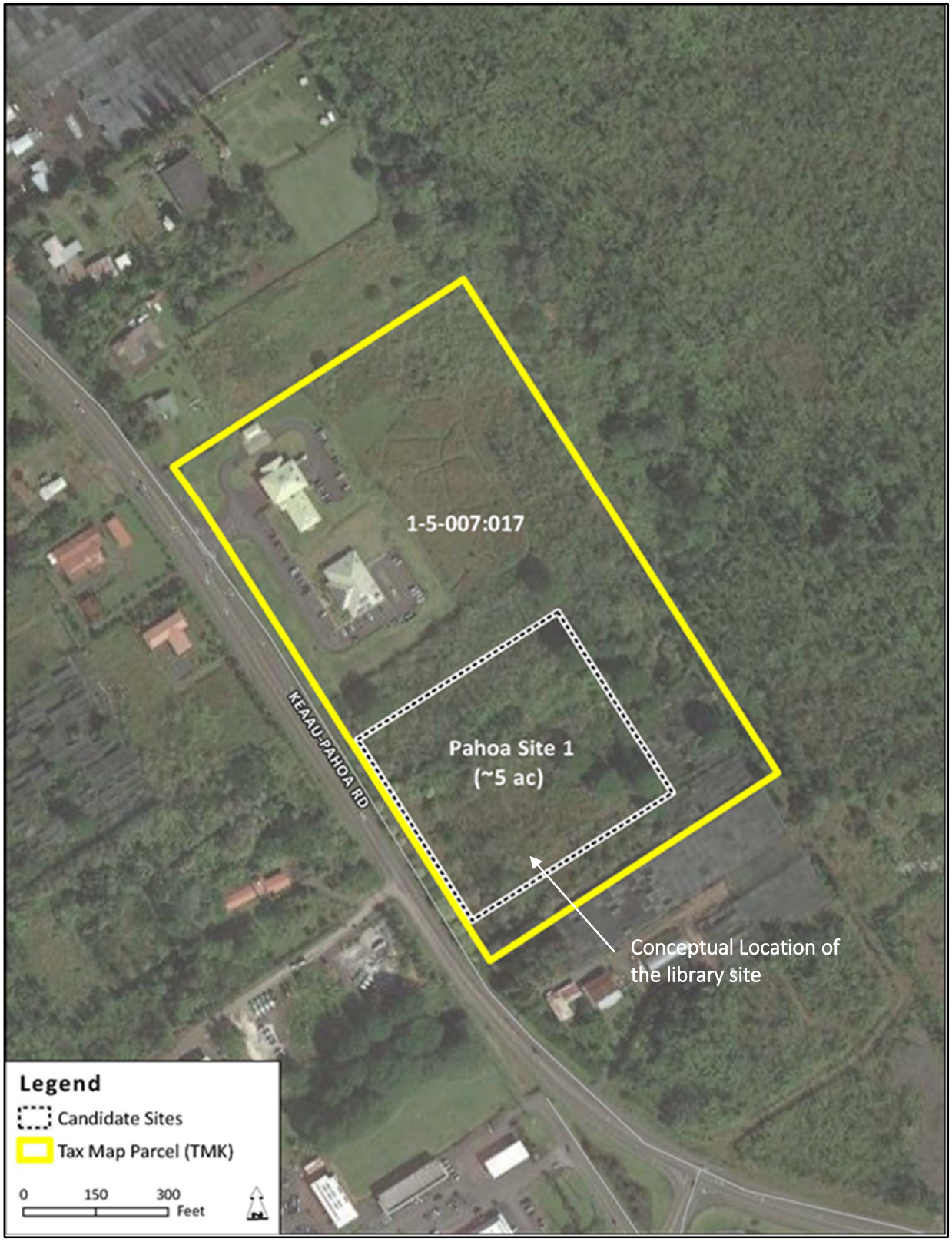

Figure 1.3: Site 1 Pāhoa Fire Station/DMV

Figure 1.4: Site 2 Pāhoa District Park

Figure 1.5: Pāhoa Park Master Plan (PBR Hawaii, 2013)

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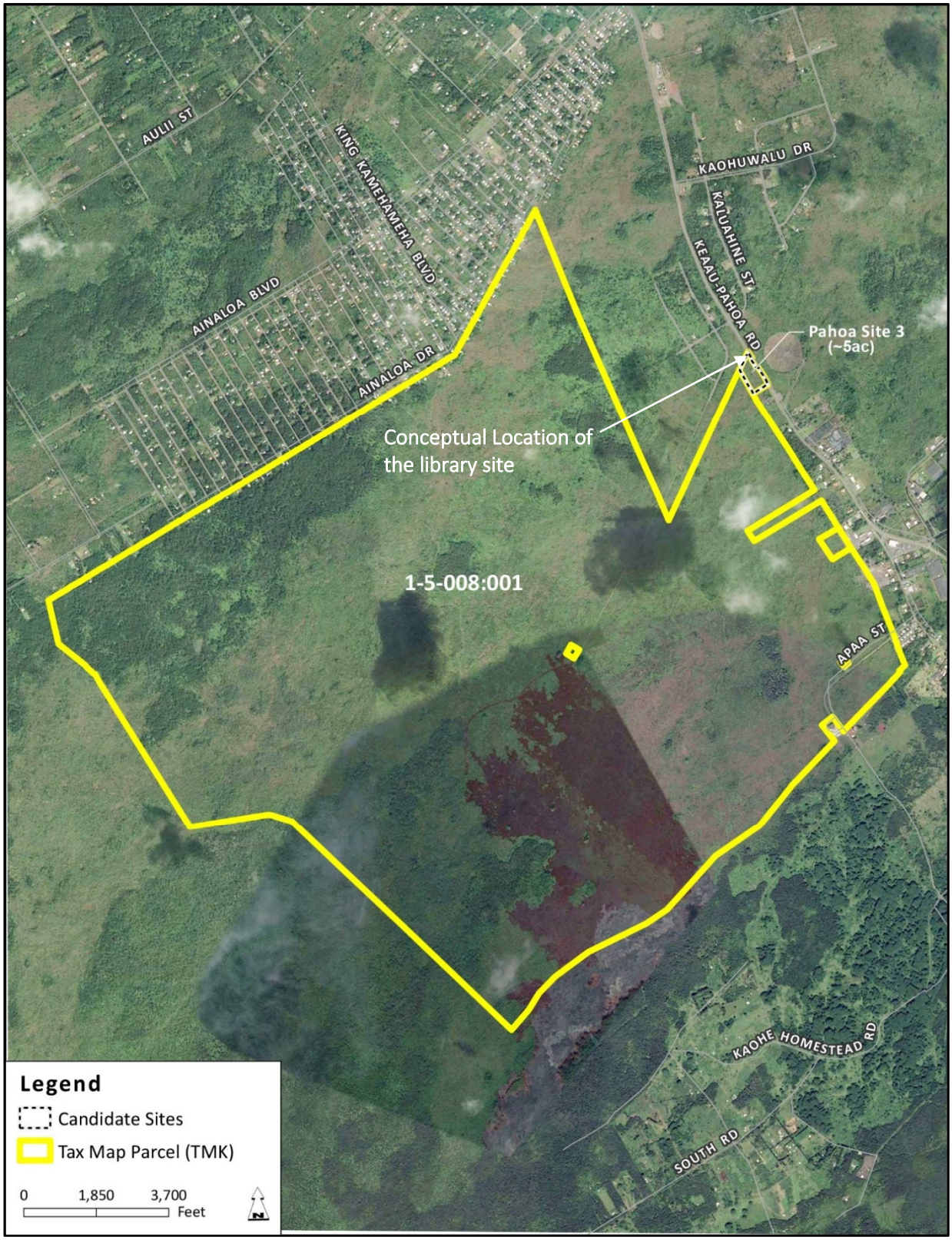

Figure 1.6: Site 3 Highway 130 Mauka (DLNR)

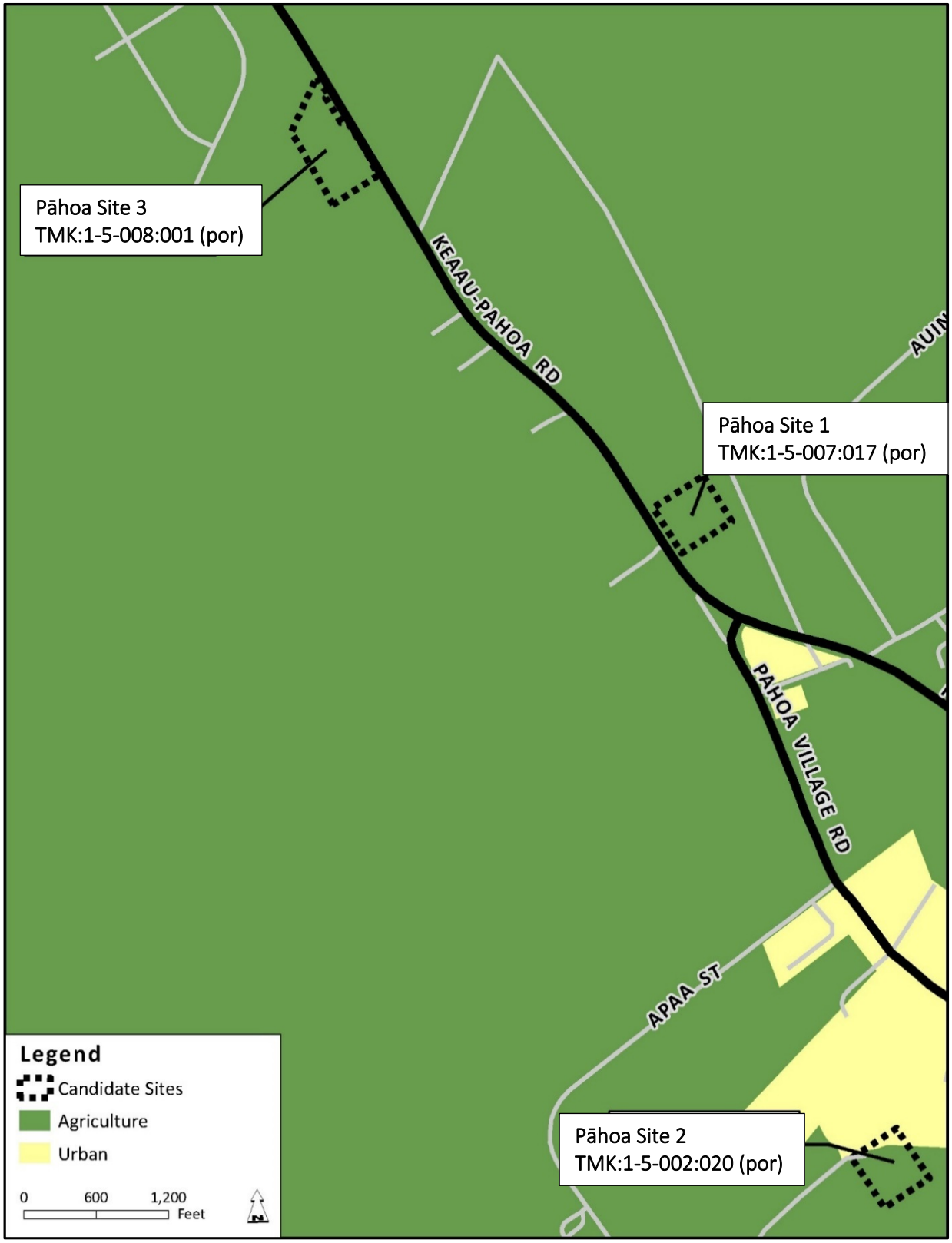

Figure 1.7: State Land Use District Map

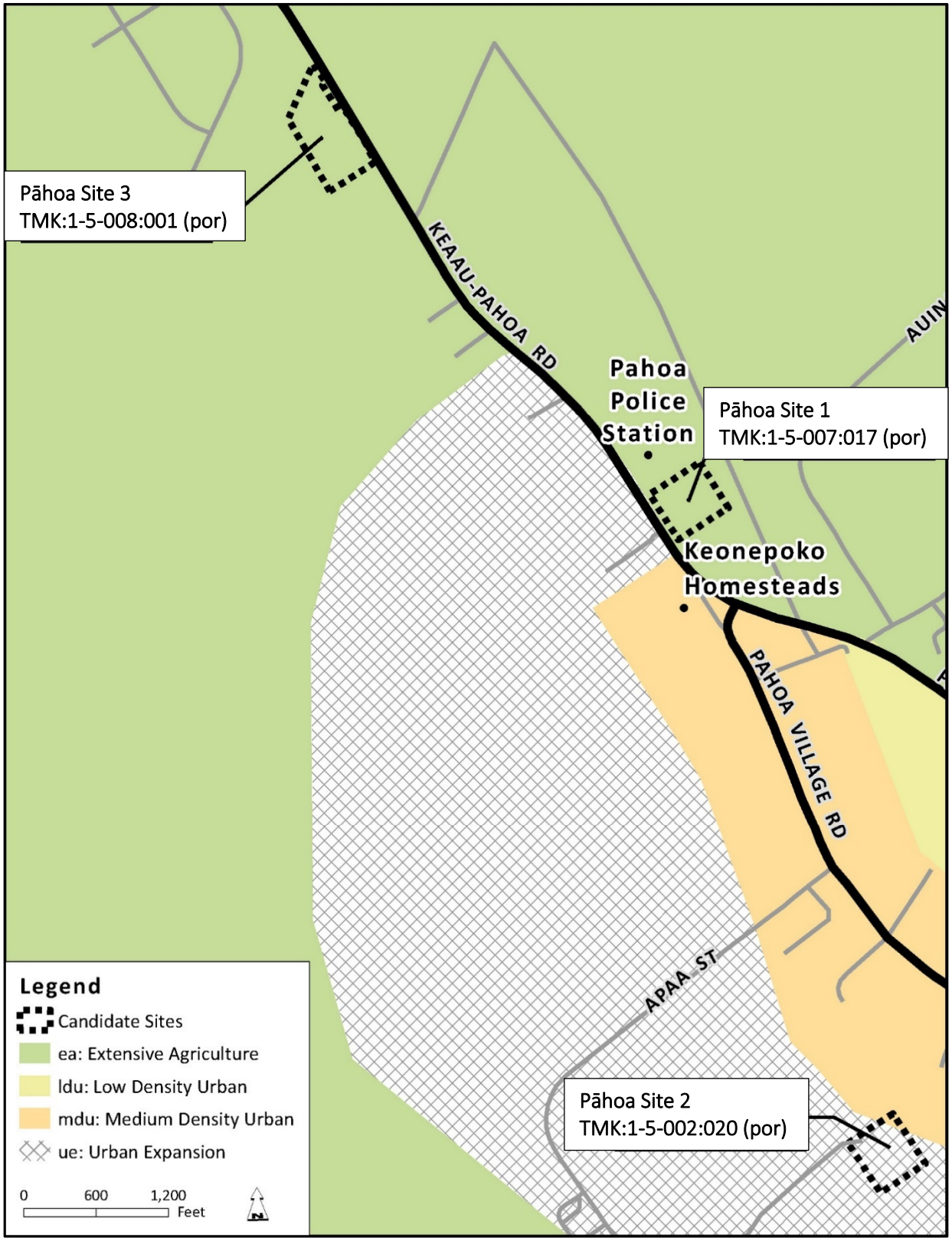

Figure 1.8: County of Hawai‘i General Plan LUPAG

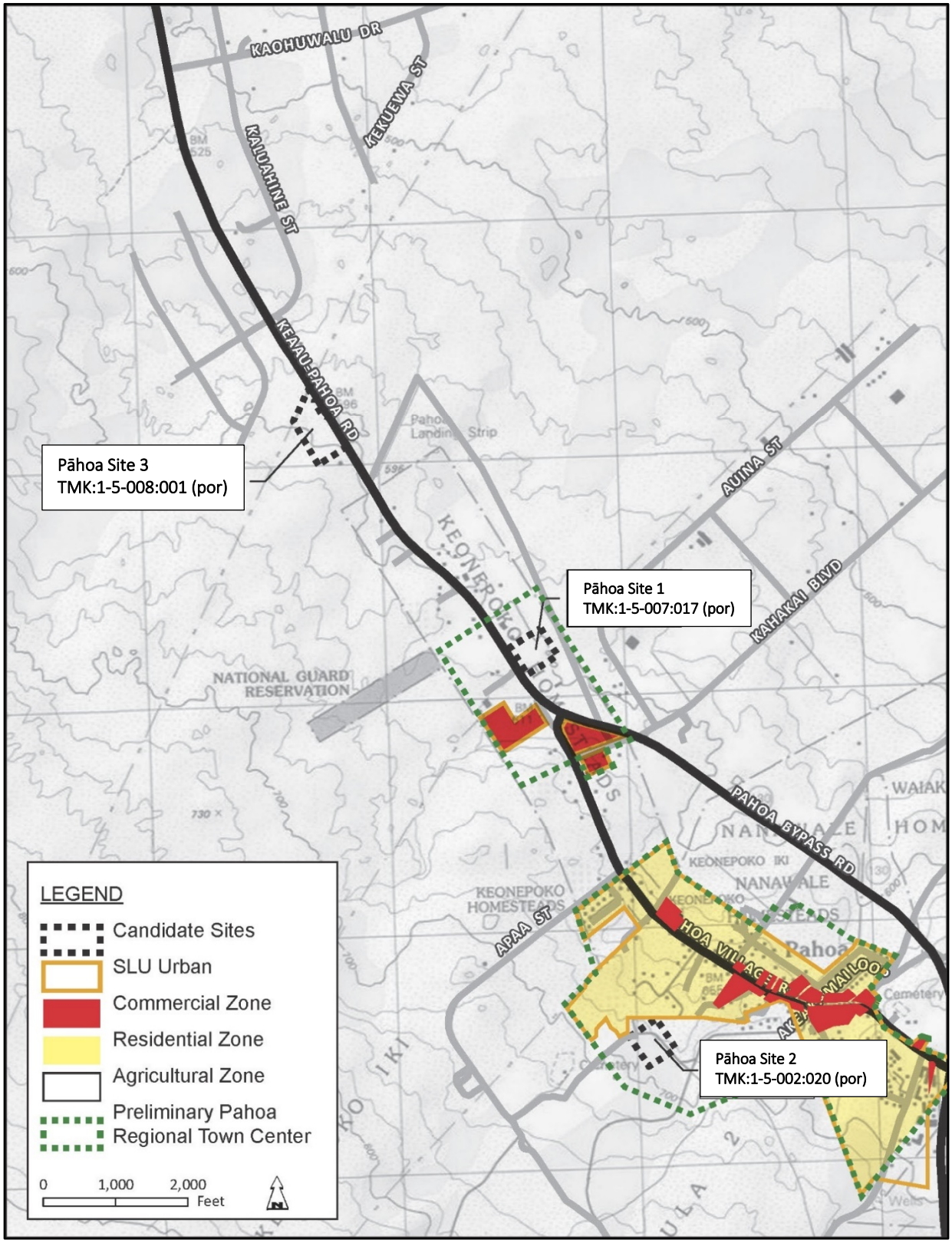

Figure 1.9: Puna Community Development Plan Land Use

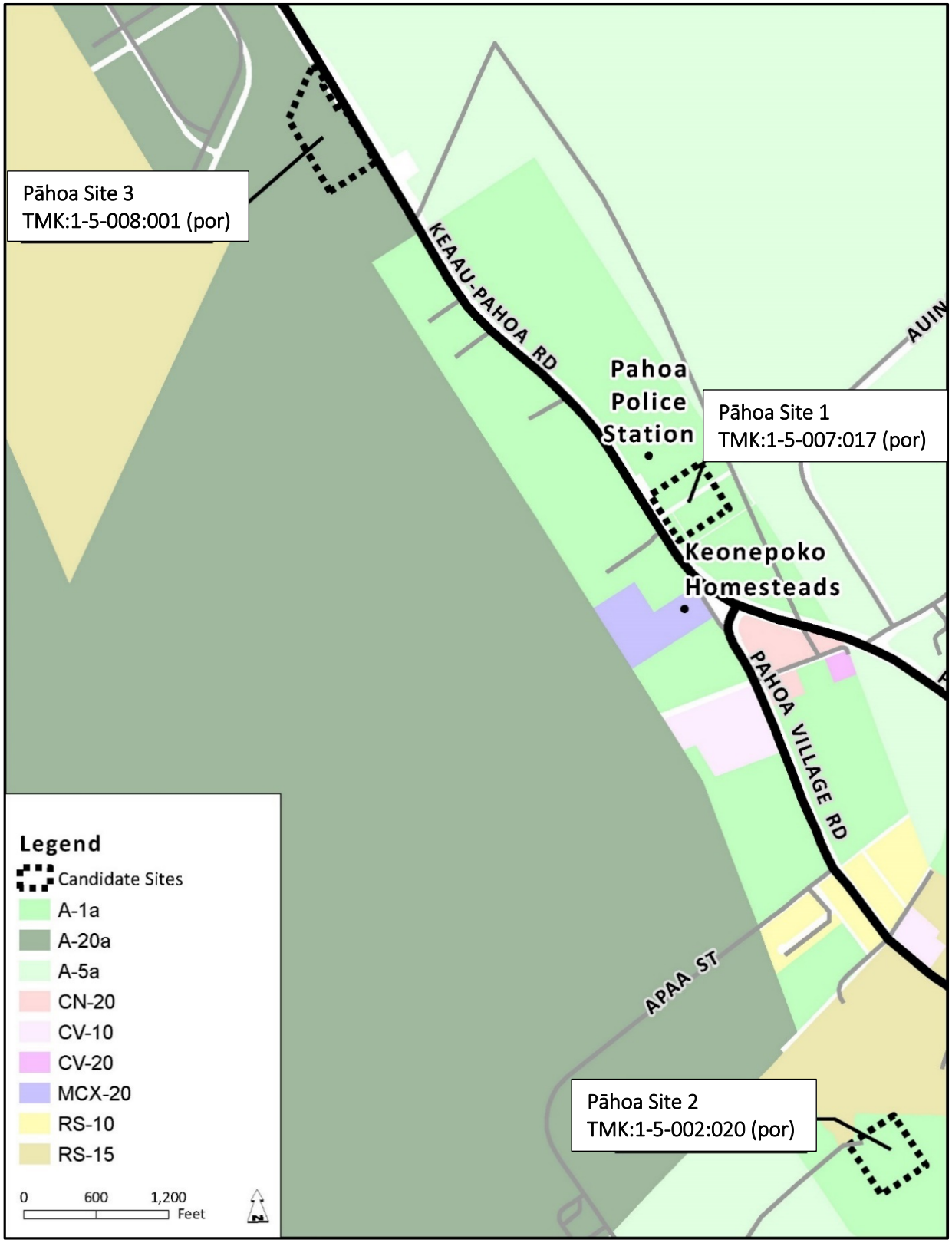

Figure 1.10: County of Hawai‘i Zoning Map

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2.0

Description of the Environmental Setting, Potential Impacts and Mitigation Measures

2 DESCRIPTION OF THE ENVIRONMENTAL SETTING, POTENTIAL IMPACTS AND MITIGATION MEASURES

2.1 CLIMATE, CLIMATE CHANGE, AND SEA LEVEL RISE

2.1.1 CLIMATE

Existing Conditions - Hawai'i Island's climate is generally mild with uniform temperatures and moderate humidity. The candidate sites are located along the winward side of the island which is subject to relatively high rainfall of 126.61 inches average annually due to exposure to the northeasterly trade winds. The annual variations in temperature encountered in the area (based on temperatures recorded at Hilo Airport) range between 66.8 and 80.9 degrees Fahrenheit on average (State of Hawai'i Data Book, 2016). According to the US Environmental Protection Agency website, temperatures are projected to rise by 1.5°F to 3.5°F by mid-century in Hawai'i and the Central North Pacific, due to climate change. The Pacific Islands are highly influenced by El Niño and La Niña events, which create annual variability in storms and precipitation. A trend for decreasing precipitation has also been observed in Hawai'i. Although future precipitation patterns are uncertain, projections suggest a small decrease in precipitation during the wet season and a small increase during the dry season.

Impacts and Mitigation – The Project will not have substantive added effects on climate conditions, therefore, no mitigation measures are proposed. The Project will consider incorporating best design practices to reduce heat island effect such as using vegetation to lower microclimate surface and air temperature and provide cooling through evapotranspiration; the use of cool roof; and using energy-efficient equipment.

2.1.2 CLIMATE CHANGE AND SEA LEVEL RISE

Existing Conditions - Climate change is considered a threat to Hawai'i. Planning for climate change and sea level rise (SLR) is challenging as there are multiple variables and unknown factors. The Intergovernmental Panel on Climate Change's predicts up to 3.2 FT of global SLR by year 2100, based on a "business as usual" scenario where greenhouse gas (GHG) emissions continue at the current rate of increase; however, recent observations and projections suggest that SLR could occur as early as 2060 (Tetra Tech et. al., 2017).

The Hawai'i Sea Level Rise Vulnerability and Adaptation Report ("SLR Report") was published in 2017. The SLR Report produced a vulnerability model using the best available data and methods to determine the potential future exposure of each island to multiple coastal hazards because of SLR. Three chronic flooding hazards were modeled: passive "bathtub" flooding, annual high wave flooding, and coastal erosion. The three hazards were then combined to define the projected extent of chronic flooding due to SLR, called the SLR exposure area. The Hawai'i Sea Level Rise Viewer is an online interactive map which illustrates the scale of potential flooding and erosion with SLR.

Due to their in-land locations, the final three candidate sites and surrounding areas have a low risk of being impacted by a 3.2 FT SLR.

Impacts and Mitigation – Construction-related activities will result in the production of GHG emissions due to the generation of exhaust from construction vehicles and equipment. Construction-related activities include earthwork, grading, excavation, concrete work, stockpiling, and transport of building materials and construction spoils and debris. Construction-related impacts will be temporary and cease upon the completion of the Project.

The proposed Project will involve similar energy consumption as the existing library. Energy efficient lightings and mechanical equipment will be used. The installation of landscaping such as shade trees and grass will help to mitigate and absorb local GHG emissions. Installation of low-impact development (LID) designs such as use of bioswales and/or permeable pavement will be considered to mitigate potential impacts of flooding due to increased rain as a result of climate change. The vehicle trips to the Project will contribute to GHG emissions. However, the impact is not anticipated to be significant.

The impacts of GHG emissions are inherently indirect and cumulative. The Project is not anticipated to have a direct significant impact on the climate or significantly contribute to climate change, as proposed improvements will not lead to a substantial increase in GHG emissions, associated with the consumption of electricity, compared to baseline conditions. No additional mitigation is recommended.

2.2 GEOLOGY

Existing Conditions – The sites lie on the lava shield of Kīlauea within an elevation range from 600 to 700 feet above MSL. The sites naturally slope from southwest to northeast direction. Geologically, the Project area consists almost entirely of Pāhoehoe Lava Flows with small pockets of soils from the Keaukaha Series, the Keei Series, the Olaa series and the Papai Series

Impacts and Mitigation – The proposed Project will not substantially alter the overall existing geology and topography of the sites. Mitigation measures related to soils and grading are described in the following section.

2.3 SOILS AND GRADING

Existing Conditions –According to the updated *Soil Survey of the Island of Hawai'i* (USDA, 2013), soil at Sites 1 and 3 belongs primarily to Keaukaha highly decomposed plant material, 0 to 3 percent slopes. Soil at Site 2 belongs primarily to Hakuma highly organic hydrous loam, 2 to 10 percent slopes (refer to *Figure 2.1*). The Keaukaha series consist of well-drained, thin organic soils overlying pāhoehoe lava bedrock with fast permeability, high runoff, and bedrock depths of 4 to 14 inches. The Hakuma series with fast permeability, high runoff, and bedrock depths of 3 to 20 inches.

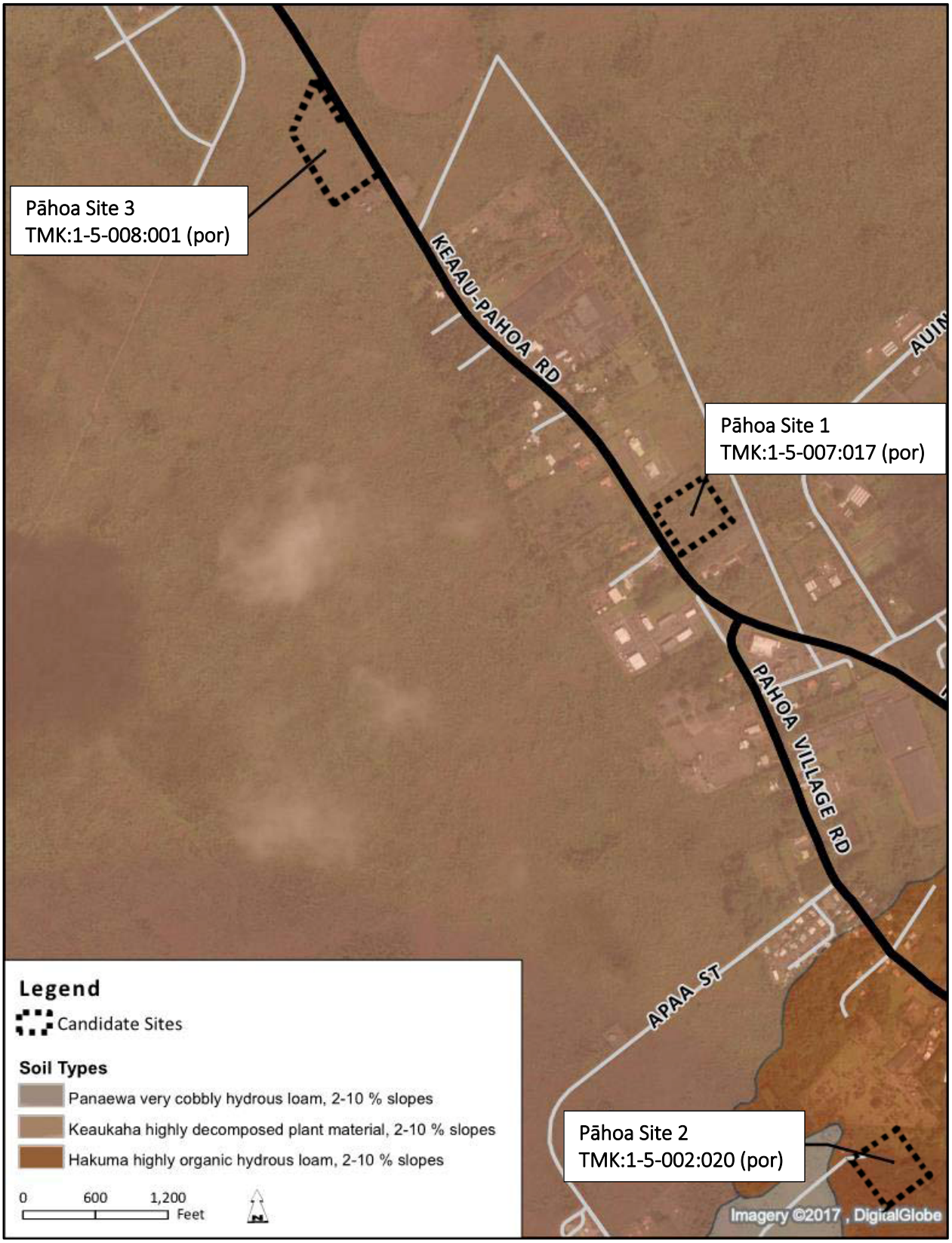

Figure 2.1: Natural Resources Soil Conservation Survey Map

Impacts and Mitigation – Grading will consist primarily of site preparation and excavation for the new building structure, parking, and utilities. The ground levels will be graded to maintain adequate slopes for drainage. Grading will be designed to convey stormwater away from the proposed building to proposed storm drain improvements. Proposed grades will also prevent run-off from entering the downhill adjacent properties. Grading and stockpiling work will be in accordance with the State rules and County Code. An NPDES permit will be required for the Project. An erosion control plan will be developed for the Project.

Per comment letter from the DLNR Division of Forestry and Wildlife (DOFAW) dated March 16, 2021, movement of plant or soil material between worksites will be minimized to prevent cross contamination of invasive fungal pathogens, vertebrate and invertebrate pests, or invasive plant parts that could harm native species and ecosystems. The Big Island Invasive Species Committee will be contacted during the planning, design, and construction of the Project to learn of any high-risk invasive species in the area and to mitigate spread. All equipment, materials, and personnel will be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

Temporary erosion control measures will be incorporated during construction to minimize soil loss and erosion hazards. Best Management Practices may include temporary sediment basins, temporary diversion berms and swales to intercept runoff, silt fences, dust fences, inlet protection, temporary ground cover, stabilized construction entrances and truck wash-down areas. Periodic water spraying of loose soils will be implemented to minimize air-borne dirt particles from reaching adjacent properties. Permanent sediment control measures will be used once construction is completed. The Project will comply with the requirements of the Hawaiʻi County Code, Chapter 10, Erosion and Sedmentary Control.

2.4 SURFACE WATER, GROUNDWATER, AND STORM WATER RUNOFF

Existing Conditions – There are no existing sources of surface water located on the sites. The nearest coastline is approximately 6 miles from the sites to the northeast. There are no wetlands presented in or adjacent to the finalist Project sites.

The sites have relatively flat topography. Therefore, the site is not subject to significant erosion potential. Currently, the sites are vacant with weeds, grass, and other vegetation.

Impacts and Mitigation –Significant impact to the Waters of the United States by construction of Project structures and associated ground disturbing activities is not anticipated. After built out, runoff generated from the sites will consist of building runoff as well as storm water generated from the parking lot. Storm water quantities and flow rates will increase from current conditions. A Stormwater management system, to include landscaping and on-site drainage improvements, will be planned once a site has been selected. A stormwater management plan will be developed for construction and operation of the library.

No significant impact to groundwater underlying the Project site is anticipated during the construction and operation of the library building. Construction of the proposed facility is unlikely to introduce or release any substance into the soil that could adversely affect groundwater quality. Per the Commission on Water Resource Management (CWRM) comment letter dated April 1, 2021, best management practices (BMPs) for stormwater management will be implemented to minimize impact on area hydrology and prevent polluted runoff.

2.5 FLOOD, TSUNAMI, GEOLOGIC, VOLCANIC, AND WILDFIRE HAZARDS

2.5.1 FLOOD AND TSUNAMI HAZARD

Existing Conditions – The Federal Emergency Management Agency's *Flood Insurance Rate Map (FIRM)* identifies all three finalist sites as located within Zone X (minimal flood risk, outside of 0.2% annual chance floodplain). The Flood Insurance Program does not have regulations for development within this district. The sites are not located within the tsunami evacuation zone. Refer to *Figure 2.2*.

Impacts and Mitigation – The Project site will be at minimal risk from the threat of flooding and tsunami. As the sites are not located in a flood zone or a tsunami evacuation zone, no mitigation is required.

2.5.2 VOLCANIC HAZARD

Existing Conditions – The United States Geological Survey (USGS) characterizes long-term lava flow hazards based on where and how often past lava inundation has occurred. The latest lava hazard zones map was created in 2011. The map divides the island into 9 zones, with lava flows most likely to occur in Zone 1 and least likely in Zone 9. According to the USGS, hazard zones also consider the larger topographic features of the volcanoes that will affect the distribution of lava flows. The hazard assessment assumes that future eruptions will be similar to those in the past. The hazard boundaries are approximate, and the change in the degree of hazard is generally gradual rather than abrupt. The long-term lava-flow threat is greatest on Kīlauea and Mauna Loa, the two most active volcanoes, followed by Hualālai.

The three final candidate sites are all located in an area of relatively high lava flow risk – Zone 2 and 3. Refer to *Figure 2.3*. Sites 1 and 2 are located in volcanic hazard Zone 2 which is a relatively high lava flow risk. However, Site 1 is positioned near the boundary of Zone 3 (Areas gradationally less hazardous than Zone 2 because of greater distance from active vents or topography). Site 3 is located in Lava Zone 3 which is less hazardous than Zone 2. In addition to lava flow, other lava-related hazards include airborne lava fragments, volcanic gas and wildfire ignition (Hawai'i Wildfire Management Organization 2013, *Appendix D*).

Impacts and Mitigation – All three final candidate sites are situated father from the east rift zone than the current location of Pāhoa library. Specific site and building design should consider potential lava hazards. Lava hazards will be considered in the final site selection. Per comment letter from Lucky Joseph dated February 24, 2021, Site 2 would be the best candidate location based on previous lava flows.

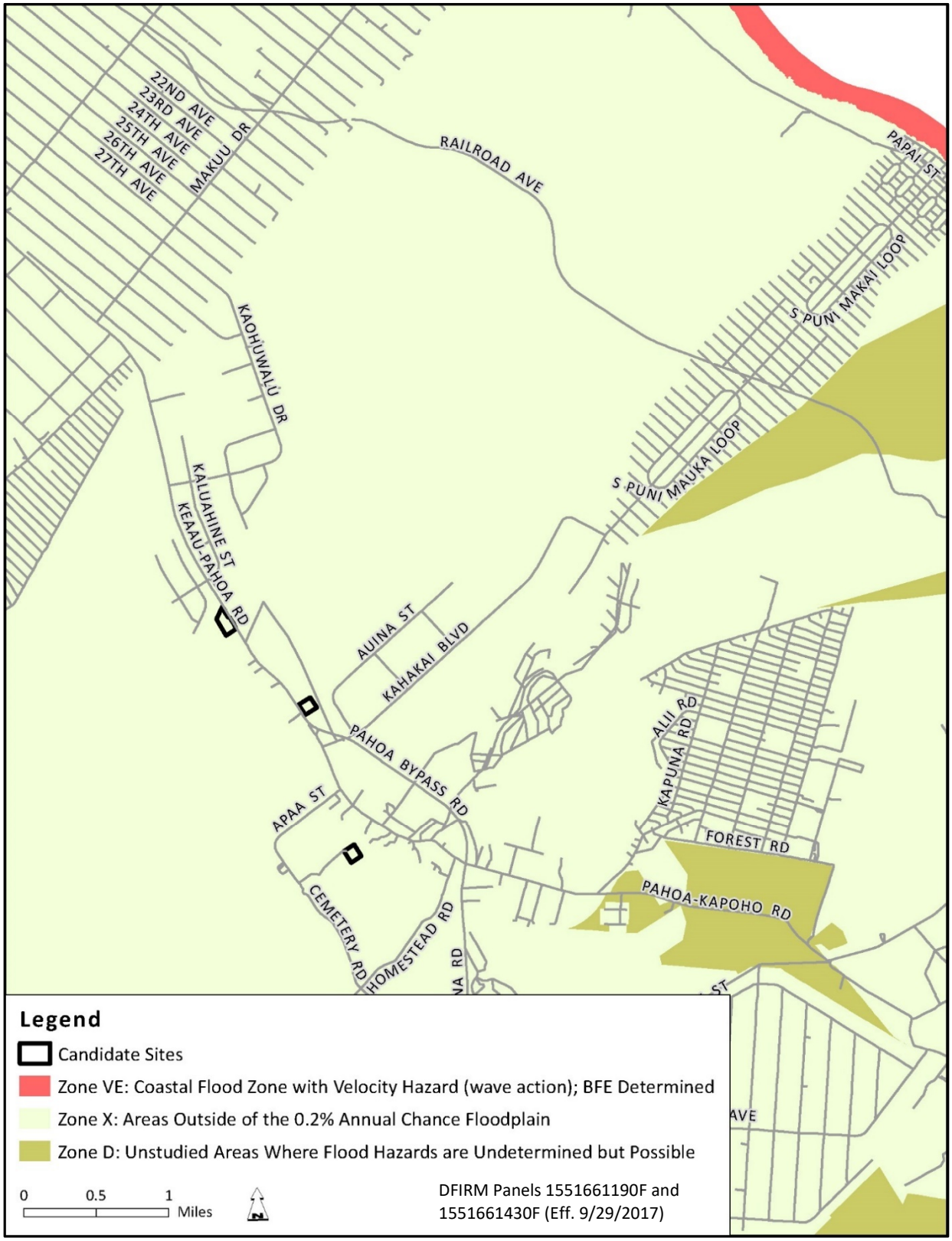

Figure 2.2: Federal Emergency Management Agency FIRM

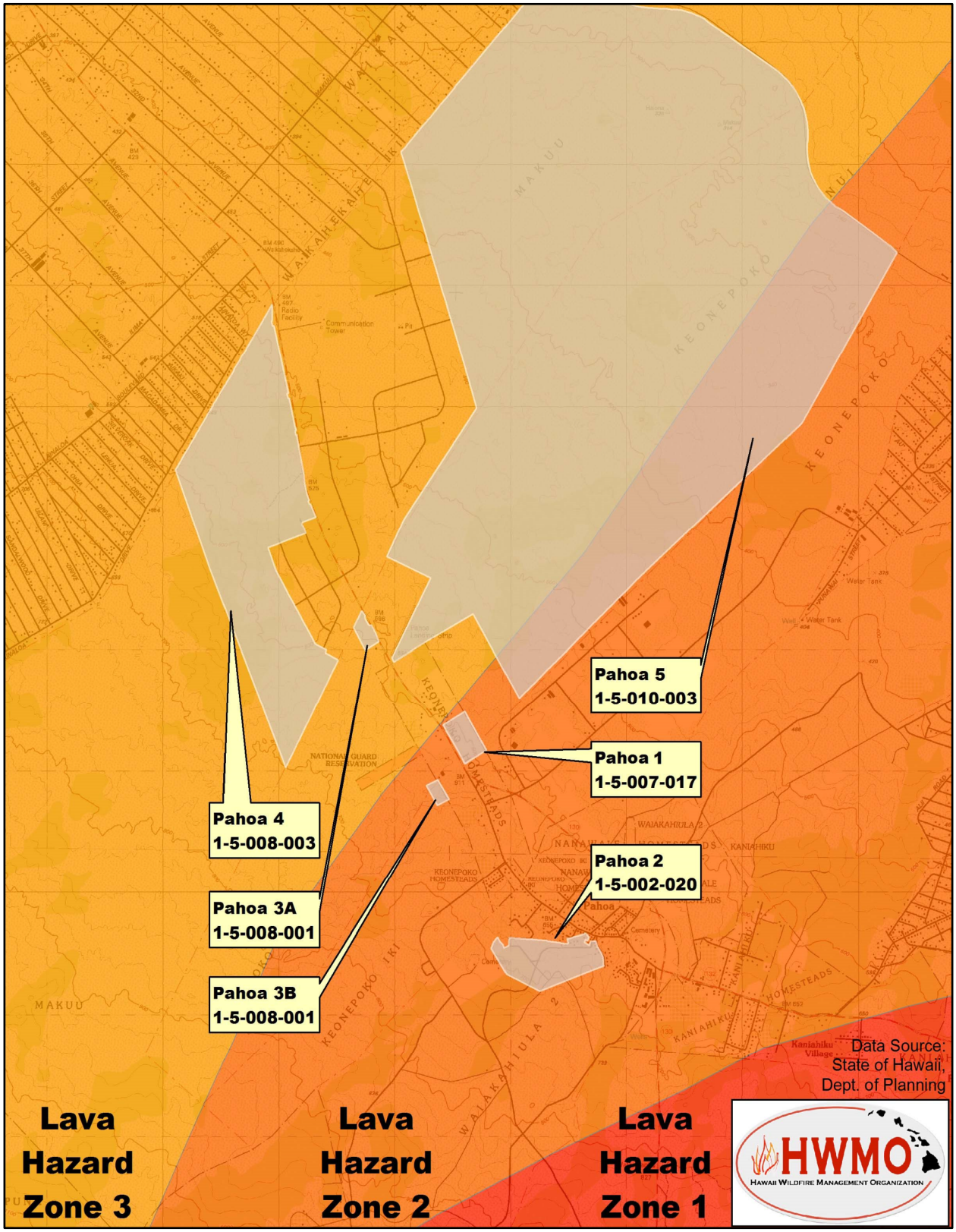

Figure 2.3: Lava Hazard Zone Map

2.5.3 SEISMIC HAZARD

Existing Conditions – The Island of Hawai'i is one of the most seismically active areas in the world with more than twenty large earthquakes (magnitude 6 or greater) over the past 166 years (Wyss and Koyanagi, 1992). The Building Code rating for the entire island of Hawaii is seismic Zone 4 which has higher risk for seismic activity.

Impacts and Mitigation – As required, all of the buildings will be constructed in compliance with Federal Building Ordinance Regulations and meet County Building Code under the International Building Code (IBC) appropriate to the maximum considered earthquake ground motion response accelerations.

2.5.4 WILDFIRE HAZARD

Existing Conditions – Wildfire risk in the Puna/Pāhoa area is fairly low (Hawai'i Wildfire Management Organization 2013, *Appendix D*). Although Puna has a wide variety of vegetation, rainfall and consequently fuel moisture is generally high and not likely to burn sizeable areas. However, weather patterns have been changing in recent decades, leading to an increase in drought episodes. In any drought episode or dry period of time, vegetation in the Puna area can readily carry fire.

In terms of ignition hazard, 99% of wildfires in Hawaii are started by people, both accidentally and intentionally (Trauernicht 2015). All of the sites are in close proximity to a main road. Ignitions generally occur along roadsides, subdivision boundaries, and human accessed areas. The Hawaii Wildfire Management Organization's 2013 (HWMO 2013) classified Site 1 as a low to moderate ignition risk as there is no history of such wildfire ignitions in the nearby area. Site 3 is also anticipated to have low to moderate risk for the same reason. With police and fire personnel adjacent to Site 1, the ignition risk by people is further reduced. Ignition hazard for Site 2 area is currently low. Ignition risk for Site 2 may increase as the park become heavily used. The other 1% of wildfires in Hawaii are naturally started by lava or lightning. While lightning in the area is rare, all three final candidate sites sit in an area where lava flows may ignite wildfires.

Vegetative fire fuel hazard for Site 1 is low due to the presence of the municipal buildings, well-maintained surrounding vegetation, and the site's location bordering the highway. The wildland area adjacent to the site has a fuel load and type rating of low to moderate hazard. This hazard will be further reduced when parking infrastructure and/or managed landscaping on the wildland borders increase the defensible space around the building. Due to these features, the vegetation hazard for Site 1 is the same or less than alternative sites. For Site 2, the vegetation and its maintenance within the park produces a low wildfire hazard. The wildland areas adjacent to the park have dense unmanaged vegetation that could dry out during drought episodes and create a high hazard. There is also vegetation that would allow the spread of fire from the ground to the canopy in Site 2 area. Site 3 is comprised of a sparse to dense mixed grass-shrub-forest complex. In the dry periods, the vegetation would be hazardous without intentional defensible space created on its borders.

Suppression capacity at Site 1 is excellent compared to other sites due to Hawai'i Fire Department (HFD) Station 10 being adjacent to the site. Immediate firefighting access and pressurized water available to the Site 1 is the same or better than the alternative sites.

Impacts and Mitigation – The existing HFD Station 10 provides fire suppression capacity in case of an emergency at any of the three final candidate sites. Site 1 is located next to the highway (hardened surface) and well-maintained surrounding vegetation at the police and fire station reducing vegetative fuel hazard. Structural ignition hazard can be greatly reduced through the use of non-combustible building materials and Firewise building techniques, including the use of native and drought resistant plants in landscaping features and minimizing public access to any adjacent areas that may contain unmanaged vegetation to minimize the risk of ignition by people.

Defensible space such as parking and managed landscaping on the wildland borders can be created at Sites 2 and 3 to mitigate the risk for vegetative fire fuel hazard.

Site 1 and Site 3 are located within the State Department of Defense (DOD)'s emergency warning siren 'Pāhoa Agriculture Park-HA935', which was recently installed in 2018 at the intersection of Kahakai Boulevard and Pāhoa by-pass road. The siren output is 121 dba at 100 feet distance from the pole and has a sound output range of 3,400 feet radius. Site 2 is located within the DOD's emergency warning siren 'Pāhoa-HA903' located along Kauhale Street and has a sound output range of 3,400 feet radius.

2.6 FLORA

Existing Conditions – Rana Biological Consulting, Inc conducted a preliminary assessment of potential biological issues regarding botanical resources that are protected under Federal and/or State of Hawaii endangered species statues (*Appendix F*).

Impacts and Mitigation – Based on the site locations, listed botanical resources are not anticipated to be present on the three final candidate sites. A complete floristic survey is recommended for final site selection to confirm no listed botanical resources presence on site.

Per comment letter from the DLNR-DOFAW dated March 16, 2021, to prevent the spread of Rapid ʻŌhiʻa Death (ROD), if ʻōhiʻa trees are present and will be removed, trimmed, or potentially injured, information and guidance from https://cms.ctahr.hawaii.edu/rod will be reviewed and followed. Should an infected ʻōhiʻa tree be encountered, a qualified arborist will be contacted for removal of the tree and appropriate steps be taken for its disposal.

Per comment letter from Dr. Stephen M. Smith dated March 24, 2021, there are known lava tubes at Site 1. Subterranean voids associated with the lava tube are habitat for unique ecosystems. Destruction to surface vegetation would destroy subterranean ecosystems. The HSPLS will further explore and consider potential impacts to the lava tube and subterranean ecosystems during the final site selection.

Per comment letter from the DLNR-DOFAW dated March 16, 2021, landscaping will use appropriate plant species for the area and avoid using invasive species in landscaping. Hawaiʻi-Pacific Weed Risk Assessment website (https://sites.google.com/site/weedriskassessment/home) and www.pllantpono.org will be consulted during the design phase for guidance on landscaping plants selection and evaluation.

2.7 FAUNA

Existing Conditions – Rana Biological Consulting, Inc conducted a preliminary assessment of potential biological issues regarding faunal resources that are protected under Federal and/or State of Hawaii endangered species statues (*Appendix F*).

One or more of five listed avian and mammalian species of concern (Hawaiian Petrel, Newell's shearwater, Band-rumped Storm-Petrel, Hawaiian Hawk, and Hawaiian hoary bat) are anticipated to present at the three final candidate sites, in different combinations. Ornithological radar studies were conducted and confirmed that nocturnal flying seabirds do fly over the general area.

Impacts and Mitigation – Site 1 will likely have the least potential biological issues as the site has been developed. Site 2 will likely present the most biological issues due to large amount of mature trees. Mitigation measures will be required by the wildlife agencies on all three final candidate sites to minimize potential light attraction issues associated with the three protected seabird species (Hawaiian Petrel, Newell's shearwater, and Band-rumped Storm-Petrel) that overfly all of the sites. Per comment letter from the DLNR-DOFAW dated March 16, 2021, the final site will be surveyed for presence of Hawaiian Hawk nests and 'Io nests, especially during their breeding season from March to September, before trees removal or trimming activities. The HSPLS will work with a qualified biologist to provide appropriate mitigation measures to minimize impacts to pupping Hawaiian hoary bats and Hawaiian Hawk nesting, if they are present at the site. Woody plants greater than 15 feet tall will not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15) without consulting DOFAW or qualified professional.

Nighttime construction is not currently planned. If nighttime construction activity or equipment maintenance occurs, the associated lights will be shielded. Nighttime construction will be avoided during the seabird fledging period (September 15 through December 15) to prevent injury to seabirds. Large flood/work lights will be placed on poles that are high enough to allow the lights to be pointed directly at the ground to reduce the potential for interactions of nocturnally flying avian. The design of the facility's lighting will utilize best practices for night lighting having full cutoff fixtures.

The Pāhoa Public Library will implement bat-friendly BMPs and structure design, including avoiding the disturbance, removal, or trimming of woody vegetation 5 meters or taller during bat birthing and pup rearing season (June 1 – September 15), and not using barbed wire in fencing.

Hawaiian Hawks are known to be present in the area. They often nest in large mature trees. A Hawaiian Hawk nesting survey will be required for Sites 2 and 3, if selected, and if construction will occur during their nesting period from February through July. If nesting activity is presented, vegetation clearing and construction activities will not occur until the nest fails or the chicks fledge.

If it is determined that this proposed Project may affect federally listed species, HSPLS will contact US Forestry and Wildlife United States Fish and Wildlife Service office to discuss the Endangered Species Act (ESA) compliance, and to discuss the application for an incidental take permit under section 10(a)(1)(B) of the ESA.

2.8 ARCHAEOLOGICAL RESOURCES

Existing Conditions – A literature review was conducted for the sites by Keala Pono Consulting in August 2017 (*Appendix B*). The literature review consisted of archival research and a site visit of the parcels. The majority of the candidate sites are still untouched land consisting of natural flora which has sprouted on relatively recent lava flows with a very small portion of previously disturbed areas covered with introduced foliage. The sites contain no known surface archaeological/cultural features and no historic buildings requiring preservation. The most likely features which may exist within the boundaries of these specific parcels would be subsurface lava tubes that may or may not contain properties of significance within. Several other studies conducted in the study areas yielded no significant findings.

Impacts and Mitigation – An official consultation with the SHPD under HRS Chapter 6E will be conducted once a site has been selected to determine if further archaeological work is necessary. However, per the research conducted in the literature review, it is not anticipated that any of the sites chosen for construction of the new library will be detrimental to the archaeological/cultural resources of the area identified thus far. Per comment letter from Dr. Stephen M. Smith dated March 24, 2021, there are known lava tubes and potential associated Hawaiian cultural features at Site 1. The HSPLS will work with the SHPD to identify location of the subterranean cultural resources and determine suitability for construction at this site in the final site selection process.

2.9 CULTURAL RESOURCES

A cultural assessment was completed for the Project area by Keala Pono Consulting in March 2018 (*Appendix C*). Three community members who have ties to the Project area were interviewed as part of the study. Interviewees shared information about historical evidence regarding each candidate site.

Existing Conditions – Pāhoa is known for sandalwood, ʻōhiʻa, and koa trades during the early post-contact era. The demand for native trees eventually gave way to large-scale agriculture focused on sugarcane. The town once had plantation-spurred ethnic camps and mom & pop businesses. Old-timer families would share their food with each other, and it was important for people to give back to the community. Information about each site shared by interviewees are summarized below.

Site 1-Pāhoa Fire Station/DMV: There are underground lava tubes and caves in the area, but investigations of the underground tubes yielded no cultural artifacts or burials. Due to the complications of building anything above subsurface lava tubes and caves, nothing major has been constructed or developed on the remainder area of Site 1. One interviewee recommended this site for the library for security and emergency reasons, being that it would be next door to the police and fire stations. Another interviewee said that this site would not be a good choice due to issues of safe ingress/egress on and off of the property to/from the busy Keaʻau-Pāhoa Road.

Site 2-District Park: This area was part of a 56-acre parcel once owned by the Roman Catholic Diocese. In addition, a Filipino plantation community was once located near the Catholic church and another was located near the current pool. Besides the native plants in the area, other plants such as gandule beans were cultivated by residents for food. The site was also known as a place to gather warabi fern for salads, and also hōʻio ferns. However, the ferns were destroyed with development of the District Park. It was also during the park's development that remnants of the

old railroad line were excavated and removed. In the areas surrounding this site, strawberry guava trees could also be found. About ¼ mile from the site, a heiau and a Japanese cemetery are located. Two of the interviewees recommended Site 2 for the library, but they highlighted the need for an additional access road coming from the back off of Apaʻa Street.

Site 3-Highway 130 Mauka (DLNR): There may be underground lava tubes and caves at this site. This site was once known for the many fruitful mango trees that lined both sides of the Keaʻau-Pāhoa Road corridor. Today the area is overgrown with invasive flora, including tall grasses along with some native ʻōhiʻa. None of the interviewees recommended this site due to the traffic congestion and the potential for vehicular accidents.

All interviewees strongly support the construction of a new Pāhoa Library. They differ in which site they believe is the best for the new library. Two interviewees recommended Site 2, and one interviewee recommended Site 1. None of the interviewees recommended Site 3.

Impacts and Mitigation – Based on the extent of effort completed for the cultural assessment, no traditional gathering practices were identified or known to currently being carried out. An official consultation with the SHPD under HRS Chapter 6E will be conducted once a site has been selected to determine if further archaeological work is necessary. The new library will be landscaped with native plants appropriate for the area.

2.10 SOCIO-ECONOMIC CHARACTERISTICS

Existing Conditions – The resident population for the island of Hawaiʻi is estimated to grow 11% from 195,965 residents in 2015 to 217,718 residents in 2020. In the Puna District alone, resident population is projected to grow 17% from 49,801 residents in 2015 to 58,246 residents in 2020. The Puna District is anticipated to experience strong population growth and will account for approximately 27% of the Hawaiʻi County population in 2020 (Hawaiʻi County General Plan Update, 2012).

Impacts and Mitigation – The Project is not expected to impact population in the region. The Project will create short-term benefits as a result of design and construction employment. Local material suppliers and retail businesses can also expect to benefit through a multiplier effect from the construction activities. The Project is intended to accommodate the increased needs for library service.

The State of Hawaiʻi and County of Hawaiʻi will receive general excise tax revenues from construction activities and income taxes from business revenues and wages. No specific socio-economic mitigation actions are recommended.

2.11 VISUAL RESOURCES

Existing Conditions – Site 1 and site 2 are located adjacent to previously developed sites. Site 3 is located on a vacant agricultural land. The existing views from the sites are distant view of the Mauna Loa to the west and surrounding open and/or developed areas. The historic Pāhoa Village is considered to be a scenic resource according to the Puna Community Development Plan. The sites are not located on a scenic corridor.

According to the Hawaiʻi Institute of Astronomy (IFA) comment letter dated March 18, 2021, the IFA conducts research in astronomy using telescopes located on Haleakalā and Maunakea.

Impacts and Mitigation - Development of the Pāhoa Public Library will not significantly impact area views. The building and landscaping improvements will be consistent with the Pāhoa Village Design Guidelines. The Pāhoa Public Library will be low rise and will not have a significant impact on the surrounding areas. Per comment letter from Lee Maniscalco dated March 18, 2021, the location of Site 2 would make the library less visible to the community.

According to the IFA, blue light is most harmful to observatories and blue-deficient lighting should be selected. White light should be avoided because the blue component of white light is very damaging to astronomy. White light should have a Correlated Color Temperature of 2700 K or below. The Project will comply with the Hawai‘i County outdoor lighting ordinance.

2.12 UTILITIES

An infrastructure analysis was prepared by G70 in April 2018 and is discussed below.

2.12.1 WASTEWATER SYSTEM

Existing Conditions

Site 1-Pāhoa Fire Station/DMV: Proposed site is not within the limits of the Hawai‘i County wastewater system. Existing privately-maintain wastewater system may be at its capacity.

Site 2-Pāhoa District Park: Proposed site is not within the limits of the Hawai‘i County wastewater system. Existing privately-maintain wastewater system may be at its capacity.

Site 3-Highway 130 Mauka (DLNR): Proposed site is not within the limits of the Hawai‘i County wastewater system. Existing privately-maintain wastewater system may be at its capacity.

Impacts and Mitigation - A private wastewater facility will be required for construction of the Pāhoa Public Library on any of the sites, along with necessary permit applications for construction and operation. If the designed average daily flow is less than 1,000 gpd an individual wastewater system can be used. If the designed average daily flow is greater than 1,000 gpd, a wastewater treatment works will need to be designed. The proposed wastewater system will be designed to meet County of Hawai‘i standards. The Pāhoa Public Library will be designed to integrate sustainable design principles to minimize impact on the existing wastewater infrastructure.

2.12.2 WATER SYSTEM

Existing Conditions

Site 1-Pāhoa Fire Station/DMV: The Project will be serviced by the existing 6-in and 12-in water mains that lie within HWY 130 (Kea‘au-Pāhoa Road). Under early consultation, County of Hawai’i Department of Water Supply (DWS) (2/23/2018) indicated that due to the development of the parcel, a limited amount of additional water may be available for this site.

Site 2-Pāhoa District Park: The nearest connection point to water system is within Pāhoa District Park which is served by an existing 8-in water main within Kauhale Street. Under early consultation, County of Hawai’i Department of Water Supply (DWS) (2/23/2018) indicated that due to the development of the park, additional water is not available for the site.

Site 3-Highway 130 Mauka (DLNR): The Project will be serviced by the existing 6-in and 12-in water mains that lie within HWY 130 (Keaʻau-Pāhoa Road). Under early consultation, County of Hawai'i Department of Water Supply (DWS) (2/23/2018) indicated that there is an existing 12-inch waterline within Keaʻau-Pāhoa Road fronting the subject parcel. Current water availability can provide 2,800 gallons per day per each pre-existing lot of record. However, a large portion of the parcel is located at an elevation that sufficient water pressure will not be available. Therefore, the parcel is limited to 400 gallons per day of water.

Impacts and Mitigation - Climate change is expected to affect the availability of fresh water resources in Hawaiʻi where precipitation is projected to decrease. Ground and surface water supplies may not be recharged, resulting in less freshwater availability. Sea level rise and coastal erosion may also reduce water availability by inundating land with saltwater, contaminating freshwater, and preventing recharge of the freshwater supply. Increased temperatures and reduced precipitation are also expected to increase the likelihood of drought.

Construction activities will require use of potable water for dust control, vehicle wash down, concrete mixing, pipe pressure testing, and general housekeeping activities. These uses will be intermittent, of short duration, and will cease upon Project completion. The existing potable water system is anticipated to have sufficient capacity to accommodate the temporary demands from construction-related activities and is not anticipated to disrupt or adversely affect the potable water system.

The Project will require potable water for drinking, sanitation, irrigation, and a fire sprinkler system. Total water demand for the library is estimated at 840 gallons per day (gpd). Per comment letter from the Department of Water Supply (DWS) dated March 17, 2021, as water availability in the area is limited, an alternative water sources would likely be required for any of the sites. Site 2-Pāhoa District Park will require the most improvement, as a new water source will be required to accommodate the entire water demand. This would make Site 2 the least viable for the new public library.

Alternative water sources will be explored during the final site selection. Projected demands will be examined in detail during the design phase. A detailed estimated maximum daily water usage calculation for the proposed public library will be prepared and submitted to the DWS during the design phase to review and determine the existing water system capacity, facilities charge, and necessary water system improvement. Water efficient fixtures will also be utilized to reduce water demands. Participation in the Hawaiʻi Green Business Program will also be considered during Project implementation.

Per the CWRM comment letter dated April 1, 2021, landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaiʻi will be adopted. Landscaping at the Pāhoa Public Library will integrate water conservation principles such as the use of native or adaptive plant species that are drought tolerant, synthetic turf, water-efficient drip irrigation system, and climate sensing device to minimize impact on the water resource.

2.12.3 DRAINAGE

Existing Conditions - Sites elevations range from approximately 600 to 700 feet MSL with slopes of generally two to four percent. Soil on the three final candidate sites shared similar characteristics with fast permeability and high runoff. Per Gaila Vidunas comment letter dated

March 24, 2021, Site 2 is prone to flooding during heavy rains and is located farther from existing infrastructure systems.

Impacts and Mitigation - Stormwater quantities and flow rates will increase from current undeveloped condition. Drainage improvements will be provided. The drainage systems will be designed according to the State and County standards and will effectively retain stormwater within the sites. Low Impact Development (LID) techniques such as bioswales, bioretention planters, planter boxes, vegetated buffer strips, retention basins and drywells, rain gardens, and green roofs will be explored with the storm drainage site design. All development-generated runoff will be disposed of on site and not directed toward any adjacent properties. The Project will also comply with the requirements of the Hawai‘i County Code, Chapter 10, Erosion and Sedmentary Control.

2.12.4 ELECTRICAL, TELEPHONE, AND CABLE TELEVISION SYSTEMS

Existing Conditions - Electrical power on the Island of Hawai‘i is served by Hawai‘i Electric Light Company. Telephone and cable services for the sites are provided by Hawaiian Telcom.

Impacts and Mitigation - The Pāhoa Public Library will be provided electrical/ telecommunication service through connection to the existing systems. Per comment letter from Gaila Vidunas dated March 24, 2021, necessary infrastructure can be readily brought in to Site 1 from Highway 130. New duct lines and conduit, and vaults/manhole, will be required. The Pāhoa Public Library will be designed to integrate sustainable design principles to minimize energy consumption such as the use of energy-efficient HVAC, and possibly integrating a photovoltaic (PV) system to provide alternative energy source.

Per comment letter from the State Office of Planning dated March 29, 2021, the library will also play an important role in providing community access to broadband, in alignment with HRS §226-10.5A.

2.13 TRANSIT, BICYCLE, VEHICLE AND PEDESTRIAN ACCESS

The following provides descriptions of the existing transit services, bicycle facilities, vehicle and pedestrian access for the candidate sites (Fehr & Peers, May 2017).

2.13.1 TRANSIT SERVICES

Existing Conditions - Hele-On Bus” is the County of Hawai‘i’s primary form of public transit that offers a fixed-route transit service between Pāhoa and Hilo. The Pohoiki-Pāhoa-Hilo route is the only route serving the community.

Site 1-Pāhoa Fire Station/DMV: There are currently no bus stops directly serving Site 1 on Keaau-Pāhoa Road. The closest bus stop is locate approximately a half mile away, adjacent to the intersection of Pāhoa Village Road and Kahakai Blvd.

Site 2-Pāhoa District Park: A bus stop as part of the Pohoiki-Pāhoa-Hilo route is located north of the park, which is approximately 0.3 mile from the site.

Site 3-Highway 130 Mauka (DLNR): There are currently no bus stops directly serving Site 3.

Impacts and Mitigation – The Project is not anticipated to result in any significant impacts to transit services within the study area. The Project is also not expected to conflict with any existing or proposed transit facilities and services.

2.13.2 BICYCLE FACILITIES

Existing Conditions

Site 1-Pāhoa Fire Station/DMV: No bicycle infrastructure is provided within the direct proximity of Site 1; thus, bicyclists are required to share the roadway along Keaʻau- Pāhoa Road, Kahakai Blvd., and Pāhoa Village Rd. However, Keaʻau-Pāhoa Road currently has "Share the Road" signs installed along the roadway. There is a proposed bike route along Kahakai Blvd. roughly ½ mile from the site.

Site 2-Pāhoa District Park: No bicycle infrastructure is provided within the direct proximity of Site 2. Keaʻau-Pāhoa Road currently has "Share the Road" signs installed along the roadway. Some residents will be able to bike to and from the site on lower speed and lower volume roads such as Pāhoa Village Road and Kauhale Street.

Site 3-Highway 130 Mauka (DLNR): No bicycle infrastructure is provided within the direct proximity of Site 2. Keaʻau-Pāhoa Road currently has "Share the Road" signs installed along the roadway.

Impacts and Mitigation – It is unlikely that the library facility will induce a high volume of people traveling to the site by bicycle given the lack of existing bicycle facilities and the high posted speed (45 mph) along Keaau- Pāhoa Road. Thus, the implementation of the Project is not expected to significantly impact or conflict with existing or planned bicycle operations.

2.13.3 VEHICLE ACCESS

Existing Conditions

Site 1-Pāhoa Fire Station/DMV: Access to this site would be along Keaʻau-Pāhoa Road. The site would share the existing driveway with the Pāhoa Fire Station and the Pāhoa Police Station/DMV. The driveway includes dedicated left-turn and right-turn lanes to and from the site allowing for easier access from the major roadway.

Site 2-Pāhoa District Park: Access to the site is on a local street (Kauhale Street) which is a lower speed, lower volume facility. All vehicles will access the park and the library via a driveway on Kauhale Street. An internal road will allow for circulation within the site. If Phase 2 of the park master plan occurs, the library would be located in the back of the park. This location would be less visible and no direct access is provided from the adjacent public street. If Phase 2 does not occur, the library would be located adjacent to Kauhale Street near the park entry. This location would be visible and allow for direct access.

Site 3-Highway 130 Mauka (DLNR): The Access to this site would be along Keaʻau-Pāhoa Road. A new driveway access would have to be constructed.

Impacts and Mitigation –Trip generation for the library is not likely to require an additional driveway access on the highway or modified traffic control such as traffic signal at all three final candidate sites.

If the library is to be located at Site 1, a proper signage will be installed to direct library patrons to the building. A comment letter from Council Member Eileen O'Hara (1/31/2018) for Site 1 stated the need to allow unobstructed egress and ingress of emergency vehicle from the adjacent fire and police stations and thirty parking stalls would not be sufficient for large functions. If the proposed library is to be located at Site 1, further coordination and design will be conducted with applicable agencies.

Per comment letter from Gaila Vidunas dated March 24, 2021, Site 1 is easily accessible by car, highly visible to the public, and located a short distance from new focal points of Pāhoa town such as the Woodlawn Center, and the Puna Makai Shopping Centers. The road connecting the park and Pāhoa Village Road is too narrow and winding for a county bus. This park site is mauka from town, making it a strenuous trek, in an area that averages over 120" of rain per year, for anyone walking from the Pāhoa Village Road, and/or the bus stop. Site 2 also has poor visibility to the public. Site 3 is a far from Pāhoa and would make a less desirable location.

Per comment letter from Linda Moore dated March 25, 2021, Site 2 is preferable because access does not include highway usage, especially during peak traffic hours.

Per comment letter from Lee Maniscalco dated March 18, 2021, Site 3 is on the highway which makes car access and visibility good.

If Site 2 or Site 3 is selected as the final site, more detailed analysis will be conducted to identify the appropriate driveway configuration and other needed roadway improvements.

Event parking will be considered for the chosen library site.

2.13.4 PEDESTRIAN ACCESS

Existing Conditions

Site 1-Pāhoa Fire Station/DMV: The site is located in a semi-rural area and surrounded by limited development with low pedestrian activity. Pedestrian facilities are also limited. There is one crosswalk across the site driveway, but there are no pedestrian sidewalks provided on Kea'au-Pāhoa Road and pedestrians are required to walk in the shoulders of the roadway. The closest crosswalks and sidewalks are located ¼ mile south of the site, across all legs of the roundabout intersection of Kea'au-Pāhoa Road and Pāhoa Village Road.

Site 2-Pāhoa District Park: There are extensive pedestrian facilities within the vicinity of the district park. There are sidewalks with landscape buffer along Kahuhale Street and high visibility crosswalks at Pāhoa Village Road/Kauhale Street.

Site 3-Highway 130 Mauka (DLNR): There is no sidewalks along the Kea'au- Pāhoa Road, which is a high speed roadway with posted speed limits of 45 mph or more. The closest crosswalks and sidewalks are located 1 mile south of the site at the roundabout intersection of Kea'au-Pāhoa Road and Pāhoa Village Road.

Impacts and Mitigation – In a comment letter from the State of Hawai'i Department of Transportation (HDOT) dated March 31, 2021, pedestrian enhancement should be looked at given that the site location may generate pedestrian movement. Off-site pedestrian improvements, if any, will be determined once a site is selected.

An early consultation comment letter from Council Member Eileen O'Hara (1/31/2018) indicated that Site 1 is not accessible by pedestrians, especially school-age children. Per comment letter from Lee Maniscalco dated March 18, 2021, there are a lot of pedestrians in Pāhoa and Site 3 would be too far for those who walk. A comment letter from resident George Gorman, dated March 22, 2021 states Site 2 would be easier for younger people to access.

Pedestrian accessibility will be considered as part of the final Site selection.

2.14 TRAFFIC

A Transportation Impact Analysis Report (TIAR) was completed for Site 1 by Fehr and Peers in February 2018 (*Appendix A*). An additional TIAR will be prepared for another candidate site if selected.

Site 1 is a 19.5-acre undeveloped parcel that is adjacent to the Pāhoa Fire Station and the Pāhoa Police Station/DMV located on Pāhoa Bypass Road. The Project site is located approximately 0.3 miles north of the Kea'au-Pāhoa Road and Pāhoa Village Road roundabout intersection, and it would share driveway access with the Pāhoa Fire Department and the Pāhoa Police Station/DMV along Kea'au-Pāhoa Road. The following provides descriptions of the existing roadways within the vicinity of Site 1.

Kea'au-Pāhoa Road (State Route 130) – is operated and maintained by Hawaii Department of Transportation (HDOT) and is a two-lane roadway in the vicinity of the Project site. The portion of Kea'au- Pāhoa Road within the study area is oriented in the north-south direction. Kea'au-Pāhoa Road connects the communities of Kea'au and Pāhoa, and also provides access to Hilo via State Route 11. At the Project driveway, Kea'au- Pāhoa Road includes two acceleration lanes (one each for the westbound left-turn and right-turn movements exiting the driveway), in addition to a northbound right turn pocket and a southbound left turn pocket. The posted speed limit is 45 miles per hour (mph).

Pāhoa Village Road – is under the jurisdiction of the County of Hawai'I and is a two-lane facility within the study area with a posted speed limit of 30 mph. Pāhoa Village Road connects Pāhoa Bypass Road to Pāhoa Kalapana Road, and transitions to Kapoho Road south of Pāhoa Kalapana Road. It provides direct access to retail centers, single family residential units, the Pāhoa High & Intermediate School, and the existing Pāhoa Public Library.

Pāhoa Bypass Road – is part of the State Route 130 under the jurisdiction of the HDOT. It is a north-south, two-lane facility with a posted speed limit of 45 mph. Pāhoa Bypass Road begins at the Kea'au- Pāhoa Road roundabout intersection and extends in the southern direction where it transitions into Pāhoa Kalapana Road south of Pāhoa Village Road/Kapoho Road. There are minimal driveways along Pāhoa Bypass Road and is primarily fronted by open space.

The TIAR analyzed two intersections within the vicinity of Site 1 including (*Figure 2.4*):

- Keaau-Pāhoa Road/Project Driveway
- Keaau-Pāhoa Road – Pahoa Bypass Road/Pahoa Village Road

The existing traffic volume data utilized in this report were collected based on weekday evening (PM) peak hours from 3:30PM-5:30PM. While impacts are normally conducted for both morning (AM) and PM peak periods, the library is expected to generate a negligible amount of traffic during

the AM peak hours. The current facility opens at 10AM and the new facility is not expected to open before 9 AM. Thus, no AM peak period analysis was conducted for this Project.

Figure 2.4: Traffic Study Intersections (Source: Fehr and Peers, 2018) – Site 1

Existing Conditions – During the PM peak hours, traffic movements at the intersection of Keaau-Pāhoa Road and the Project Driveway currently operate at Level of Service (LOS) C due to the delay of turning from the Project driveway onto Keaau-Pāhoa Road. During the PM peak hours, the roundabout at the intersection Keaau-Pāhoa Road and Pāhoa Village Road currently operate at LOS F mainly due to regional traffic demand of commuters traveling north to south from Hilo to Pāhoa.

Impacts and Mitigation – By year 2021, Puna Kai Shopping Center along Pāhoa Village Road and adjacent to the Kahakai Boulevard-Pāhoa Village Road intersection is anticipated to be operating. For base year 2021, traffic at the intersection Keaau-Pāhoa Road and the project driveway are to remain at LOS C. Under year 2021 with Project conditions, the Keaau-Pāhoa Road/Project driveway intersection is anticipated to operate at a desirable level (i.e. LOS D or better) in the PM peak hour. The proposed Project is anticipated to exacerbate LOS F operations at Keaau-Pāhoa Road and Pāhoa Village Road intersection during the PM peak hour under this scenario.

2.15 NOISE

Existing Conditions – Existing noise levels at the candidate sites are typical of a rural setting fronting a major thoroughfare. The primary existing noise sources include vehicles traveling on the Keaʻau-Pāhoa highway and agricultural equipment operating on surrounding properties. Site 1 may experience intermittent loud noises from fire engine siren, police vehicle siren, and from the use of emergency helipad. Site 2 may experience occasional loud noises from large gathering events and sport activities in the park. Site 3 is currently undeveloped thus the noise level at the site is minimal.

Impacts and Mitigation –Temporary noise impacts are expected to occur during construction of the Project, particularly during the excavation and site preparation phases. Mitigation measures will be utilized to minimize noise impacts and comply with federal and state noise control regulations, including the HAR *Chapter 11-46, Community Noise Control*, by limiting construction activities to daytime hours and obtaining a permit from the State of Hawaiʻi Department of Health prior to any anticipated construction that might exceed state allowable noise limits. If a permit is acquired for noise levels exceeding permissible sound levels, construction activities will be limited to Mondays through Friday, between the hours of 7:00 AM and 6:00 PM, and Saturdays between 9:00 AM and 6:00 PM.

In the long term, the Project is anticipated to create slight impacts to noise levels from vehicular traffic. However, these traffic noise levels are expected to be imperceptible to those with normal hearing, and therefore no mitigation measures are proposed.

2.16 AIR QUALITY

Existing Conditions – The air quality within the vicinity of the sites is affected by volcanic emissions and vehicle exhaust emissions along the streets. The ambient air quality of the sites in general meet all federal and state standards (Brian T. Nishimura, 2005).

Impacts and Mitigation – The development of the Pāhoa Public Library may result in short- and long-term impacts on air quality as a result of construction and use. However, it is anticipated that no State or Federal air quality standards will be violated during or after construction. Short-term impacts during construction may include fugitive dust and to a lesser extent, exhaust

emissions from construction equipment, disruption of traffic, and workers' vehicles. Long-term impacts after construction will include emissions from motor vehicles coming to and from the site.

Mitigative measures will include dust control best practices during construction activities. Construction activities will comply with the provisions of HAR, Chapter 11-60.1 Section 33, "Fugitive Dust". Per a comment letter from the State of Hawai'i Department of Health, Clean Air Branch (3/24/2021). The HSPLS will consider preparing a dust control management plan during construction. Also, during the Project construction permit phase, the Permitting Section of the Clean Air Branch will be consulted to determine if the Project requires an air pollution control permit. The Asbestos Abatement Office in the Indoor and Radiological Health Branch will be contacted if the Project includes construction or demolition activities that involve asbestos. Long-term impacts on air quality due to traffic related to the use of the Pāhoa Public Library is anticipated to be minimal, therefore mitigation measures are unwarranted.

2.17 SOLID WASTE AND HAZARDOUS MATERIAL

Existing Conditions – There is no municipal solid waste collection system in the County of Hawai'i. The nearest County solid waste transfer station to the sites is the Pāhoa Transfer Station located on Apa'a Road. There is also a recycling center at the Pāhoa Transfer Station.

Impacts and Mitigation – According to the Construction and Demolition Waste Management Guide (http://infohouse.p2ric.org/ref/24/23088.pdf) case study, a new office or similar type of construction project could generate about 7.5 tons of construction waste per 10,000 SF. Therefore, the proposed 9,000 SF library building could generate approximately 6.75 tons of construction waste. With a construction waste management plan, approximately 50-75% of construction waste could be diverted from a landfill. Waste generated during site prep will be reused on site as much as possible for fill and berms.

After build-out, solid waste generated by operation activities at the Pāhoa Public Library will be collected and disposed at the Pāhoa Transfer Station. Recycling of solid waste will be accommodated and implemented to the extent practicable. Composting of green waste will be encouraged and landscape maintenance will recycle as much as possible.

2.18 PUBLIC SERVICES

The proposed Pāhoa Public Library will provide a purpose-built library and community use spaces for Puna residents. Potential impacts to public services are described below.

2.18.1 POLICE PROTECTION

Existing Conditions – The Pāhoa Police Station/DMV is located adjacent to Site 1 and approximately ¾ miles from Site 2 and Site 3.

Impacts and Mitigation – The Pāhoa Public Library will not significantly increase the need for police services.

2.18.2 FIRE PROTECTION

Existing Conditions – The Pāhoa Fire Station is located adjacent to Site 1 and approximately ¾ miles from Site 2 and Site 3.

Impacts and Mitigation – The Pāhoa Public Library will not significantly increase the need for fire services.

2.18.3 SCHOOLS

Existing Conditions – State DOE's Hawai'i Complex schools in Pāhoa include Pāhoa High and Intermediate School and Pāhoa Elementary School.

Impacts and Mitigation – The Pāhoa Public Library will not increase the demand on the State DOE's Hawai'i Complex schools.

2.18.4 RECREATIONAL FACILITIES

Existing Conditions – Pāhoa District Park is located adjacent to Site 2, approximately ¾ miles from Site 1 and 1.6 miles from Site 3.

Impacts and Mitigation – The Pāhoa Public Library will not increase the demand on the recreational facilities in the area.

2.18.5 HEATH CARE SERVICES

Existing Conditions – Puna Community Medical Center, Pāhoa Women & Children's Health Center, and Pāhoa Family Health Center are the closest healthcare facilities to the sites.

Impacts and Mitigation – The Pāhoa Public Library will not increase the demand for medical services at theses healthcare facilities. Per comment letter from Lee Maniscalco dated March 20, 2021, the proximity of the fire and police stations to Site 1 would create a sense of security.

2.19 POTENTIAL CUMULATIVE AND SECONDARY IMPACTS

Cumulative effects are impacts which result from the incremental effects of an activity when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertake such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The Pāhoa Public Library is not anticipated to generate substantial cumulative impacts. The use of the Pāhoa Public Library will not cause significant long-term effects on water use, wastewater generation, and traffic. These impacts will not significantly increase the regional cumulative impacts on water resources, water quality and roadway operations.

Secondary effects are impacts that are associated with, but do not result directly from, an activity. The environmental analysis of the proposed Pāhoa Public Library addresses full development of the facility in the context of known planned or approved land uses in the vicinity. The Project is not anticipated to generate secondary impacts or induce growth.

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3.0

Alternatives to the Proposed Project

3 ALTERNATIVES TO THE PROPOSED PROJECT

Alternatives to the proposed action are addressed in this section. The potential benefits and impacts of alternative development schemes are evaluated along with the no-action alternative.

3.1 NO ACTION ALTERNATIVE

The "No Action" alternative is addressed in this EA as required by HRS Chapter 343 and HAR §11-200. "No Action" means the Pāhoa Public Library would not be constructed. The "No Action" alternative would result in HSPLS continuing to operate out of the DOE public school complex. The library would not be able to expand and provide adequate service for the growing Puna region. Public school security issues would not be resolved. Therefore the "No Action" alternative would not meet the purpose of the proposed action. The "No Action" alternative would not create site construction impacts such as grading, traffic, noise, and air emissions. Beneficial aspects of the Project will also not be realized.

3.2 ALTERNATIVE LOCATION

The Alternative Location would involve constructing the new Pāhoa Public Library at one of the other three non-finalist sites as described in Chapter 1. These sites were rated Fair or Poor in respect to site acquisition feasibility, adequacy of infrastructure, pedestrian access, natural and historical/archaeological resources, lava/wildlife risk, community criteria, and community effects. Constructing the new Pāhoa Public Library at one of these sites would likely delay the schedule due to site acquisition challenge. It would also have greater impacts to the natural and historical/archaeological resources and could potentially be costly to mitigate these impacts.

Per comment letter from the State Office of Planning dated March 29, 2021, another alternative location would be to co-locate the library with the proposed Pāhoa Transit Hub, which is currently being planned by the County of Hawaiʻi Mass Transit Agency. The co-location would help reduce the cost of the required infrastructure and provide the desire safe options for users to access the library other than by individual cars. Co-location would not only increase transportation options for trips to the library but could also help address the need for overflow parking for special events. A suitable site closer to Pāhoa Village would increase safe access by pedestrians and bicyclists and enable the library to become a destination and gathering place for the community.

Per the Hawaiʻi County Planning Department comment letter from March 24, 2021, the county is in the beginning stages of an EA for the Pāhoa Transit Hub. The draft EA for the Pāhoa Transit Hub will include analysis of co-locating the two projects. Co-location would align with the Puna Puna Community Development Plan (CDP) objective for compact and multi-modal development. HSPLS will work with the County of Hawaiʻi Mass Transit Agency to explore co-location of the library with the Pāhoa Transit Hub in the final site selection.

3.3 DELAYED ACTION

The Delayed Action Alternative would involve postponing construction of the new Pāhoa Public Library to a future date. As a result, the HSPLS would continue to operate out of the DOE public school complex. In addition, delaying construction to a future date would likely result in higher construction costs due to inflation. Delaying the construction would have a compounding negative economic effect.

4.0

Plans and Policies

4 PLANS AND POLICIES

The proposed action for development of the Pāhoa Public Library may conform or conflict with established land use plans, policies and controls for the affected area. Conformance of the proposed project with State and County plans and public management strategies is discussed in this section.

4.1 HAWAIʻI STATE PLAN

Chapter 226 HRS is the basis of the Hawaiʻi State Plan, a long-term comprehensive plan that guides development through establishment of goals, objectives, policies, priorities and implementation measures. It is the goal of the Hawaiʻi State Plan to achieve the following:

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaiʻi's present and future generations.
- 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.
- Physical, social, and economic well-being, for individuals and families in Hawaiʻi, that nourishes a sense of community responsibility, of caring, and of participation in community life (Chapter 226-4, HRS).

Table 4-1 assesses and evaluates how the Pāhoa Public Library supports the Hawaiʻi State Plan, as promulgated under HRS Chapter 226. State Plan goals beyond the scope of the Project are noted as "N/A."

Table 4-1 Hawaiʻi State Plan, Hawaiʻi Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
Section 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 Hawaiʻi's present and future generations	X		
(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.	X		
(3) Physical, social and economic well-being, for individuals and families in Hawaiʻi, that nourishes a sense of community responsibility, of caring, and of participation in community life.	X		
Discussion: The Project is supportive of the State goals albeit at a small scale.			
Section 226-5: Objective and Policies for Population. *(A) It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter;* *(B) To achieve the population objective, it shall be the policy of this State to:*			
(1) Manage population growth statewide in a manner that provides increased opportunities for Hawaiʻi's people to pursue their physical, social and economic aspirations while recognizing the unique needs of each county.			X
(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs-and desires.	X		
(3) Promote increased opportunities for Hawaiʻi's people to pursue their socioeconomic aspirations throughout the islands.			X

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(4) Encourage research activities and public awareness programs to foster an understanding of Hawai'i's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawai'i's population.			X
(5) Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among states, provided that such actions do not prevent the reunion of immediate family members.			X
(6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.			X
(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.	X		
Discussion: The project will not add to Hawai'i's residential population growth. The proposed Pāhoa Public Library is consistent with the State's goals to accommodate population needs and socioeconomic opportunities for Hawai'i's population in the Puna region. The Project will provide necessary public facilities for Hawai' County to provide public services for residents in the region.			
Section 226-6: Objectives and Policies for the Economy in General. *(A) Planning for the State's economy in general shall be directed toward achievement of the following objectives:*			
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.	*X*		
(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.	*X*		
(B) To achieve the general economic objectives, it shall be the policy of this State to:			
(1) Promote and encourage entrepreneurship within Hawai'i by residents and nonresidents of the State.			*X*
(2) Expand Hawai'i's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.			*X*
(3) Promote Hawai'i as an attractive market for environmentally and socially sound investment activities that benefit Hawai'i's people.			*X*
(4) Transform and maintain Hawai'i as a place that welcomes and facilitates innovative activity that may lead to commercial opportunities.			*X*
(5) Promote innovative activity that may pose initial risks, but ultimately contribute to the economy of Hawai'i.			*X*
(6) Seek broader outlets for new or expanded Hawai'i business investments.			*X*
(7) Expand existing markets and penetrate new markets for Hawai'i's products and services.			*X*
(8) Assure that the basic economic needs of Hawai'i's people are maintained in the event of disruptions in overseas transportation.			*X*
(9) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.			*X*
(10) Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawai'i's small scale producers, manufacturers, and distributors.			*X*
(11) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.			*X*
(12) Encourage innovative activities that may not be labor-intensive, but may otherwise contribute to the economy of Hawai'i.			*X*
(13) Foster greater cooperation and coordination between the government and private sectors in developing Hawai'i's employment and economic growth opportunities.			*X*
(14) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.			*X*
(15) Maintain acceptable working conditions and standards for Hawai'i's workers.	*X*		
(16) Provide equal employment opportunities for all segments of Hawai'i's population through affirmative action and nondiscrimination measures.	*X*		
(17) Encourage businesses that have favorable financial multiplier effects within Hawai'i's economy.			*X*

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(18) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the Aloha spirit, which are vital to a healthy economy, particularly with respect to emerging industries in science and technology.			*X*
(19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.			*X*
(20) Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new, potential growth industries in particular.			*X*
(21) Foster a business climate in Hawai'i - including attitudes, tax and regulatory policies, and financial and technical assistance programs--that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.			*X*
Discussion: The proposed Pāhoa Public Library will provide short-term construction employment and expenditures. The new library will provide a well-designed work place and equal employment opportunities for workers, and will provide support for those seeking employment and business opportunities.			
Section 226-7 Objectives and Policies for the Economy – Agriculture. *(A) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:*			
(1) Viability of Hawai'i's sugar and pineapple industries.			*X*
(2) Growth and development of diversified agriculture throughout the State.			*X*
(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawai'i's strategic, economic, and social well-being.			*X*
(B) To achieve the agriculture objectives, it shall be the policy of this State to:			
(1) Establish a clear direction for Hawai'i's agriculture through stakeholder commitment and advocacy.			*X*
(2) Encourage agriculture by making best use of natural resources.			*X*
(3) Provide the governor and the legislature with information and options needed for prudent decision making for the development of agriculture.			*X*
(4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.			*X*
(5) Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawai'i's economy.			*X*
(6) Seek the enactment and retention of federal and state legislation that benefits Hawai'i's agricultural industries.			*X*
(7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawai'i's food producers and consumers in the State, nation, and world.			*X*
(8) Support research and development activities that strengthen economic productivity in agriculture, stimulate greater efficiency, and enhance the development of new products and agricultural by-products.			*X*
(9) Enhance agricultural growth by providing public incentives and encouraging private initiatives.			*X*
(10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.			*X*
(11) Increase the attractiveness and opportunities for an agricultural education and livelihood.			*X*
(12) In addition to the State's priority on food, expand Hawai'i's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.			*X*
(13) Promote economically competitive activities that increase Hawai'i's agricultural self-sufficiency, including the increased purchase and use of Hawai'i-grown food and food products by residents, businesses, and governmental bodies as defined under section 103D-104.			*X*
(14) Promote and assist in the establishment of sound financial programs for diversified agriculture.			*X*
(15) Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.			*X*
(16) Facilitate the transition of agricultural lands in economically non-feasible agricultural production to economically viable agricultural uses.			*X*

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(17) Perpetuate, promote, and increase use of traditional Hawaiian farming systems, such as the use of loko i'a, māla, and irrigated lo'i, and growth of traditional Hawaiian crops, such as kalo, 'uala, and 'ulu.			*X*
(18) Increase and develop small-scale farms.			*X*
Discussion: State policies for the economy related to agriculture are not directly applicable to the Project.			
Section 226-8 Objective and Policies for the Economy - Visitor Industry. *(A) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawai'i's economy.* *(B) To achieve the visitor industry objective, it shall be the policy of this State to:*			
(1) Support and assist in the promotion of Hawai'i's visitor attractions and facilities.			*X*
(2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people.			*X*
(3) Improve the quality of existing visitor destination areas by utilizing Hawai'i's strengths in science and technology.			*X*
(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.			*X*
(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawai'i's people.			*X*
(6) Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the visitor industry.			*X*
(7) Foster a recognition of the contribution of the visitor industry to Hawai'i's economy and the need to perpetuate the aloha spirit.			*X*
(8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values.			*X*
Discussion: State policies for the economy related to visitor industry are not directly applicable to the Project.			
Section 226-9 Objective and Policies for the Economy - Federal Expenditures. *(A) Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawai'i's economy.* *(B) To achieve the federal expenditures objective, it shall be the policy of this State to:*			
(1) Encourage the sustained flow of federal expenditures in Hawai'i that generates long-term government civilian employment;			X
(2) Promote Hawai'i's supportive role in national defense, in a manner consistent with Hawai'i's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawai'i's economy;			X
(3) Promote the development of federally supported activities in Hawai'i that respect state-wide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment;			X
(4) Increase opportunities for entry and advancement of Hawai'i's people into federal government service;			X
(5) Promote federal use of local commodities, services, and facilities available in Hawai'i;			X
(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawai'i; and			X
(7) Pursue the return of federally controlled lands in Hawai'i that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties.			X
Discussion: State policies related to Federal Expenditure are not directly applicable to the Project.			

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
Section 226-10 Objective and Policies for the Economy - Potential Growth Activities. *(A) Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objective of development and expansion of potential growth activities that serve to increase and diversify Hawai'i's economic base.* *(B) To achieve the potential growth activity objective, it shall be the policy of this State to:*			
(1) Facilitate investment and employment in economic activities that have the potential to expand and diversify Hawai'i's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, health care, and science and technology-based sectors;			X
(2) Facilitate investment in innovative activity that may pose risks or be less labor-intensive than other traditional business activity, but if successful, will generate revenue in Hawai'i through the export of services or products or substitution of imported services or products;	X		
(3) Encourage entrepreneurship in innovative activity by academic researchers and instructors who may not have the background, skill, or initial inclination to commercially exploit their discoveries or achievements;			X
(4) Recognize that innovative activity is not exclusively dependent upon individuals with advanced formal education, but that many self-taught, motivated individuals are able, willing, sufficiently knowledgeable, and equipped with the attitude necessary to undertake innovative activity;			X
(5) Increase the opportunities for investors in innovative activity and talent engaged in innovative activity to personally meet and interact at cultural, art, entertainment, culinary, athletic, or visitor-oriented events without a business focus;			X
(6) Expand Hawai'i's capacity to attract and service international programs and activities that generate employment for Hawai'i's people;			X
(7) Enhance and promote Hawai'i's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts;			X
(8) Accelerate research and development of new energy-related industries based on wind, solar, ocean, and underground resources and solid waste;			X
(9) Promote Hawai'i's geographic, environmental, social, and technological advantages to attract new economic activities into the State;			X
(10) Provide public incentives and encourage private initiative to attract new industries that best support Hawai'i's social, economic, physical, and environmental objectives;			X
(11) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research;			X
(12) Develop, promote, and support research and educational and training programs that will enhance Hawai'i's ability to attract and develop economic activities of benefit to Hawai'i;	X		
(13) Foster a broader public recognition and understanding of the potential benefits of new, growth-oriented industry in Hawai'i;			X
(14) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawai'i's social, economic, physical, and environmental objectives;			X
(15) Increase research and development of businesses and services in the telecommunications and information industries;			X
(16) Foster the research and development of nonfossil fuel and energy efficient modes of transportation; and			X
(17) Recognize and promote health care and health care information technology as growth industries.			X
Discussion: The Project will provide services which may support economic objectives.			
Section 226-10.5 Objectives and Policies for the Economy - Information Industry. *(A) Planning for the State's economy with regard to the telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawai'i as a leader in broadband and wireless communications and applications in the Pacific Region.* *(B) To achieve the information industry objective, it shall be the policy of this State to:*			

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(1) Promote efforts to attain the highest speeds of electronic and wireless communication within Hawai'i and between Hawai'i and the world, and make high speed communication available to all residents and businesses in Hawai'i;			X
(2) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth and innovation in Hawai'i's economy.			X
(3) Facilitate the development of new or innovative business and service ventures in the information industry which will provide employment opportunities for the people of Hawai'i;			X
(4) Encourage mainland- and foreign-based companies of all sizes, whether information technology-focused or not, to allow their principals, employees, or contractors to live in and work from Hawai'i, using technology to communicate with their headquarters, offices, or customers located out-of-state;			X
(5) Encourage greater cooperation between the public and private sectors in developing and maintaining a well- designed information industry;			X
(6) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people;			X
(7) Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry;	X		
(8) Foster a recognition of the contribution of the information industry to Hawai'i's economy; and			X
(9) Assist in the promotion of Hawai'i as a broker, creator, and processor of information in the Pacific.			X
Discussion: The library will play an important role in providing community access to broadband.			
Section 226-11 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:*			
(1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.	X		
(2) Effective protection of Hawai'i's unique and fragile environmental resources.	X		
(B) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:			
(1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.	X		
(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.	X		
(3) Take into account the physical attributes of areas when planning and designing activities and facilities.	X		
(4) Manage natural resources and environs to encourage their beneficial and multiple uses without generating costly or irreparable environmental damage.	X		
(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.			X
(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.	X		
(7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.			X
(8) Pursue compatible relationships among activities, facilities and natural resources.	X		
(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational and scientific purposes.	X		
Discussion: The Project design and operations will support the objectives and policies for the protection of land-based, shoreline, and marine resources. The Project is cognizant of the concerns for wastewater collection, treatment and disposal, as well as stormwater runoff pollution. The Project will be designed to meet State and County standards.			
Section 226-12 Objective and Policies for the Physical Environment - Scenic, Natural Beauty, and Historic Resources. *(A) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.* *(B) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:*			
(1) Promote the preservation and restoration of significant natural and historic resources.	X		
(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.			X

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.	X		
(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.			X
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.	X		
Discussion: SHPD will be consulted to ensure that the Project will not alter historic and/or cultural resources on the sites. The proposed low-rise building will be designed so that it will not have a significant impact on the views.			
Section 226-13 Objectives and Policies for the Physical Environment - Land, Air, and Water Quality. *(A) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:*			
(1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.	X		
(2) Greater public awareness and appreciation of Hawai'i's environmental resources.			X
(B) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:			
(1) Foster educational activities that promote a better understanding of Hawai'i's limited environmental resources.			X
(2) Promote the proper management of Hawai'i's land and water resources.	X		
(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground and coastal waters.	X		
(4) Encourage actions to maintain or improve rural and air quality levels to enhance the health and well-being of Hawai'i's people.			X
(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.	X		
(6) Encourage design and construction practices that enhance the physical qualities of Hawai'i's communities.	X		
(7) Encourage urban developments in close proximity to existing services and facilities.	X		
(8) Foster recognition of the importance and value of the land, air, and water resources to Hawai'i's people, their cultures and visitors.			X
Discussion: BMPs for temporary erosion control measures will be incorporated during construction to minimize soil loss, erosion hazards, sediment run-off, and negative impact to air quality from dust. Permanent sediment control measures will be used once construction is completed. Increased landscaping and on-site drainage improvements will significantly reduce sediments in runoff in comparison to the current condition. Best Management Practices will be implemented during construction to prevent any substance leaks into the soil that could adversely affect groundwater quality. The Project will be designed to meet State and County standards. Sites 1 and 2 are located near existing services and facilities, however they are located in Lava Zone 2 which presents relatively high risk for lava flow. Site 3 is located further from existing services and facilities, however the site is located in Lava Zone 3 which presents a lower risk for lava flow.			
Section 226-14 Objective and Policies for Facility Systems - In General. *(A) 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.* *(B) To achieve the general facility systems objective, it shall be the policy of this State to:*			
(1) Accommodate the needs of Hawai'i's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.	X		
(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.			X
(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.			X
(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.	X		

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
Discussion: Off-site and on-site improvements to surrounding facility systems (water, wastewater, roadways, solid waste, power, and telecommunications) will be coordinated with the appropriate State and County agencies or private utility companies.			
226-15 Objectives and Policies for Facility Systems - Solid and Liquid Wastes. *(A) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:*			
(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.	X		
(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.	X		
(B) To achieve solid and liquid waste objectives, it shall be the policy of this State to:			
(1) Encourage the adequate development of sewerage facilities that complement planned growth.	X		
(2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.	X		
(3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.			X
Discussion: Solid waste and wastewater disposal systems will be efficiently designed to minimize impacts on existing solid and liquid waste facilities.			
226-16 Objective and Policies for Facility Systems - Water. *(A) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.* *(B) To achieve the facility systems water objective, it shall be the policy of this State to:*			
(1) Coordinate development of land use activities with existing and potential water supply.	X		
(2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.			X
(3) Reclaim and encourage the productive use of runoff water and wastewater discharges.			X
(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.	X		
(5) Support water supply services to areas experiencing critical water problems.	X		
(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.	X		
Discussion: According to the Department of Water Supply, limited water is available for Sites 1 and 3. A new water source will need to be developed for Site 2. Landscaping at the Pāhoa Public Library will integrate water conservation principles such as the use of native or adaptive plant species that are drought tolerant, water-efficient drip irrigation system, and climate sensing device.			
226-17 Objectives and Policies for Facility Systems - Transportation. *(A) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:*			
(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.			X
(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.			X
(B) To achieve the transportation objectives, it shall be the policy of this State to:			
(1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter;			X
(2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives;			X
(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties;			X
(4) Provide for improved accessibility to shipping, docking, and storage facilities;			X

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs;			X
(6) Encourage transportation systems that serve to accommodate present and future development needs of communities;			X
(7) Encourage a variety of carriers to offer increased opportunities and advantages to inter-island movement of people and goods;			X
(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;			X
(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;			X
(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai'i's natural environment;			X
(11) Encourage safe and convenient use of low-cost, energy-efficient, non-polluting means of transportation;			X
(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives; and	X		
(13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.			X
Discussion: All three final candidate sites are accessible via private vehicles. Site 2 is also accessible by public transit and by walking. HSPLS will also coordinate final site selection with the County of Hawai'i Transit Oriented Development planning initiatives.			
226-18 Objectives and Policies for Facility Systems - Energy. *(A) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:*			
(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;			X
(2) Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawai'i's dependence on imported fuels for electrical generation and ground transportation;			X
(3) Greater diversification of energy generation in the face of threats to Hawai'i's energy supplies and systems;			X
(4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use, and	X		
(5) Utility models that make the social and financial interests of Hawai'i's utility customers a priority.			X
(B) To achieve the energy objectives, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable energy services to accommodate demand. *(C) To further achieve the energy objectives, it shall be the policy of this State to:*			
(1) Support research and development as well as promote the use of renewable energy sources;			X
(2) Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth;			X
(3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits;			X
(4) Promote all cost-effective conservation of power and fuel supplies through measures including: (A) Development of cost-effective demand-side management programs; (B) Education; and (C) Adoption of energy-efficient practices and technologies; (D) Increasing energy efficiency and decreasing energy use in public infrastructure;	X		
(5) Ensure to the extent that new supply-side resources are needed, that the development or expansion of energy systems utilizes the least-cost energy supply option and maximizes efficient technologies;			X
(6) Support research, development, and demonstration and use of energy efficiency, load management, and other demand-side management programs, practices, and technologies;	X		
(7) Promote alternate fuels and energy efficiency;	X		
(8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications;			X

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(9) Support actions that reduce, avoid, or sequester Hawai'i's greenhouse gas emissions through agriculture and forestry initiatives;			X
(10) Provide priority handling and processing for all state and county permits required for renewable energy projects;			X
(11) Ensure that liquefied natural gas is used only as a cost-effective transitional, limited-term replacement of petroleum for electricity generation and does not impede the development and use of other cost-effective renewable energy source; and			X
(12) Promote the development of indigenous geothermal energy resources that are located on public trust land as an affordable and reliable source of firm power for Hawai'i.			X
Discussion: The Pāhoa Public Library will be designed to minimize energy consumption through methods such as the use of energy-efficient HVAC and elevator systems, and possibly integrating a PV system to provide an alternative energy source.			
226-18.5 Objectives and Policies for Facility Systems - Telecommunications. *(A) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.* *(B) To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.* *(C) To further achieve the telecommunications objective, it shall be the policy of this State to:*			
(1) Facilitate research and development of telecommunications systems and resources;			*X*
(2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;			*X*
(3) Promote efficient management and use of existing telecommunications systems and services; and			*X*
(4) Facilitate the development of education and training of telecommunications personnel.			*X*
Discussion: State policies related to Telecommunications are not directly applicable to the Project.			
226-19 Objectives and Policies for Socio-Cultural Advancement - Housing. *(A) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:*			
(1) Greater opportunities for Hawai'i'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 Hawai'i's population.			X
(2) The orderly development of residential areas sensitive to community needs and other land uses.			X
(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawai'i's people.			X
(B) To achieve the housing objectives, it shall be the policy of this State to:			
(1) Effectively accommodate the housing needs of Hawai'i's people.			X
(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.			X
(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.			X
(4) Promote appropriate improvement, rehabilitation, and maintenance of existing housing units and residential areas.			X
(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.			X
(6) Facilitate the use of available vacant, developable, and underutilized urban lands for housing.			X
(7) Foster a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the culture and values of the community.			X
(8) Promote research and development of methods to reduce the cost of housing construction in Hawai'i.			X

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
Discussion: State policies related to Housing are not directly applicable to the Project. The Project will provide services to existing and future residents.			
226-20 Objectives and Policies for Socio-Cultural Advancement - Health. *(A) Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:*			
(1) Fulfillment of basic individual health needs of the general public.			X
(2) Maintenance of sanitary and environmentally healthful conditions in Hawai'i's communities.	X		
(3) Elimination of health disparities by identifying and addressing social determinants of health.			X
(B) To achieve the health objectives, it shall be the policy of this State to:			
(1) Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.			X
(2) Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State.			X
(3) Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs.			X
(4) Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures.			X
(5) Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions.			X
(6) Improve the State's capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring, and enforcement.			X
Discussion: The Project will provide materials and an environment supportive of health objectives.			
226-21 Objective and Policies for Socio-Cultural Advancement - Education. *(A) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.* *(B) To achieve the education objective, it shall be the policy of this State to:*			
(1) Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.	X		
(2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.			X
(3) Provide appropriate educational opportunities for groups with special needs.			X
(4) Promote educational programs which enhance understanding of Hawai'i's cultural heritage.			X
(5) Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands.			X
(6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.			X
(7) Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.			X
(8) Emphasize quality educational programs in Hawai'i's institutions to promote academic excellence.			X
(9) Support research programs and activities that enhance the education programs of the State.			X
Discussion: The Project, and all libraries support educational objectives.			
226-22 Objective and Policies for Socio-Cultural Advancement - Social Services. *(A) Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.* *(B) To achieve the social service objective, it shall be the policy of the State to:*			
(1) Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities.	X		

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(2) Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society.			X
(3) Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawai'i's communities.	X		
(4) Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations.			X
(5) Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect.			X
(6) Promote programs which assist people in need of family planning services to enable them to meet their needs.			X
Discussion: Resources related to Social Services are provided at State libraries.			
226-23 Objective and Policies for Socio-Cultural Advancement - Leisure. *(A) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.* *(B) To achieve the leisure objective, it shall be the policy of this State to:*			
(1) Foster and preserve Hawai'i's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.	X		
(2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.	X		
(3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.			X
(4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.			X
(5) Ensure opportunities for everyone to use and enjoy Hawai'i's recreational resources.			X
(6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.	X		
(7) Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawai'i's people.			X
(8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.	X		
(9) Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawai'i's population to participate in the creative arts.			X
(10) Assure adequate access to significant natural and cultural resources in public ownership.	X		
Discussion: The Project, and all libraries support leisure objectives.			
226-24 Objective and Policies for Socio-Cultural Advancement - Individual Rights and Personal Well-Being. *(A) Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.* *(B) To achieve the individual rights and personal well- being objective, it shall be the policy of this State to:*			
(1) Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment.			X
(2) Uphold and protect the national and state constitutional rights of every individual.			X
(3) Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice.	X		
(4) Ensure equal opportunities for individual participation in society.	X		
Discussion: The Project will provide equal opportunity to a wide range of resources.			

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
226-25 Objective and Policies for Socio-Cultural Advancement - Culture. *(A) Planning for the State's socio- cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.* *(B) To achieve the culture objective, it shall be the policy of this State to:*			
(1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.	X		
(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.	X		
(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.	X		
(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.	X		
Discussion: Programs and library resources will support these objectives on an ongoing basis.			
226-26 Objectives and Policies for Socio-Cultural Advancement - Public Safety. *(A) Planning for the State's socio- cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:*			
(1) Assurance of public safety and adequate protection of life and property for all people.	X		
(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.	X		
(3) Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's people.	X		
(B) To achieve the public safety objectives, it shall be the policy of this State to:			
(1) Ensure that public safety programs are effective and responsive to community needs.	X		
(2) Encourage increased community awareness and participation in public safety programs.	X		
(C) To further achieve public safety objectives related to criminal justice, it shall be the policy of this State to:			
(1) Support criminal justice programs aimed at preventing and curtailing criminal activities.			X
(2) Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies.			X
(3) Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community.			X
(D) To further achieve public safety objectives related to emergency management, it shall be the policy of this State to:			
(1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.	X		
(2) Enhance the coordination between emergency management programs throughout the State.			X
Discussion: Access control and emergency evacuation plan will be part of the Project to ensure public safety.			
226-27 Objectives and Policies for Socio-Cultural Advancement - Government. *(A) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:*			
(1) Efficient, effective, and responsive government services at all levels in the State.			X
(2) Fiscal integrity, responsibility, and efficiency in the state government and county governments.	X		
(B) To achieve the government objectives, it shall be the policy of this State to:			
(1) Provide for necessary public goods and services not assumed by the private sector.	X		
(2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response.	X		
(3) Minimize the size of government to that necessary to be effective.			X
(4) Stimulate the responsibility in citizens to productively participate in government for a better Hawai'i.			X
(5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns.	X		
(6) Provide for a balanced fiscal budget.			X
(7) Improve the fiscal budgeting and management system of the State.			X

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(8) Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible.			X
Discussion: The Project will provide necessary service to the Puna area residents and will address the need for more public library resources in the district.			
Hawai'i State Plan - HRS Ch. 226 - Part III. Priority Guideline			
226-101 Purpose. *The purpose of this part is to establish overall priority guidelines to address areas of statewide concern.*			
226-102 Overall Direction. *The State shall strive to improve the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaption.*			
226-103 Economic Priority Guidelines. *(A) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai'i's people and achieve a stable and diversified economy:*			
(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;	X		
(ii) Rely on economic linkages within the local economy;	X		
(iii) Diversify the economy;	X		
(iv) Reinvest in the local economy;	X		
(v) Are sensitive to community needs and priorities; and	X		
(vi) Demonstrate a commitment to provide management opportunities to Hawai'i residents.			X
(b) Encourage investments in innovative activities that have a nexus to the State, such as:			
(i) Present or former residents acting as entrepreneurs or principals;			X
(ii) Academic support from an institution of higher education in Hawai'i;			X
(iii) Investment interest from Hawai'i residents;			X
(iv) Resources unique to Hawai'i that are required for innovative activity; and			X
(v) Complementary or supportive industries or government programs or projects.			X
(2) Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements.			X
(3) Improve the quality, accessibility, and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations.			X
(4) Seek to ensure that state business tax, labor laws, and administrative policies are equitable, rational, and predictable.			X
(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.			X
(6) Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawai'i's small-scale producers, manufacturers, and distributors.			X
(7) Continue to seek legislation to protect Hawai'i from transportation interruptions between Hawai'i and the continental United States.			X
(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:			
(a) An industry that can take advantage of Hawai'i's unique location and available physical and human resources.			X
(b) A clean industry that would have minimal adverse effects on Hawai'i's environment.			X
(c) An industry that is willing to hire and train Hawai'i's people to meet the industry's labor needs at all levels of employment.			X
(d) An industry that would provide reasonable income and steady employment.			X
(9) Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawai'i business.	X		

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(10) Enhance the quality of Hawai'i's labor force and develop and maintain career opportunities for Hawai'i's people through the following actions:			
(A) Expand vocational training in diversified agriculture, aquaculture, information industry, and other areas where growth is desired and feasible.			X
(B) Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities.			X
(C) Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired.			X
(D) Promote career opportunities in all industries for Hawai'i's people by encouraging firms doing business in the State to hire residents.			X
(E) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on- the-job training opportunities.	X		
(F) Provide retraining programs and other support services to assist entry of displaced workers into alternative employment.	X		
(B) Priority guidelines to promote the economic health and quality of the visitor industry:			
(1) Promote visitor satisfaction by fostering an environment which enhances the Aloha Spirit and minimizes inconveniences to Hawai'i's residents and visitors.			X
(2) Encourage the development and maintenance of well- designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access.			X
(3) Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities.			X
(4) Encourage visitor industry practices and activities which respect, preserve, and enhance Hawai'i's significant natural, scenic, historic, and cultural resources.			X
(5) Develop and maintain career opportunities in the visitor industry for Hawai'i's people, with emphasis on managerial positions.			X
(6) Support and coordinate tourism promotion abroad to enhance Hawai'i's share of existing and potential visitor markets.			X
(7) Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.			X
(8) Support law enforcement activities that provide a safer environment for both visitors and residents alike.			X
(9) Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques.			X
(C) Priority guidelines to promote the continued viability of the sugar and pineapple industries:			
(1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.			X
(2) Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawai'i.			X
(3) Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops.			X
(D) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:			
(1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.			X
(2) Assist in providing adequate, reasonably priced water for agricultural activities.			X
(3) Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture.			X
(4) Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.			X
(5) Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawai'i's agricultural community.			X
(6) Seek favorable freight rates for Hawai'i's agricultural products from inter-island and overseas transportation operators.			X
(7) Encourage the development and expansion of agricultural and aquacultural activities which offer long-term economic growth potential and employment opportunities.			X

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(8) Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.			X
(9) Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions.			X
(10) Support the continuation of land currently in use for diversified agriculture.			X
(11) Encourage residents and visitors to support Hawai'i's farmers by purchasing locally grown food and food products.			X
(E) Priority guidelines for water use and development:			
(1) Maintain and improve water conservation programs to reduce the overall water consumption rate.	X		
(2) Encourage the improvement of irrigation technology and promote the use of non-potable water for agricultural and landscaping purposes.	X		
(3) Increase the support for research and development of economically feasible alternative water sources.			X
(4) Explore alternative funding sources and approaches to support future water development programs and water system improvements.			X
(F) Priority guidelines for energy use and development:			
(1) Encourage the development, demonstration, and commercialization of renewable energy sources.	X		
(2) Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.	X		
(3) Provide incentives to encourage the use of energy conserving technology in residential, industrial, and other buildings.			X
(4) Encourage the development and use of energy conserving and cost-efficient transportation systems.	X		
(G) Priority guidelines to promote the development of the information industry:			
(1) Establish an information network that will serve as the catalyst for establishing a viable information industry in Hawai'i.			X
(2) Encourage the development of services such as financial data processing, products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center.			X
(3) Encourage the development of small businesses in the information field such as software development, the development of new information systems and peripherals, data conversion and data entry services, and home or cottage services such as computer programming, secretarial, and accounting services.			X
(4) Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields.	X		
(5) Encourage research activities, including legal research in the information and telecommunications fields.	X		
(6) Support promotional activities to market Hawai'i's information industry services.			X
(7) Encourage the location or co-location of telecommunication or wireless information relay facilities in the community, including public areas, where scientific evidence indicates that the public health, safety, and welfare would not be adversely affected.			X
Discussion: The new Pāhoa Public Library will have a positive impact on the local economy including creating jobs for local residents and multiplier effect from jobs. The Pāhoa Public Library will provide services to Puna area residents. The Pāhoa Public Library will integrate sustainable design principles to minimize energy and water consumption.			
226-104 Population Growth and Land Resources Priority Guidelines. *(A) Priority guidelines to effect desired statewide growth and distribution:*			
(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 Hawai'i's people.			X
(2) Manage a growth rate for Hawai'i's economy that will parallel future employment needs for Hawai'i's people.			X
(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.	X		
(4) Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.			X
(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.			X

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(6) Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands.			X
(7) Support the development of high technology parks on the neighbor islands.			X
(B) Priority guidelines for regional growth distribution and land resource utilization:			
(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.	X		
(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.			X
(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.			X
(4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.			X
(5) In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core.			X
(6) Seek participation from the private sector for the cost of building infrastructure and utilities, and sustaining open spaces.			X
(7) Pursue rehabilitation of appropriate urban areas.			X
(8) Support the redevelopment of Kaka'ako into a viable residential, industrial, and commercial community.			X
(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.	X		
(10) Identify critical environmental areas in Hawai'i 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.			X
(11) Identify all areas where priority should be given to preserving rural character and lifestyle.			X
(12) Utilize Hawai'i'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.	X		
(13) Protect and enhance Hawai'i's shoreline, open spaces, and scenic resources.	X		
Discussion: The Pāhoa Public Library will be located near established community area where public facilities are already available. An EA was prepared for the Project to ensure no significant impacts to the natural environment. The Project will utilize marginal or nonessential agricultural lands for appropriate urban use, which helps support the use of lands in the State Agricultural District.			
226-105 Crime and Criminal Justice Priority Guidelines. *(A) Priority Guidelines in the Area of Crime and Criminal Justice:*			
(1) Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment.			X
(2) Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders.			X
(3) Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities.			X
(4) Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community.			X
(5) Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.			X
(6) Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization.			X
Discussion: Guidelines related to Crime and Criminal Justice are not directly applicable to the Project.			

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
226-106 Affordable Housing Priority Guidelines. *(A) Priority guidelines for the provision of affordable housing:*			
(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.			X
(2) Encourage the use of alternative construction and development methods as a means of reducing production costs.			X
(3) Improve information and analysis relative to land availability and suitability for housing.			X
(4) Create incentives for development which would increase home ownership and rental opportunities for Hawai'i's low- and moderate-income households, gap-group households, and residents with special needs.			X
(5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawai'i's people for the purchase of initial owner- occupied housing.			X
(6) Encourage public and private sector cooperation in the development of rental housing alternatives.			X
(7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.			X
(8) Give higher priority to the provision of quality housing that is affordable for Hawai'i's residents and less priority to development of housing intended primarily for individuals outside of Hawai'i.			X
Discussion: Guidelines related to Affordable Housing are not directly applicable to the Project.			
226-107 Quality Education Priority Guidelines. *(A) Priority guidelines to promote quality education:*			
(1) Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;			X
(2) Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;			X
(3) Initiate efforts to improve the quality of education by improving the capabilities of the education work force;			X
(4) Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities;			X
(5) Increase and improve the use of information technology in education by the availability of telecommunications equipment for:			X
(a) The electronic exchange of information;			X
(b) Statewide electronic mail;			X
(c) Access to the Internet;			X
Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;			X
(6) Pursue the establishment of Hawai'i's public and private universities and colleges as research and training centers of the Pacific;			X
(7) Develop resources and programs for early childhood education;			X
(8) Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and			X
(9) Strengthen and expand educational programs and services for students with special needs.			X
Discussion: While the Project will support the education of residents, guidelines related to Quality Education are not directly applicable to the Project.			
226-108 Sustainability. *(A) Priority guidelines to promote sustainability shall include:*			
(1) Encourage balanced economic, social, community, and environmental priorities;	X		
(2) Encourage planning that respects and promotes living within the natural resources and limits of the State;	X		
(3) Promote a diversified and dynamic economy;	X		
4) Encourage respect for the host culture;	X		
(5) Promote decisions based on meeting the needs of the present without compromising the needs of future generations;	X		
(6) Consider the principles of the ahupua'a system; and	X		

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226 **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawai'i.	X		
Discussion: The Pāhoa Public Library will integrate sustainability principles in the design and planning of the facility.			
226-109 Climate Change Adaptation Priority Guidelines. *(A) 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:*			
(1) Ensure that Hawai'i's people are educated, informed, and aware of the impacts climate change may have on their communities;	X		
(2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;			X
(3) Invest in continued monitoring and research of Hawai'i's climate and the impacts of climate change on the State;			X
(4) Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;			X
(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;			X
(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;	X		
(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;			X
(8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities;			X
(9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and			X
(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy.	X		
Discussion: Potential impacts of climate change to the Project and mitigation strategies are discussed in Chapter 2. In addition to design and operation of the Project, libraries provide resources that inform the public about Climate Change.			

4.2 HAWAI'I STATE FUNCTIONAL PLANS

The Hawai'i State Plan is further defined by twelve State Functional Plans. While the Hawai'i State Plan establishes long-term objectives for Hawai'i, the Functional Plans further define the State Plan by identifying major statewide concerns, defining current strategies for the functional area, and providing strategies for departmental policies, programs, and priorities. The twelve areas addressed by the plans are: agriculture, conservation lands, energy, employment, health, higher education, historic preservation, housing, recreation, tourism, transportation and water resources development. The following objectives and policies are supported by the proposed Project.

Energy

Issue Area: Overdependence Upon Oil and Other fossil Fuels for Energy Needs.

Objective A: Moderate the Growth in Energy Demand through Conservation and Energy Efficiency.

Policy A (1): Promote and stimulate greater energy efficiency and conservation in non-transportation sectors.

Policy A (2): Promote and stimulate greater energy efficiency and conservation in transportation sectors.

Discussion: The Pāhoa Public Library will incorporate energy-efficient building design principles. Providing a library within the Pāhoa community will help reduce energy consumption due to travel distance by residents.

Employment

Issue Area 2: Job Placement.

Objective C: Improve Labor Exchange.

Issue Area 3: Quality of Worklife.

Objective C: Improve the Quality of Life for Workers and Families.

Discussion: The Pāhoa Public Library will help create jobs during construction. The purposeful and efficient design of the Pāhoa Public Library will help improve quality of life for library staff. Having a library within Pāhoa community will also improve quality of life for the residents.

Health

Issue Area: Environmental Protection.

Objective A: Moderate the Growth in Energy Demand through Conservation and Energy Efficiency.

Policy 5A: Air, Land and water Quality Programs: The DOH will develop and implement new programs to prevent degradation and enhance the quality of Hawai‘i’s air, land, and water.

Discussion: The Pāhoa Public Library will comply with all environmental laws, including requirements for grading, drainage and stormwater management system, solid waste, air, noise, and water quality.

Historic Preservation

Issue Area 1: Preservation of Historic Sites.

Objective B: Protection of Historic Properties.

Discussion: The Pāhoa Public Library will undergo HRS Chapter 6E consultation with SHPD once a final site has been selected to ensure no archaeological resources will be affected. Construction activities will comply with State and County laws regarding preservation of historic sites, should any be found.

4.3 HAWAIʻI 2050 SUSTAINABILITY PLAN

In 2005, the State Legislature enacted Act 8 (SSLH 2005), which provided for the development of a Sustainability Plan to address the vital needs of Hawaiʻi through the year 2050. Hawaiʻi 2050 defines five (5) goals intended to lead toward a sustainable future for Hawaiʻi, which includes living sustainably; diversified and globally competitive economy; responsible use, replenish, and preservation of natural resources; strong, healthy, vibrant and nurturing community; thriving and perpetuated Kanaka Maoli and island cultures.

Goal 1: Living sustainably is part of our daily practice in Hawaiʻi. Develop a sustainability ethic.

Discussion: Sustainability principles and practices will be implemented to the extent practicable in the design and operation of the Project.

Goal 3: Our natural resources are responsibly and respectfully used, replenished and preserved for future generations.

Reduce reliance on fossil (carbon-based) fuels.

- Expand renewable energy opportunities.
- Increase energy efficiency in private and public buildings, including retrofitting existing buildings.
- Encourage all government agencies to adopt sustainable practices, including purchasing hybrid cars, buying biodegradable products, and mandating recycling.

Conserve water and ensure adequate water supply.

- Reduce water consumption by means of education and incentives.
- Continually review water-conserving technologies for possible incorporation in county building codes.

Increase recycling, reuse and waste reduction strategies.

Conserve agricultural, open space and conservation lands and resources.

- Create compact patterns of urban development.
- Encourage "smart growth" concepts in land use and community planning.

Discussion: Energy efficient technologies will be incorporated to the Project to the extent practicable. The HSPLS supports the reduction of reliance on fossil. Sustainable design strategies that will be considered include water conservation measures, general recycling practices, and providing reserved parking for fuel efficient/electric vehicles.

GOAL 5: Our Kanaka Maoli and island cultures and values are thriving and perpetuated.

Discussion: The Project supports Kanaka Maoli and island cultures and values. The design of the buildings and landscape will incorporate cultural concepts, artworks, motifs, and native plants as appropriate. A Cultural Impact Assessment (CIA) was completed for the three finalist sites. The Project is not anticipated to affect cultural resource. Lava tubes, if known to traverse the sites,

may be examined to ensure no negative impact to cultural resources. The new library will be landscaped with native plants appropriate for the area.

4.4 HAWAIʻI ADMINISTRATIVE RULES, CHAPTER 15-15, LAND USE COMMISSION RULES

HAR, Title 15, Subtitle 3 State Land Use Commission, Chapter 15 Land Use Commission Rules provides for the establishment of State Land Use Districts. The candidate sites are currently designated Agriculture. Section 15-15-19 sets forth the following standards for determining "A" or Agricultural District boundaries (paraphrased).

- Include lands with a high capacity for agricultural production.
- May include lands with significant potential for grazing or for other agricultural uses.
- May include lands surrounded by or contiguous to agricultural lands or which are not suited to agricultural activities by reason of topography, soils, or other characteristics.
- Shall include all lands designated important agricultural lands.

Permissible uses within the Agricultural District on lands with soil classified by the land study bureau's detailed land classification as productivity rating class A or B shall be those uses as set forth in section 205-4.5, HRS. Permissible uses within the Agricultural District on lands with soil classified by the land study bureau's detailed land classification as productivity rating class C, D, E, and U shall be those uses as set forth in sections 205-2, 205-4.5, 205-5 and 205-2 (d), HRS.

Discussion: Site 1 and Site 3 are located in soil productivity rating class E, while Site 2 is located in soil productivity rating class D (*Figure 4-1*). The library use is not an allowed agricultural use per HRS sections 205-2, 205-4.5, 205-5, and 205-2(d). However, HRS section 205-5 allows "other uses" within the Agricultural District with an approval of a special permit.

4.5 HAWAIʻI STATE PUBLIC LIBRARY SYSTEM MASTER PLAN

The HSPLS Master Plan was prepared by Facility Technics/Hawaiʻi for DAGS and the HSPLS in April, 1991. This two-volume document was a collaborative effort that included the State of Hawaiʻi Board of Education, each County, a project management committee, a project advisory committee comprised of various librarian and educator contributors, and contributions from community organizations. Volume 1 summarizes the issues, approach, findings and recommendations of the Master Plan study. All aspects of the study are described in detail in Volume 2: Master Plan Technical Appendix.

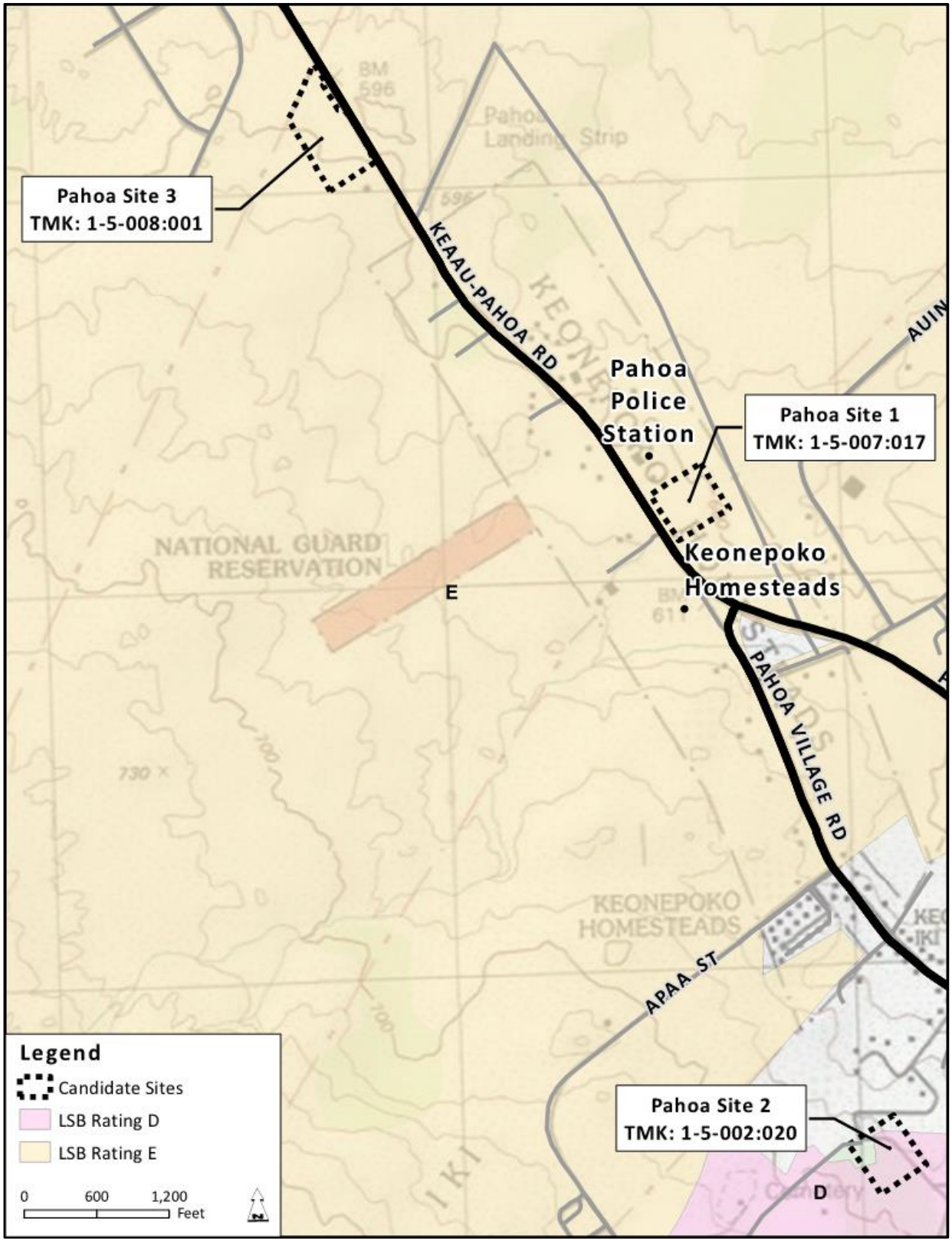

Figure 4-1: Land Study Bureau Soil Productivity Rating

The mission of the HSPLS for the next decade is to:

> ...serve as the lead state agency to provide individuals at each stage of their lives with free access to information, and to provide materials and customer services that foster reading and life-long learning.

The Master Plan describes actions which will be necessary for the HSPLS to meet these challenges. The primary recommended actions are that the HSPLS:

a. Modify its organization to meet changing technological, economic, political, and demographic environments.

b. Improve its efficiency by applying up-to-date, computerized information system and document processing technologies to its own administrative functions.

c. Provide its staff with the training, motivation, tools, procedures, and other resources necessary for them to continue to provide high quality customer services.

d. Improve the physical work environment of its administrative and library staff so that they can work efficiently and perform at their peak levels.

e. Continue to take advantage of computer and telecommunication information technologies to provide the public with more accessible and comprehensive services at lower costs.

f. Consolidate those functions which can be most effectively performed centrally, while decentralizing community-based library services.

g. Improve services and access to service for Hawai‘i’s growing special populations, which include the disabled, senior citizens, and the functionally illiterate.

h. Aggressively inform and educate the public about HSPLS services in general and its newer information technologies in particular.

i. Establish libraries through new construction or consolidation of two or more existing libraries which are space deficient so that they are conveniently located and of sufficient size for economical, flexible and comprehensive services.

j. Upgrade the physical condition of libraries so that they are safer, well-designed, and of sufficient size to support the growing service needs over the next twenty years.

k. Do not enlarge or build additional public and school libraries and consolidate the public portion with existing or new nearby libraries. Provide public library services by expanded services from a nearby public library or a new public library.

l. Aggressively seek creative relationships with other governmental agencies and the private sector to provide and fund services, collections and facilities.

m. Set up an organization, responsibilities, and procedures for monitoring the implementation of the Master Plan.

Since we cannot predict the exact future of the HSPLS environment, specific recommendations are presented as options within broad time frames so that the HSPLS can take the most appropriate actions for the prevailing economic, political, and social circumstances. But while this flexibility is necessary, it is vital that the HSPLS act on these recommendations in a timely manner if it is to emerge from the next decade as a strong, vital and relevant service for meeting the people of Hawai‘i’s library and information needs.

Discussion: The Pāhoa Public Library project promotes the following objectives of the HSPLS Master Plan:

a. Consolidating smaller libraries into a larger library is a more efficient organization that allows the HSPLS to do more for the community with a more efficient use of resources.

b. A new library allows the HSPLS to properly train, staff, and set up computer systems, document processing technologies, and administrative functions with a blank slate.

c. The new library improves the physical work environment over the current DOE spaces by providing a work area specifically designed for the needs of the library processes and staff functions.

d. The library's new computer, telecom, and wi-fi capabilities will provide internet access to the community, and additional conference call, video calling, and small business capabilities would also be available at a reasonable cost for library users.

e. Library functions will be consolidated as appropriate in the new facility, providing more efficient processes and services for the community.

f. The new library spaces and functions will allow the HSPLS to upgrade their capability to provide better services and equipment to Hawai'i's growing special populations.

g. The establishment of this new library provides a facility with ample space, and a more convenient location than on shared DOE campuses.

h. The new library facility will be designed to be safe and with the flexibility to support the library's needs for decades to come.

As shown in *Figure 4-2*, the HSPLS Master Plan recommends the current Kea'au, Mountain View, and Pāhoa libraries be consolidated and replaced on a new site. Per direction by the HSPLS, this will be achieved through the construction two new libraries, one in Kea'au and one in Pāhoa. The Pāhoa library will be designed and constructed first, based on legislative mandate and HSPLS's assessment of need. The Kea'au library will be constructed at a later date. The future Kea'au library will be a regional library that addresses the needs of Kea'au and Mountain View communities. The proposed Pāhoa and Kea'au libraries will fulfill the first of the two recommendations of the HSPLS Master Plan. HSPLS will be submitting a Capital Improvement Project budget appropriation for the Kea'au - Mountain View Public library.

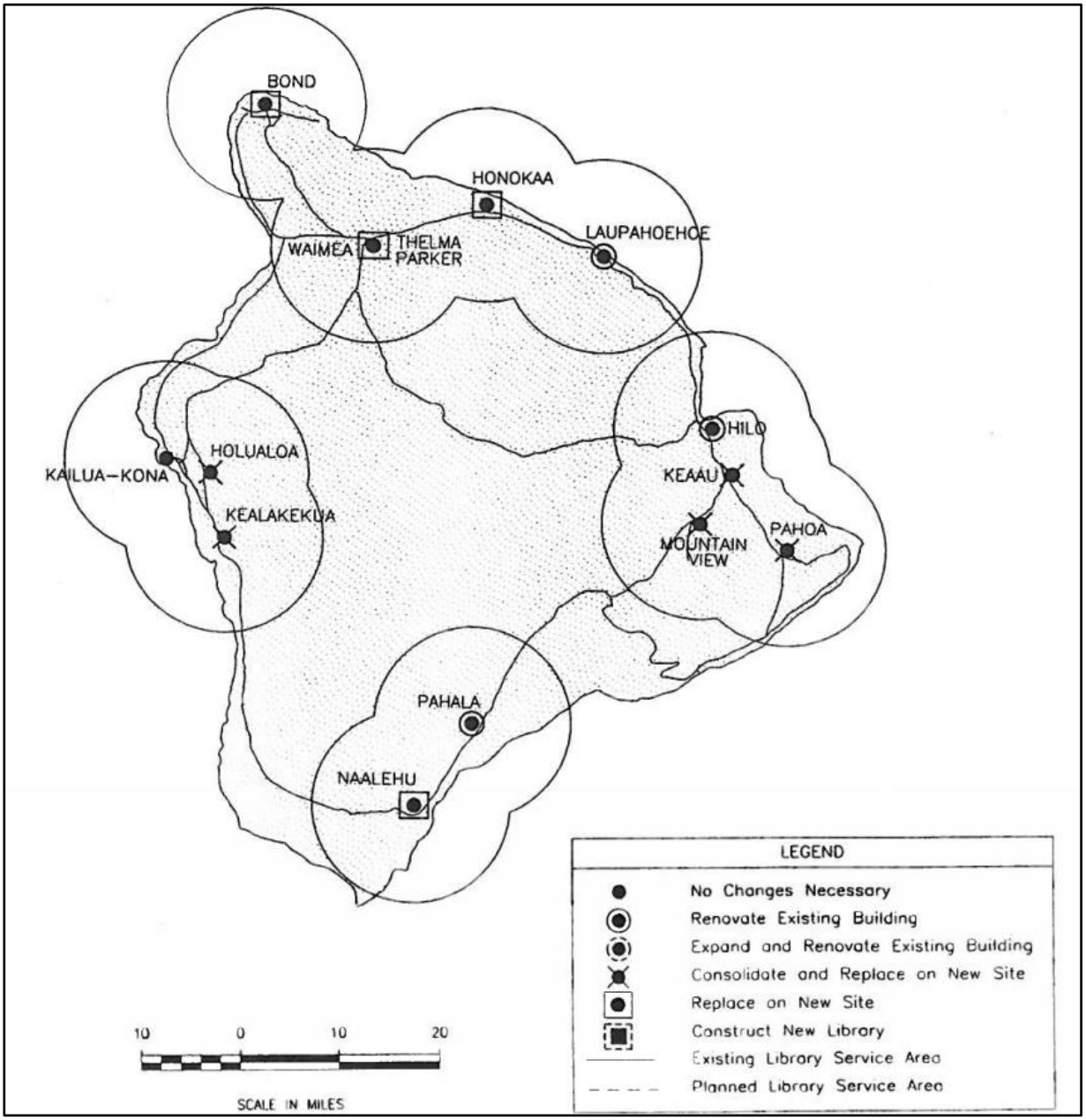

Figure 4-2: HSPLS Master Plan (1991) – Hawai‘i Library Recommendations Map

4.6 COASTAL ZONE MANAGEMENT PROGRAM

In 1972, the Federal government enacted the Coastal Zone Management (CZM) Act to protect and preserve the natural resources, land and water uses of the coastal zone. This process is achieved by providing assistance to coastal states, to develop and manage Coastal Management Programs. Implementing authority for the Federal CZM Program (Public Law 104-150, as amended in 1996) has been delegated to the State of Hawai‘i under Chapter 205A, HRS.

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".

According to the comment letter from the State Office of Planning (3/29/21), the sites do not lie within the Special Management Area (SMA), any shoreline setback area, and do not require permits that would trigger a national Coastal Zone Management Act federal consistency determination.

Table 4-2 outlines the objectives and policies of HRS Chapter 205A and discusses the applicability to the Project.

Table 4-2 Coastal Zone Management Program HRS Section 205 A- Objectives and Policies **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
OBJECTIVES & POLICIES			
(1) Recreational resources;			
Provide coastal recreational opportunities accessible to the public.			
(A) Improve coordination and funding of coastal recreational planning and management; and			X
(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;			X
(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;			X
(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;			X
(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;			X
(v) Ensuring public recreational uses of county, state and federally-owned or controlled shoreline lands having recreational value consistent with public safety standards and conservation of natural resources.			X
(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect	X		
(vii) Developing new shoreline recreational opportunities			X
(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.			X
Discussion: The Project does not affect recreational access or use of the shoreline. The Project will incorporate measures to address environmental protection, foremost being soil conservation, water conservation, energy conservation, runoff management, waste management and water quality. Improvements to the site will meet water quality standards set by the State Department of Health for both point and non-point source pollution.			
(2) Historic resources;			
Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.			
(A) Identify and analyze significant archaeological resources;	*X*		
(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and	*X*		
(C) Support state goals for protection, restoration, interpretation, and display of historic resources.	*X*		

Table 4-2 Coastal Zone Management Program HRS Section 205 A- Objectives and Policies **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
Discussion: The Project supports the CZM historic resources objective and policies to 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. The Pāhoa Public Library will undergo HRS Chapter 6E consultation with SHPD once a final site has been selected to ensure no archaeological resources will be affected. Construction activities will comply with state and county laws regarding preservation of historic sites, should any be found. The building and landscaping improvements will be in compliance with the Pāhoa Village Design Guidelines. The proposed low-rise building will not have a significant impact on the view corridor. The Pāhoa Public Library is not located within a historic district, but celebration and expression of cultural and heritage themes will be weaved into the building's façade, artwork, and landscaping.			
(3) Scenic and open space resources;			
Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.			
(A) Identify valued scenic resources in the coastal zone management area;	X		
(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;	X		
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and	X		
(D) Encourage those developments that are not coastal dependent to locate in inland areas.	X		
Discussion: Pāhoa Public Library will be located inland. The building and landscaping improvements will be in compliance with the Pāhoa Village Design Guidelines. The proposed low-rise building will not have a significant impact on the view corridor.			
(4) Coastal ecosystems;			
Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.			
(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;	X		
(B) Improve the technical basis for natural resource management;			X
(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;	X		
(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and	X		
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and non-point source water pollution control measures.	X		
Discussion: The Pāhoa Public Library will comply with State and County regulations and will be designed to integrate sustainable design principles to minimize impact on the natural resources. Best Management Practices for erosion control measures will be incorporated during and after construction to minimize soil loss, erosion hazards, sediment run-off, and negative impact on coastal resources. Increased landscaping and on-site drainage improvements will significantly reduce sediments in runoff in comparison to the current condition.			
(5) Economic uses;			
Provide public or private facilities and improvements important to the State's economy in suitable locations.			
(A) Concentrate coastal dependent development in appropriate areas;			X
(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and			X

Table 4-2 Coastal Zone Management Program HRS Section 205 A- Objectives and Policies **S = Supportive, N/S = Not Supportive, N/A = Not Applicable**	**S**	**N/S**	**N/A**
(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when: (i) Use of presently designated locations is not feasible; (ii) Adverse environmental effects are minimized; and (iii) The development is important to the State's economy.			X
Discussion: The Project is not coastal-dependent and the Economic Uses policies are therefore not applicable to the Project.			
(6) Coastal hazards;			
Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.			
(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;	X		
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and non-point source pollution hazards;	X		
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and	X		
(D) Prevent coastal flooding from inland projects.	X		
Discussion: The Pāhoa Public Library is not located in a flood zone or in the tsunami evacuation zone. The facility will be constructed to meet State and County requirements.			
(7) Managing development;			
Improve the development review process, communication, and public participation in the management of coastal resources and hazards.			
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;			X
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and			X
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.			X
Discussion: Policies regarding Managing Development are not directly applicable to the Project.			
(8) Public participation;			
Stimulate public awareness, education, and participation in coastal management.			
(A) Promote public involvement in coastal zone management processes;			X
(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and			X
(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.			X
Discussion: Coastal Zone Management policies regarding Public Participation are not directly applicable to the Project.			
(9) Beach protection;			
Protect beaches for public use and recreation.			
(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;			X
(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			X
(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.			X
Discussion: The Project is not located near the shoreline.			
(10) Marine resources;			

Table 4-2 Coastal Zone Management Program HRS Section 205 A- Objectives and Policies S = Supportive, N/S = Not Supportive, N/A = Not Applicable	S	N/S	N/A
Promote the protection, use, and development of marine and coastal resources to assure their sustainability.			
(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;			X
(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;			X
(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;			X
(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and			X
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.			X
Discussion: The Project will not use or develop marine or costal resources. However, the Pāhoa Public Library will comply with State and County regulations and will integrate sustainable design principles to minimize impact on natural resources.			

4.7 DHHL HAWAIʻI ISLAND PLAN 2002

The 2002 Department of Hawaiian Home Lands (DHHL) Hawaiʻi Island Plan was developed per Section 213(e) of the Hawaiian Homes Commission Act to guide the award of lands to DHHL beneficiaries on the Big Island. The Plan includes identification of preferred land uses and management strategies for those lands. The three candidate sites are located within the East Region of the DHHL Hawaiʻi Island Plan. Pana'ewa and Lower Piʻihonua tracts have been identified as "priority tracts" for the East Region. These tracts are most suitable for priority development based on environmental factors, appropriate uses, and DHHL mission to address beneficiary needs. Makuʻu, ʻŌlaʻa, and Keonepoko Nui tracts have been identified as non-priority due to access and/or infrastructure development cost constraints.

Discussion: Sites 1 and 3 are located within close proximity to DHHL East Region non-priority tracts. The new Pāhoa library, if to be developed on either of these sites, will not have a significant impact on the implementation of the DHHL Island Plan. The new library will serve as a community resource for DHHL beneficiaries on these tracts once developed.

4.8 DHHL MAKUʻU REGIONAL PLAN 2010

The purposes of the 2010 DHHL Makuʻu Regional Plan were to identify priority projects and coordinate regional infrastructure improvements. The Plan identified five priority projects as follow:

- Makuʻu Farmers' Association Community Center
- Makuʻu Offsite Water System, Phase 2
- Sustainability and Renewable Energy Initiatives
- Capacity Building and Promotion of Agriculture
- Lease Enforcement Provisions

Discussion: The candidate sites are not located within DHHL tracts and will not impact the implementation of DHHL's Makuʻu Regional Plan. The new library will serve as a community resource for DHHL beneficiaries on these tracts once developed.

4.9 COUNTY OF HAWAII GENERAL PLAN

Adopted by Ordinance in 1989 and amended most recently in 2005, the General Plan for the County of Hawaiʻi sets forth long-range objectives for the general welfare and prosperity of the people of Hawaiʻi Island and broad policies to attain those objectives. The General Plan provides policies and courses of action intended to guide and coordinate growth patterns through the designation and preservation of lands for specified uses. One element of this coordination is the Zoning Code, which is the legal instrument that regulates land use within the County.

4.9.1 LAND USE

Goal: The County designates and allocates land uses in appropriate proportions and mix in keeping with the social, cultural, and physical environments of the County.

Policies:

- Zone urban- types of uses in areas with ease of access to community services andemployment centers and with adequate public utilities and facilities.
- Encourage urban development within existing zoned areas already served by basic infrastructure, or close to such areas, instead of scattered development.

4.9.2 PUBLIC FACILITIES

Goal: Encourage the provision of public facilities that effectively service community and visitor needs and seek ways of improving public service through better and more functional facilities in keeping with the environmental and aesthetic concerns of the community.

Policies:

- Continue to seek ways of improving public service through the coordination of service and maximizing the use of personnel and facilities.
- Coordinate with appropriate State agencies for the provision of public facilities to serve the needs of the community.

Discussion: Site 1 and Site 2 are located near Pāhoa Town and are located within the Puna Community Development Plan's Pāhoa Regional Town Center area. These sites support the County General Plan land use and public facilities policies by locating public facility in close proximity to established communities or centrally situated areas. The Project will be co-located with existing County facilities on previously developed sites (Site 1 and Site 2) to maximize the use of County facilities. The new library will address the need for more library to serve the Puna residents. Per the Hawaiʻi State Office of Planning comment letter dated March 29, 2021, there should be consideration of a County-administered district boundary amendment to the Rural or Urban land use district if the selected site lies within a County rural or urban-like plan designation or rural or urban County zoning district. In a comment letter from the Department of Public Works (DPW) dated March 24, 2021, Kauhale Street and Apaa Street are both maintained by the

County. Therefore, construction within these right-of-ways shall comply with HCC, Chapter 22, County Streets.

4.10 PUNA COMMUNITY DEVELOPMENT PLAN

The Puna CDP (2008) was adopted by the County Council through Ordinance No. 08-116 in September 2008, and subsequently amended in 2010 and 2011. The Puna CDP is organized into three overarching themes that correspond to the top three issues that face the region, as identified in the public involvement process conducted in the early 1990s through 2007.

At its January 18, 2007 meeting the Steering Committee adopted the following vision statement to embrace the three themes and guide the direction of the plan:

The Vision: Mālama Puna A Mau Loa!

Residents of Puna live in harmony with the ʻāina while promoting a sustainable vibrant local economy, healthy communities, and a viable transportation system that is accessible, friendly and safe for now and future generations.

The three themes of the CDP are:

- **Mālama I Ka ʻĀina** establishes how the contextual natural, historic and cultural features of Puna should be preserved and respected. The goals, objectives and implementing actions under this theme address cultural and historic sites and districts; forest lands and unique geological features; scenic resources; and drainage, aquifers and coastal water quality.
- **Growth Management** addresses how the future pattern of human settlement and land use should be shaped to respect that context and support the desired quality of life for Puna's residents. The goals, objectives and implementing actions under this theme address the land use pattern; agricultural and economic development; public services, social services and housing; parks and recreation and renewable energy and energy efficiency.
- **Transportation** focuses on sustainable approaches to transportation to support the goals of the two above themes. The goals, objectives and implementing actions under this theme address mass transit and alternative travel modes, travel demand management and roadway connectivity and safety.

Discussion: The Project supports all three themes of the Puna CDP. The library supports preservation of historic sites, environmental areas, scenic resources, and aquifer/coastal water quality. The library will be designed to protect archaeological and historical sites, to take advantage and implement sustainable design practices to minimize the footprint of the facility on the environment and on water resources.

The library supports the CDP theme of Growth Management through providing modern and comprehensive public library and social services to a growing district on Hawaiʻi Island.

The library will support sustainable approaches to transportation via thoughtful site placement, access to public transportation, and proper traffic design to mitigate travel demand increases due to the Project, as well as to increase roadway connectivity and safety as part of the Project.

Pāhoa Regional Town Center

Pāhoa's village center is divided into two parts. The northern portion straddling Highway 130 at the intersection with the Bypass Road is intended for regional uses and services – e.g., areas already zoned for commercial and light industrial uses; proposed new police, fire, and ambulance facilities; and a proposed transit hub. The area straddling Pāhoa Village Road from ʻApaʻa Street to the intersection of Kapoho Road and Pāhoa-Kalapana Road, is intended to contain uses that are oriented primarily to residents of the Pāhoa community itself. The exceptions are the post office in the center of town and the intermediate and high school at the southern tip of town, which are region-serving facilities. Together, these two areas shall comprise the Pāhoa Regional Town Center. Nearly all of the designated regional town center is within the State Urban District.

Discussion: The Project will support the Puna CDP by complying and integrating, as much as possible, with the land use plans as documented in the Pāhoa Regional Town Center map *(Figure 4-3)*. Per the Hawaiʻi County Planning Department comment letter from March 24, 2021, site selection in closer proximity to both of Pahoa's Town Centers would be more beneficial and increase the Library's accessibility to pedestrians and bicyclists.

Land Use Pattern

Goal 3.1.1.c Services and community facilities are more accessible in village/town centers that are distributed throughout the region, including the underserved subdivisions that have been experiencing higher levels of development growth.

Objective 3.1.2.c Enhance the role of existing and new village/town centers by allowing expanded commercial uses, facilitating the development of farmers markets and community gathering places, opportunities for special needs housing, and infrastructure to support more compact development form and multi-modal travel.

Objective 3.1.2.e Target investments in public services and infrastructure to promote the development of village/town centers and, secondarily, to serve the peripheral subdivision areas.

Action 3.1.3.c Facilitate land use entitlements and other tools for the development of existing and future village/town centers and special design districts by recommending approval of applications for commercial zoning or use permits for existing commercial uses in designated village/town centers that do not presently have appropriate entitlements, and for proposed uses at appropriate nearby locations, provided that the size and use of the expansion area conforms to the criteria applicable to the type of village/town center at that location.

Discussion: Site 1 and Site 2 are located within the Puna CDP's Pāhoa Regional Town Center. The proposed library use at one of these two sites is consistent with the intent of the Puna CDP's Pāhoa Regional Town Center designation. A new library location at one of these two sites will help enhance and diversify uses at the Town Center. However, ability to access the sites via different modes of transportation may be limited.

Per comment letter from Hawaiʻi County Planning Department dated March 24, 2021, limited pedestrian and bicycle access does not align with the Puna Community Development Plan Objective 3.1.2.c. Pedestrian and bicycle access improvement will be considered during the final site selection. Co-locating the library with the Pāhoa Transit Hub would align with the Puna CDP objective for compact and multi-modal development. HSPLS will work with the County of Hawaiʻi

Mass Transit Agency to explore co-location of the library with the Pāhoa Transit Hub in the final site selection.

Transportation

Goal 4.3.1.d Traffic congestion and traffic-related health risks are reduced

Goal 4.4.1.a Highways have design features that improve traffic safety and reduce collisions, particularly at intersections.

Discussion: The Project will not contribute to significant increase in vehicle traffic along the highway. Providing design features along the highway to improve traffic safety and reduce collisions are beyond the scope of improvement of the new library.

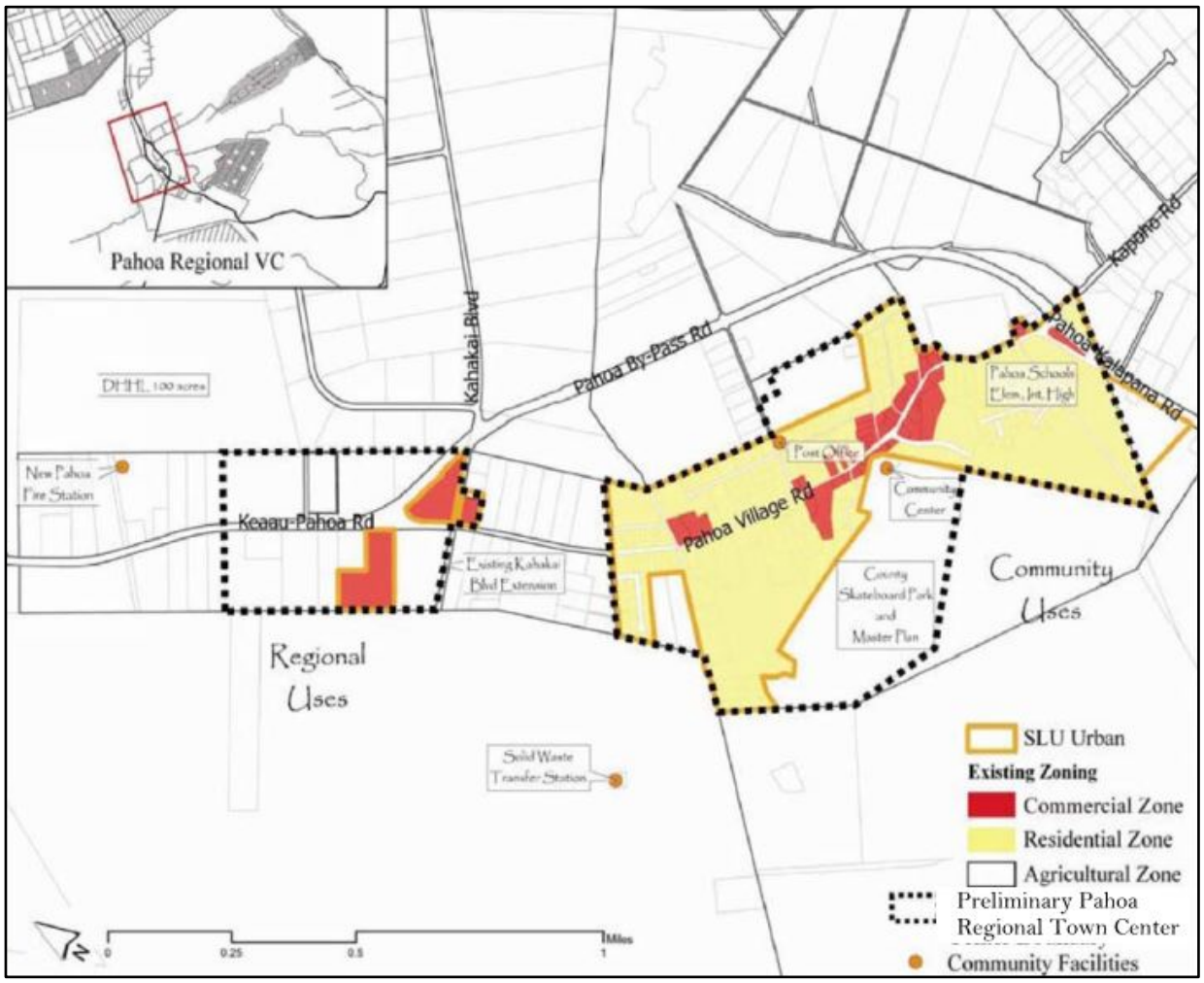

Figure 4-3: Pāhoa Regional Town Center (Puna CDP, 2011)

4.11 PĀHOA VILLAGE DESIGN GUIDELINES

The Pāhoa Village Design Guidelines (October 2013) were prepared by the citizen volunteers of the Pāhoa Regional Town Center Plan Steering Committee under the direction and guidance of the Puna Community Development Plan Action Committee and the Hawai'i County Planning Department. The Pāhoa Regional Town Center Steering Committee and Design Working Group have attempted to embrace this proposition of "Place" in part by utilizing the unique characteristics of Pāhoa and present this collection of guidelines to create a positive village design environment for daily life and commerce. These guidelines attempt to identify the underlying design principles that define Pāhoa's unique historic and architectural character. The design guidelines are intended to help preserve Pāhoa's historic character, allow for new development that compliments and is comparable to Pāhoa's historical character and improve the streetscape to make Pāhoa a more pedestrian friendly environment.

The Pāhoa Design Guidelines apply to all renovations and new developments within the Pāhoa Village district (see Figure 4-4) for which a building permit is required except as noted in Sec. 25. 7.0 (b) of the Zoning Code.

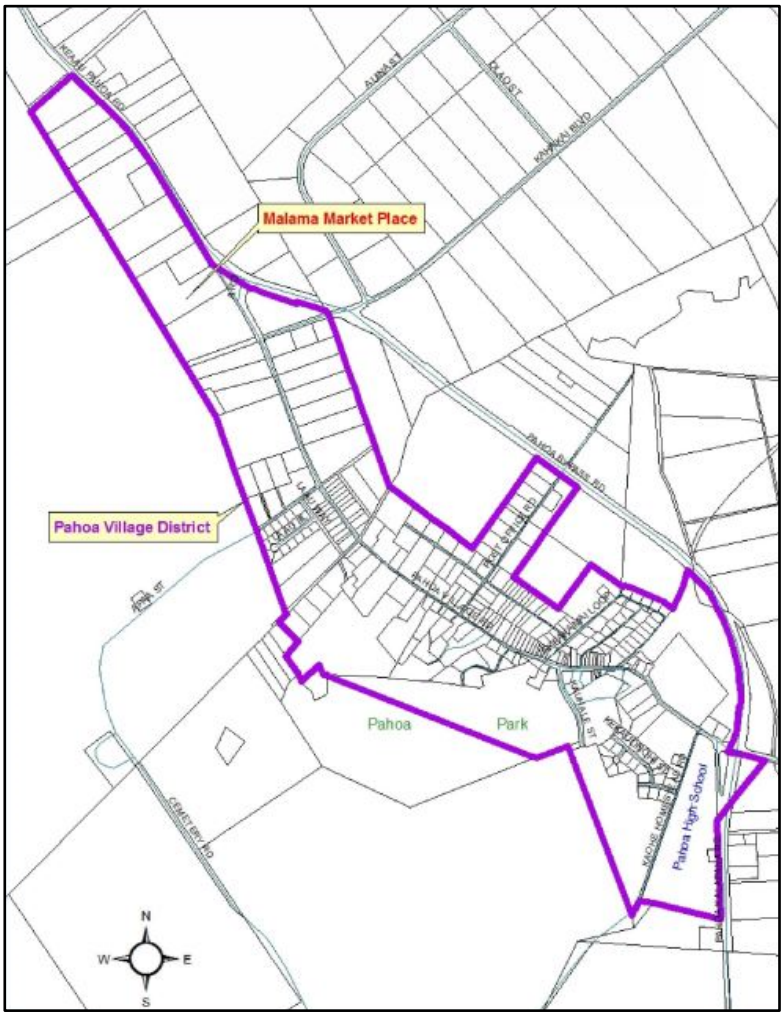

Figure 4-4: Pāhoa Village District

4.11.1 DESIGN GUIDELINE GOALS

- Pāhoa Village is primarily a high density urban core with small scale building design of historic character.
- The Pāhoa streetscape reflects a pedestrian oriented environment with automobile traffic and related amenities being accommodated as a secondary albeit necessary feature.
- Commercial activity is seamlessly integrated with residential uses.
- Commercial operations are at street level with residential or low volume commercial and office spaces on upper floors.
- Where applicable, passageways and courtyards link nearby streets and parking areas.
- Street trees, planter boxes and other appropriate landscaping is common throughout Pāhoa Village District further enhancing its sense of place.

4.11.2 GENERAL DESIGN RECOMMENDATIONS

To the extent reasonably feasible the following features should be incorporated into each new construction and building renovation project within the PV district.

Features to Enhance

- Traditional downtown small scale, being predominantly low -rise and pedestrian-friendly.
- Automobiles and associated amenities should be accommodated as secondary to overall aesthetic appeal and pedestrian oriented priorities.
- Contribute to the variety of small storefront architectural styles from various eras in Pahoa's history. Details on historic buildings should be replicated or preserved, including traditional canopies, false -front parapets, attic vents, cornices, windows, doors, and other architectural elements.
- Pockets of landscaping and greenery, especially in the commercial blocks.
- Passageways and courtyards between buildings, which link nearby streets to parking areas.
- The mass and scale of new buildings should complement, not overwhelm, Pahoa's traditional, small -scale architecture.
- Canopies are highly recommended as means to keep Pahoa pedestrian friendly.
- Canopies should be replaced and /or restored on Pahoa' s historic structures.
- Landscape all parking lots that have street frontage. Plantings should be of size and caliber to screen automobiles from pedestrian sight lines upon completion.
- Efforts should be made to include Native Hawaiian Flora whenever possible.
- Improve and /or maintain neglected and vacant lots.
- Plant street trees where feasible.
- Improve sidewalks to adequate ADA compliant widths; build new sidewalks where necessary, especially in areas where sidewalks are not continuous.
- Utility lines should be located underground from the border of the lot line to the connection of the building.

4.11.3 EXISTING CHARACTER

Most of Pāhoa's older commercial and residential buildings are characterized as “plantation style" and are typical of buildings commonly seen in small towns and villages throughout Hawaiʻi. Vernacular plantation -style building features vary, but generally share the following characteristics:

- **Building height:** usually two stories in height, or some one -story structures with false - fronts nearly as high as two -story buildings.
- **Setback:** no setback from property lines and the sidewalk.
- **Roof form:** gable, shed, or flat roof, often behind a false front.
- **Roof materials:** typically corrugated metal, sometimes tarpaper; later composition shingles were used.
- **Walls:** single -wall construction primarily of vertical tongue- and - groove board, board and batten or horizontal boards.
- **Storefront:** Small, irregular and varied.
- **Entries:** Often flush with the front wall, occasionally recessed to provide shade and shelter for pedestrians.
- **Doors:** Wood and wood - with -glass doors featuring multiple panels, raised panels, or glazing and panels.
- **Windows:** Multiple -light and wood framed, with wood sashes and mullions, double -hung windows double hung windows featuring transoms.

4.11.4 PLANTATION-STYLE COMMERCIAL ARCHITECTURE CHARACTER DEFINING FEATURES

- **False-front facade:** Hawai‘i’s plantation -style commercial architecture typically featured a false front because building materials were quite expensive in relation to the labor costs. Architectural ornamentation was often limited to the building' s facade and resulted in numerous variations of the false front.
- **Canopy:** Canopies across the main facade are a character - defining feature in plantation style commercial structures. Most canopies were shed roofs covered with corrugated metal. A few of Pāhoa's canopies were hipped with shingles. Most canopies were supported by brackets underneath and /or rods above; posts were sometimes used to support canopies in turn -of -the- century structures. Historically, some of Pāhoa' s two - story edifices had wood -framed balconies, which also functioned as canopies. Canopies and balconies provide the shade and weather protection important in a pedestrian - friendly environment. Unfortunately, many canopies have been removed from Pahoa's historic buildings due to deterioration 1 or the requirements of modern building codes.
- **Cornice:** Often used in plantation -style commercial architecture, cornices were sometimes ornamented with rather elaborate brackets, while others were quite simple in detail. Cornices and brackets were an easy way to decorate a building during an age when craftsmen were easy to find, but building materials were not.
- **Attic Vent:** Louvered attic vents were a prominent, distinctive feature of plantation architecture, often appearing in a variety of geometric shapes, including round, square, rectangular, semi - circular, and rectangular with a gable- shaped peak.
- **Kick plate:** Older plantation -style buildings often included an architectural feature known as a " kick plate." Kick plates are wood panels located beneath the windows and approximately 18" above the foundation. Many of Pahoa's plantation -style buildings have been inappropriately remodeled with large plate -glass windows that replaced both the historic windows and kick plates.

Discussion: The Pāhoa Public Library will comply with all associated design guidelines and associated building department approvals. If the library site is ultimately located outside of the Pāhoa Village District, the design should still consider and reference the district guidelines as much as reasonably possible.

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5.0

Findings Supporting Anticipated Determination

5 FINDINGS SUPPORTING ANTICIPATED DETERMINATION

5.1 ANTICIPATED DETERMINATION

After reviewing the significance criteria outlined in Chapter 343, HRS, and Section 11-200-12, State Administrative Rules, Contents of EA, it is anticipated that the proposed action will not result in significant adverse effects on the natural or human environment. A FONSI is determined for this Project.

5.2 REASONS SUPPORTING THE ANTICIPATED DETERMINATION

The potential impacts of the development and future use after construction of the proposed Pāhoa Public Library have been fully examined and discussed in this EA. As stated earlier, there are no significant adverse environmental impacts expected to result from the proposed action. This determination is based on the following assessments:

1. Irrevocably commit a natural, cultural, or historical resources.

The proposed Project does not irrevocably commit natural, cultural, or historical resources. The subject lands are non-cultivated agricultural lands that were converted to other uses. Once a final site has been selected, an official consultation with SHPD will be initiated to determine the best course of action to identify any presence of cultural resources on site. During construction, if there are any cultural or archaeological remnants unearthed, the SHPD will immediately be notified, and their treatment will be conducted in strict compliance with SHPD requirements.

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

The proposed action does not curtail the range of beneficial uses of this location in Pāhoa. The Project will provide much needed library service to the community to meet existing and future demands. Sites 1 and 2 are located in the designated Pāhoa Regional Town Center, which is an area designated for uses that support the growing Pāhoa community. The proposed Project will benefit the Pāhoa residents by providing convenient, adequate, and efficient library services. Construction and operation of the new Pāhoa Public Library will be performed in accordance with Federal, State and County regulations, thereby minimizing potential impacts to the air and water quality and ambient noise levels.

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

The proposed Project will not conflict 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. Construction-related impacts of noise, dust, and emissions will be mitigated by the contractor's compliance with the State Department of Health Administrative Rules.

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

The proposed action will have positive direct and indirect economic benefits to the State and County through the flow of construction spending and employment income through the economy. The new purposeful designed library, which will be located independently from DOE public school campus, will have a direct positive impact on Pāhoa residents' welfare. The proposed action is not expected to adversely affect traditional Hawaiian rights related to gathering, access, or other customary activities within the Project area or its vicinity or any cultural practices or beliefs. There are no Native Hawaiian (or other ethnic group's) cultural practices customarily and traditionally exercised for subsistence, cultural and religious purposes that are known to occur in the Project areas. The scale of the new building will not affect regional wind patterns or important mauka-makai views. Design and construction work will generate indirect and induced employment opportunities and multiplier effects, but not at a level that would generate any significant population expansion. The Project will create short-term and long-term employment that will be beneficial to the local economy.

5. Have a substantial adverse effect on public health.

The proposed action will not substantially affect public health. Typical short-term construction-related impacts (e.g., noise and air quality) are anticipated, but will be temporary and will comply with State and County regulations. Standard construction best management practices will be used to minimize the temporary impacts. Though none are known, if Project area soils are found to contain hazardous or regulated materials, the necessary abatement will be conducted prior to construction in accordance with applicable Federal and State regulations to minimize potential impacts to human health and the environment. Also, the proposed action will not generate sufficient solid waste or other emissions to have a significant adverse effect on public health. If the selected site is accessible by walking or bicycling, the Project will have a positive impact to public health by encouraging more physical activities.

6. Involves adverse secondary impacts, such as population changes or effects on public facilities.

The proposed action will not produce substantial secondary impacts. It is not designed to directly foster population growth or impact public facilities. The Project will support existing and anticipated population growth within the Puna area.

7. Involves a substantial degradation of environmental quality.

The proposed action will not substantially degrade environmental quality. Long-term impacts to air and water quality, noise levels, and natural resources would be minimal. The use of standard construction and erosion control best management practices will minimize the anticipated construction-related short-term impacts.

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

The proposed Pāhoa Public Library will not have considerable effect upon the environment and does not involve a commitment for larger actions.

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

The Project is not anticipated to have substantial adverse effect on rare, threatened or endangered plants or animal species.

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

Short-term effects on air, water quality or ambient noise levels during construction will be mitigated by compliance with County of Hawai'i and State Department of Health rules which regulate construction-related activities.

After construction, the potential impacts to air and water quality are anticipated to be minimal. No significant increases in traffic noise are predicted to occur as a result of Project traffic following Project build-out.

Sustainable design will be implemented wherever practicable. Water efficient appliances and environmentally conscious design efforts such as Low Impact Development strategies will be utilized as much as feasible to reduce minimal impacts on air or water quality.

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

The Project site is not located in an environmentally-sensitive area, such as a flood plain, sea level rise exposure area, beach, erosion-prone area, geologically-hazardous land, estuary, fresh water, or coastal waters. The Project area is not located within the tsunami and the extreme tsunami evacuation zones.

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

The architecture will be designed in accordance with the Pāhoa Village Design Guidelines. Landscaping will also be used to improve the visual character of the constructed site and area. The Project will not have substantial adverse effect on scenic vistas and viewplanes, identified in the county or state plans or studies.

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

Construction and operation of the Project will require similar or less energy consumption and greenhouse gases emission relative to other similar-sized projects. After the Project is completed, energy will be conserved by using energy efficient appliances and fixtures and green design concepts as practicable, therefore limiting greenhouse gases emission.

5.3 SUMMARY

Based on the above findings, further consideration of the Project's impacts through the preparation of an Environmental Impact Statement is not warranted. A FONSI is anticipated for

this Project. Development of this Pāhoa Public Library will provide public benefits while resulting in minimal impacts to the surrounding environment.

6.0

List of References

6 LIST OF REFERENCES

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7.0

List of Agencies, Organizations and Individuals Consulted and/or Informed in the EA Process

7 LIST OF AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED AND/OR INFORMED IN THE EA PROCESS

7.1 CONSULTATION LIST

Early consultation on the Project was carried out with various agencies and stakeholder groups on January 5, 2018. The Draft EA was published in *The Environmental Notice* on February 23, 2021. Publication of the Draft EA was followed by a 30-day public comment period. Parties contacted in preparation of the Draft EA process, Draft EA comments received, and those that will receive a publication notification of the Final EA are identified in *Table 7.1* below. Comment letters received during the Draft EA public comment period are provided in *Appendix H*.

Table 7-1 Parties Consulted and/or Informed in the EA Process

Respondents and Distribution	Early Consultation	Early Consultation Comments Received	Receiving Draft EA	Draft EA Comments Received	Receiving Final EA/ FONSI
Federal Agencies					
U.S. Fish and Wildlife Service	×		×		×
State Agencies					
Department of Accounting and General Services	×		×		×
Department of Agriculture	×		×		×
Department of Business, Economic Development & Tourism (DBEDT)	×		×		×
DBEDT Office of Planning	×		×	×	×
Department of Defense	×		×		×
Department of Education	×		×		×
Department of Hawaiian Homelands	×	×	×		×
Department of Health (DOH) Environmental Planning Office	×	×	×		×
DOH-Clean Air Branch	×		×	×	×
Department of Human Services	×	×	×	×	×
Department of Labor and Industrial Relations	×		×		×
Department of Lands and Natural Resources (DLNR), Commission on Water Resource Management	×		×	×	×
DLNR, Engineering Division	×	×	×	×	×

Table 7-1 Parties Consulted and/or Informed in the EA Process

Respondents and Distribution	Early Consultation	Early Consultation Comments Received	Receiving Draft EA	Draft EA Comments Received	Receiving Final EA/ FONSI
DLNR, Division of Forestry & Wildlife	×		×	×	×
DLNR, Land Division	×	×	×	×	×
DLNR, Historic Preservation Division	×		×		×
Office of Environmental Quality Control			×		×
Department of Transportation	×	×	×	×	×
Hawai‘i Housing Finance and Development Corporation	×		×		×
Hawai‘i State Library	×		×		×
Hawai‘i State Public Library System	×	×	×		×
Hilo Public Library			×		×
Kea‘au Public Library			×		×
Mountain View Public Library			×		×
Office of Hawaiian Affairs	×	×	×		×
Pāhoa High and Intermediate School	×		×		×
Pāhoa Elementary School	×		×		×
Pāhoa Public School and Library	×	×	×		×
University of Hawai‘i, Institute of Astronomy				×	×
County of Hawai‘i Agency					
Department of Environmental Management	×	×	×		×
Department of Parks and Recreation	×		×		×
Department of Planning	×	×	×	×	×
Department of Public Works	×	×	×	×	×
Department of Research & Development	×		×		×
Department of Transportation	×		×		×
Department of Water Supply	×	×	×	×	×
Fire Department	×	×	×		×
Office of Housing and Community Development	×		×		×

Table 7-1 Parties Consulted and/or Informed in the EA Process

Respondents and Distribution	Early Consultation	Early Consultation Comments Received	Receiving Draft EA	Draft EA Comments Received	Receiving Final EA/ FONSI
Office of the Mayor	×		×		×
Police Department	×	×	×	×	×
State of Hawai‘i Legislature					
Senator Russell E. Ruderman (D)	×		×		×
Hawai‘i County Council Member					
Valerie T. Poindexter, Council Chair	×		×		×
Eileen O’Hara, Ph.d., Puna District (eastern)	×	×	×		×
Jen Ruggles, Puna District (western)	×		×		×
Residents/Civic Groups					
Puna Community Development Action Committee	×	×	×		×
Friends of the Pāhoa Library	×	×	×	×	×
Mainstreet Pāhoa Association		×	×		×
Maku‘u Farmers’ Association	×		×		×
Gaila Vidunas				×	×
Dr. Stephen M. Smith				×	×
Deborah Ward				×	×
Linda Moore				×	×
George Gorman				×	×
Lucky Joseph				×	×
Ben				×	×
Bobby Camara				×	×

7.2 SUMMARY OF COMMENTS

Table 7-2 summarizes comments received during the DEA 30-day public comment period by major topics and associated responses. Refer to comment letters in *Appendix H*.

Table 7-2 DEA Comments Summary and Responses

Comments	Commenter and Date of Comment Letter	Responses
Site 1 – Fire Station / DMV (Support)		
I believe the best and only choice for the new library location is choice #1, by the police station. I hope you will see its many advantages.	Cheryl Carroll, Board of the Friends of Pāhoa Library (3/20/2021)	Comment is acknowledged.
Excellent location for car access from the Pahoa area, visibility to the community, easy to give directions, reachable by public transportation. This location would help the community hub aspect of the current library to expand. This site would always have the police and the fire station nearby to create a sense of security. Hitchhikers may not seem like an important community anywhere else but there were a significant number of them in the Pahoa area before COVID. Hitchhiking and walking access would be best at this site.	Lee Maniscalco, President Friends of Pāhoa Library (3/18/2021)	Comment is acknowledged
Site #1: the best location choice - Necessary infrastructure (water, electricity, telephone, broadband) readily brought in from Highway 130 - Located on the main road (Hwy 130) leading into Pahoa, making access by car or bus very easy - Located a very short distance of the Woodlawn Center, and the Puna Makai Shopping Centers, the new focal points of Pahoa town	Gaila Vidunas Resident (3/24/2021)	Comment is acknowledged.

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
High visibility to the public.		
Site 1 – Fire Station / DMV (No Support)		
Site 1 is approximately a quarter mile away from other shops and services. Pedestrian and bicycle accessibility is limited because of its location on a major highway. High-speed traffic makes walking and biking conditions uncomfortable and may deter those modes of travel. Thus, Site 1 does not align with the Puna Community Development Plan "Objective 3. 1. 2. c Enhance the role of existing and new village/town centers by allowing expanded commercial uses, facilitating the development of farmers markets and community gathering places, opportunities for special needs housing, and infrastructure to support more compact development form and multi-modal travel."	Zendo Kern, Planning Director Hawai‘i County Planning Department (3/24/2021)	Comment is acknowledged. Consistency with the Puna Community Development Plan Objective 3.1.2.c will be discussed in Chapter 4.
- There are known Hawaiian cultural features that would be impacted by development. - Subterranean voids jeopardize safety to people and property during and post-construction. - Destruction to surface vegetation would destroy subterranean ecosystem.	Dr. Stephen M. Smith Resident (3/24/2021)	Comment is acknowledged. HSPLS will work with the SHPD to identify location of the subterranean cultural resources and determine suitability for construction at this site in the final site selection process.
Would be a very poor choice. Lack of critical information regarding the cultural, archaeological and ecological values that have been known, reported and discussed for years with SHPD, NARS, County of Hawai'i Planning Department, and Civil Defense. There is extensive documentation of subterranean passages that run under the property.	Deborah Ward Resident (Feb 2021)	Comment is acknowledged. HSPLS will continue to work with the SHPD to identify location of the subterranean cultural resources and determine suitability for construction at this site in the final site selection process.

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
Site 2 – Pāhoa District Park (Support)		
As noted in our comments during the Early Consultation review, the HDOT remains in favor of Alternative Site 2, the Pahoa District Park with the least traffic impact to the State highway facilities	Jade T. Butay, Director of Transportation, State of Hawai‘i Department of Transportation	Comment is acknowledged. HSPLS concerns about infrastructure costs (roadways) and potential hours conflict, security issues after hours
I would like to see the new Pahoa library built on Site 2, at the Pahoa District Park. I would much prefer to be able to access the library without having to get on the highway, especially during peak traffic hours. I like the location of the current library and at least with Site 2 the library would still be in Pahoa.	Linda Moore Resident (3/25/2021)	Comment is acknowledged.
I live in Leilani and I vote for the second possible site above the Community Center. Libraries and highway noises don't go well together. And it would be easier for more young people to get to.	George Gorman Resident (3/22/2021)	Comment is acknowledged.
I think site 2 would be best based on previous lava flows that has happened. Mother nature has a way of popping up and it wasn't too long ago the whole location was evacuated.	Lucky Joseph Resident (2/24/2021)	Comment is acknowledged.
Site 2 – Pāhoa District Park (No Support)		
My view is that this will make the library less visible to the community. The library users would be more of an in group. The area seems hidden and lonely and deserted at night.	Lee Maniscalco, President Friends of Pāhoa Library (3/18/2021)	Comment is acknowledged.
- That particular section of the county park is prone to flooding: the recent weeks of heavy rain have turned it into a lake. It would take a substantial drainage plan/project to fix. Other infrastructure is also	Gaila Vidunas Resident (3/24/2021)	Comment is acknowledged. Drainage system will be designed to appropriately manage run-offs if Site 2 is selected as the final site.

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
more distant to bring in than for Sites #1 or #3. - The road connecting the park and Pahoa Village Road is too narrow and winding for a county bus. This site is mauka from town, making it a strenuous trek, in an area that averages over 120" of rain per year, for anyone walking from the Pahoa Village Road, and/or the bus stop - Poor visibility to the public		
Site 3 – Highway 130 Mauka (Support)		
1.5 miles north of Pahoa. I'm not sure exactly where this is but it is on the highway which makes car access and visibility good and the site is big.	Lee Maniscalco, President Friends of Pāhoa Library (3/18/2021)	Comment is acknowledged
Site 3 – Highway 130 Mauka (No Support)		
While it shares some of the positive attributes of Site #1 (infrastructure accessibility, on Hwy 130 for car and bus access), the fact that it is a far distance from Pahoa itself would make a less desirable location.	Gaila Vidunas Resident (3/24/2021)	Comment is acknowledged.
It's too far away for the walkers. I have spent a lot of time in the library and observing the population in Pahoa. There are a lot of walkers.	Lee Maniscalco, President Friends of Pāhoa Library (3/18/2021)	Comment is acknowledged.
Alternative Site		
The cost of the required infrastructure and the desire for safe options for users to access the library other than by individual cars are reason to continue to collaborate with the County of Hawai'i Mass Transit Agency on the potential for co-locating the library with the proposed Transit Hub. Co-location would not only increase transportation options for trips to the	Mary Alice Evans, Director State Office Of Planning (3/29/2021)	Comment is acknowledged. HSPLS will work with the Hawai'i County to explore co-location of the library with the Pāhoa Transit Hub in the final site selection in order to accommodate

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
library, but could also help address the request for overflow parking for special events. OP also supports any DAGS and HSPLS action to pursue the viability of co-location of the proposed Pahoa Public Library and the County Pahoa Transit Hub.		infrastructure costs and pedestrian/bicycle accessibility. Location in the back – far to walk/security reason.
It is hoped that a suitable site closer Pāhoa Village to could be located to increase safe access by pedestrians and bicyclists, and to enable the library to become a destination and gathering place for the community.	Mary Alice Evans, Director State Office Of Planning (3/29/2021)	Pedestrian and bicycle accessibility, as well as community gathering capabilities will be explored during the final site selection process.
County of Hawaii has recently discussed with the Hawaii State Public Library Systems its interest in a collaboration/ partnership with the State to co-locate the Pāhoa Public Library with the Pāhoa Transit Hub. Benefits of colocation includes providing an integrated and improved level of service, both collectively and as individual services, compared to stand alone facilities. This also aligns with the Puna CDP objective for compact and multi-modal development previously mentioned. The County is in the beginning stages an Environmental Assessment process for the Pāhoa Transit Hub Project. The DEA for the Pāhoa Transit Hub will include analysis of co- locating the two projects and we request that prior to acceptance of a Final EA for the Pāhoa Public Library, co-location be taken into consideration.	Zendo Kern, Planning Director, Hawai‘i County Planning Department (3/24/2021)	Comment is acknowledged. HSPLS will work with the Hawai‘i County to explore co-location of the library with the Pāhoa Transit Hub in the final site selection to achieve goals in compact and multi-modal development. Depending on location and schedule.
Site selection in closer proximity to both of Pahoa' s Town Centers in Figure 5- 2 on page 5- 8 of the Puna Community Development Plan (Puna CDP) would be more beneficial and increase the Library's accessibility to pedestrians and bicyclists.	Zendo Kern, Planning Director Hawai‘i County Planning Department (3/24/2021)	Comment is acknowledged and accessibility for pedestrians and bicyclists in compliance with the Puna community Development Plan will

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
		be considered in the final site selection
Plans and Policies Compliance		
Consider a County-administered district boundary amendment to the Rural or Urban land use district if the selected site lies within a County rural or urban-like plan designation or rural or urban County zoning district.	Mary Alice Evans, Director State Office of Planning (3/29/2021)	Comment is acknowledged. HSPLS will work with the Hawai'i County to identify land use permit options that is appropriate for the Project, once the final site has been selected.
Overall, the DEA generally addresses issues of concern and points of interest with respect to Coastal Zone Management Act (CZMA) matters, including discussion of the Proposed Action in relation to CZM objectives and policies in Statutes (HRS) Chapter 205A-2. In addition, the study sites do not lie within the Special Management Area (SMA), any shoreline setback area, and do not require permits that would trigger a CZMA federal consistency determination.	Mary Alice Evans, Director State Office of Planning (3/29/2021)	Comment is acknowledged. CZMA federal consistency determination will not be triggered, given the sites are out of the shoreline setback and any Special Management Areas
Consideration should be given in the Final EA to calling out the role of the library in providing access to broadband and the availability of broadband infrastructure in pertinent HRS Chapter 226 policy sections. In addition, the Final EA should note the proposed action aligns with HRS §226-104(B)(2), regarding use of available marginal or nonessential agricultural lands for appropriate urban use, which helps support the use of lands in the State Agricultural District.	Mary Alice Evans, Director State Office of Planning (3/29/2021)	Consistency with the HRS Chapter 226 policy sections and HRS §226-104(B)(2), regarding use of available marginal or nonessential agricultural lands for appropriate urban use will be discussed in Chapter 4.
Contact the Permitting Section of the Clean Air Branch to determine if your project requires an air pollution control permit.	State of Hawai'i Department of Health, Clean Air Branch (3/24/2021)	During Project construction permit phase, the Permitting Section of the Clean Air Branch will be consulted to determine if the Project requires

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
		an air pollution control permit.
If the project includes construction or demolition activities that involve asbestos You must contact the Asbestos Abatement Office in the Indoor and Radiological Health Branch.	State of Hawai‘i Department of Health, Clean Air Branch (3/24/2021)	The Asbestos Abatement Office in the Indoor and Radiological Health Branch will be contacted, if the Project includes construction or demolition activities that involve asbestos.
You must control the generation of all airborne, visible fugitive dust. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does not require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.	State of Hawai‘i Department of Health, Clean Air Branch (3/24/2021)	Project construction will comply with air pollution control rules and regulations set forth by Hawai‘i Administrative Rules, §11-60.1-33 on Fugitive Dust.
Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust	State of Hawai‘i Department of Health, Clean Air Branch (3/24/2021)	Comment is acknowledged. Project construction will comply with air pollution control rules and regulations set forth by Hawai‘i Administrative Rules, §11-60.1-33 on Fugitive Dust
All activities shall comply with the requirements of the Hawaii County Code, Chapter 10, Erosion and Sedimentary Control.	Alan K. Thompson, Division Chief, Engineering Division Department of Public Works (3/24/2021)	The Project will comply with the requirements of the Hawai‘i County Code, Chapter 10, Erosion and Sedmentary Control.
Kauhale Street and Apaa Street are both maintained by the County. Therefore, construction within these right-of-ways	Alan K. Thompson, Division Chief, Engineering Division	Comment is acknowledged. Construction activities within the County

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
shall comply with HCC, Chapter 22, County Streets.	Department of Public Works (3/24/2021)	right-of-ways will comply with HCC, Chapter 22, County Streets.
All development-generated runoff shall be disposed of on site and not directed toward any adjacent properties.	Alan K. Thompson, Division Chief, Engineering Division Department of Public Works (3/24/2021)	The drainage systems will be designed according to the State and County standards and will effectively retain stormwater within the sites. Low Impact Development (LID) opportunities will be explored with the storm drainage site design.
Program and Design Recommendations		
Just trying to suggest that with the new generation of people reading books online that you design a library that is multi purpose. more community use than just a moldy book shelf. maybe with an outdoor theater/stage area can be used for both book reading groups and outdoor events. indoor auditorium for author presentations and movies.	Ben Resident (3/17/2021)	Comment is acknowledged. Recommendations for library amenities will be considered during the future design phase.
Before Covid the current library was the third busiest library (based on circulation) on the island. An area earmarked for Friend's book sales would be great! More computers and fast wifi. With a good sized meeting room and good parking it would be possible to have actual community classes, events and meetings.	Lee Maniscalco, President Friends of Pāhoa Library (3/18/2021)	Comment is acknowledged. Recommendations for the library amenities will be considered during the future design phase.
Lighting should conform to standards established by the Hawai'i County lighting ordinance. All lighting should be fully shielded.	Karen Meech, Interim Director Hawai'i Institute of Astronomy	Comment is acknowledged. Lighting of the Project will comply with the Hawai'i County lighting ordinance. Fully

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
	(3/18/2021)	shielded light fixtures will be used to minimize impacts to the night sky.
Minimum possible amount of outdoor lighting should be used. Motion sensor activated lighting is strongly preferred wherever feasible.	Karen Meech, Interim Director Hawai'i Institute of Astronomy (3/18/2021)	Comment is acknowledged. Outdoor lighting will be limited to security lights. Fully shielded light fixtures will be used to minimize impacts to the night sky.
Blue light is most harmful to the observatories, blue-deficient lighting should be selected such as filtered LED lights or amber LED lights. Under no circumstances should high-intensity discharge lamps such as metal halide be used; fluorescent lights also must be avoided.	Karen Meech, Interim Director Hawai'i Institute of Astronomy (3/18/2021)	Comment is acknowledged. Lighting of the Project will comply with the Hawai'i County lighting ordinance.
White light should be avoided because the blue component of white light is very damaging to astronomy. White light should have a Correlated Color Temperature of 2700 K or below.	Karen Meech, Interim Director Hawai'i Institute of Astronomy (3/18/2021)	Comment is acknowledged. Lighting of the Project will comply with the Hawai'i County lighting ordinance.
Artificial lighting can adversely impact seabirds that may pass through the area at night by causing disorientation. For nighttime lighting that might be required, DOFAW recommends that all lights be fully shielded to minimize impacts. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15.	David Smith, Administrator Department of Land and Natural Resources (DLNR) – Department of Forestry and Wildlife (DOFAW) (3/16/2021)	Comment is acknowledged. Outdoor lighting will be limited to security lights. Fully-shielded light fixtures will be used to minimize impacts to seabirds. Nighttime construction will be avoided during the seabird fledging period (September 15 through December 15) to prevent injury to seabirds.

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawai'i- Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project (https://sites.google.com/site/weedriskassessment/home). We recommend that you refer to www.pllantpono.org for guidance on selection and evaluation for landscaping plants.	David Smith, Administrator Department of Land and Natural Resources (DLNR) – Department of Forestry and Wildlife (DOFAW) (3/16/2021)	Landscaping will use appropriate plant species for the area and avoid the planting/use of invasive species in landscaping.
Please put in nice public restrooms. The current library (before COVID) had one of the only public restrooms in Pahoa, a real service!	Lee Maniscalco, President Friends of Pāhoa Library (3/18/2021)	Comment is acknowledged. The new Pāhoa Public Library will include public restrooms.
Recommend water efficient fixtures be installed and practices implemented to reduce increased demand.	Kaleo Manuel, Deputy Director Commission on Water Resource Management (CWRM) (4/1/2021)	Comment is acknowledged. Water efficient fixtures, along with water efficient landscape and irrigation system will be utilized to reduce water demands.
Recommend BMP for stormwater management to minimize impact on area's hydrology; prevent polluted runoff	Kaleo Manuel, Deputy Director Commission on Water Resource Management (CWRM) (4/1/2021)	Best management practices will be implemented to minimize impact on area's hydrology and prevent polluted runoff. The drainage systems will be designed according to the State and County standards and will effectively retain stormwater within the sites. Low Impact Development (LID)

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
		opportunities will be explored with the storm drainage site design. The Project will also comply with the requirements of the Hawai‘i County Code, Chapter 10, Erosion and Sedmentary Control.
Recommend use of alternative water sources, wherever practicable.	Kaleo Manuel, Deputy Director Commission on Water Resource Management (CWRM) (4/1/2021)	Comment is acknowledged. Use of alternative water sources will be explored during the design phase.
Recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii.	Kaleo Manuel, Deputy Director Commission on Water Resource Management (CWRM) (4/1/2021)	Landscape irrigation conservation best management practices will be incorporated to the extent possible.
Reducing water use, stormwater management BMPs may earn credit towards LEED Certification.	Kaleo Manuel, Deputy Director Commission on Water Resource Management (CWRM) (4/1/2021)	Comment is acknowledged.
Recommend participating in Hawaii Green Business Program	Kaleo Manuel, Deputy Director Commission on Water Resource Management (CWRM) (4/1/2021)	Comment is acknowledged. Participation in the Hawai‘i Green Business Program will be considered during Project implementation.
HDOT encourages pedestrian enhancement should be looked at given that the site	Jade T. Butay, Director of Transportation,	Comment is acknowledged.

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
location may generate pedestrian movement. As stated in the assessment, the site is only a half mile to the closest residential area and a quarter mile to the closest commercial center	State of Hawai‘i Department of Transportation (3/31/2021)	Pedestrian enhancement will be explored once the final site has been selected.
Natural Hazards		
Subject parcels are in area designated as Zone X on the Flood Insurance Rate Map (FIRM) by the Federal Emergency Management Agency (FEMA). Zone X is an area determined to be outside the 500-year floodplain.	Alan K. Thompson, Division Chief, Engineering Division Department of Public Works (3/24/2021)	Comment is acknowledged. The Project site will be at minimal risk from the threat of flooding.
Best is not to build in hazardous areas! I remind you that in 2014 a lava flow entered the premises of Pahoa Dump. Spending tens of millions of dollars on a Library in Pahoa seems not a good idea. If a community gathering place and access to broadband is needed, build that.	Bobby Camara Resident (3/5/2021)	Comment is acknowledged. Lava hazard will be considered in the final site selection.
None of the sites are on Maunaloa. Use Geological Maps to determine flow ages and origins.	Bobby Camara Resident (3/5/2021)	Comment is acknowledged. We have revised Section 2.2 to state that the sites lie on the slopes of Kīlauea.
Page 5-3, Paragraph 11. Although the conventional language used here does not cite lava hazards, the Final EA should include site/facility vulnerability to lava hazards in the discussion.	Mary Alice Evans, Director State Office of Planning (3/29/2021)	Comment is acknowledged. The Final EA will expand discussion on Lava hazards.
Natural Resources		
To prevent the spread of Rapid ‘Ōhi‘a Death (ROD), if ‘ōhi‘a trees are present and will be removed, trimmed, or potentially injured DOFAW requests that the	David Smith, Administrator	Comment is acknowledged. Recommendations

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
information and guidance at the following website be reviewed and followed: https://cms.ctahr.hawaii.edu/rod.	Department of Land and Natural Resources – Division of Forestry and Wildlife (3/16/2021)	from the website will be followed to prevent the spread of ROD during the removal, trimming, or potential injury of ʻōhiʻa trees.
DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid ʻŌhiʻa Death), vertebrate and invertebrate pests (e.g. Little Fire Ants), or invasive plant parts that could harm out native species and ecosystems. We recommend consulting the Big Island Invasive Species Committee att (808) 933-3340 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be clean of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol soluion to prevent the spead of Rapid ʻŌhiʻa Death and other harmful fungal pathogens.	David Smith, Administrator Department of Land and Natural Resources – Division of Forestry and Wildlife (3/16/2021)	Precautions will be taken to minimize the movement of plant or soil material. Gear potentially contains soil will be cleaned with a 70% alcohol solution to prevent spread of ROD. The Big Island Invasive Species Committee will be consulted in planning, design, and construction of the project once a final site has been selected.
Hawaiian Hawk or ʻIo (Buteo solitarius) is known to occur in the project vicinity. DOFAW recommends surveying the area to ensure no Hawaiian Hawk nests are present if trees are to be cut. ʻIo nests might be present during the breeding season from March to September.	David Smith, Administrator Department of Land and Natural Resources – Division of Forestry and Wildlife (3/16/2021)	Comment is acknowledged. Once the final site has been selected, the site will be surveyed for the presence of Hawaiian Hawk and its habitat. A survey will also be done before tree trimming activities during the breeding season from March to September.
Hawaiian Hoary Bat or ʻŌpeʻapeʻa (Lasiurus cinereus semotus) has the	David Smith, Administrator	Comment is acknowledged. Woody

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
potential to occur in the vicinity of the project area and may roost in nearby trees. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.	Department of Land and Natural Resources – Division of Forestry and Wildlife (3/16/2021)	plants greater than 15 feet tall will not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15) without consulting DOFAW or qualified professional.
Infrastructure		
Early consultation comments, found on page 7- 3, from Police and HDOT regarding access to Site 1 conflict with each other. No effort was made to incorporate them in site planning to address or provide alternate access to Site 1. Similarly, a Traffic Impact Analysis Report (TIAR) was only conducted for Site 1 utilizing the existing access. We request that an alternative vehicular access point connecting to Auina Rd be evaluated and included in an updated TIAR and the Final EA.	Mary Alice Evans, Director State Office of Planning (3/29/2021)	Comment is acknowledged. Alternate access to Site 1 will be discussed in the Final EA.
Proposed water sources and projected demands, both potable and non-potable, should be identified and used to estimate demands.	Kaleo Manuel, Deputy Director Commission on Water Resource Management (4/1/2021)	According to comments from the County Department of Water Supply, alternative water sources would likely be required for any of the sites. Water sources and projected demands will be examined in detail during the design phase.
A discussion of the potential impacts on water resources and other public trust uses of water should be included, and any proposed mitigation measures described. Water conservation and efficiency	Kaleo Manuel, Deputy Director Commission on Water Resource Management	Potential impacts and mitigation measures on water resources and public trust uses will be discussed.

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
measures to be implemented should also be discussed.	(4/1/2021)	
The Commission supports the use of alternative resources wherever practicable to conserve natural supplies. It is the policy of the Water Commission to promote the viable and appropriate reuse of reclaimed water insofar as it does not compromise beneficial uses of existing water resources.	Kaleo Manuel, Deputy Director Commission on Water Resource Management (4/1/2021)	Alternative resources where practicable will be coordinated once a final site has been selected.
Submit a detailed estimated maximum daily water usage calculation for the proposed public library, prepared by a professional engineer, licensed in the State of Hawai'i, for review and approval. The water usage calculations should include the total estimated daily water usage in gallons per day (GPD) and the estimated peak flow, in gallons per minute (GPM). Based on the water usage calculations provided, the Department will determine if the existing water system is adequate to support the additional water demand, facilities charge, and necessary water system improvement. Please be informed that the water availability in the area is limited, and additional water may not be available.	Keith K. Okamoto, Manager-Chief Engineer Department of Water Supply (3/17/2021)	We acknowledge your comments that water availability in the area is limited. Water demands will be coordinated with the County Department of Water Supply during the design phase.
Page 2-4, Impacts and Mitigation, Storm water Runoff. The County Department of Public Works commented that all runoff shall be retained onsite. Specific reference to the use of low impact development techniques or practices should be included in the Final EA.		Runoff from construction will be retained onsite. Low impact development techniques will be discussed in the Final EA.
On Page 4, 1.0 Executive Summary states that "The addition of project trips are expected to exacerbate undesirable operations in the PM peak hour." However, the study did not address or offer any recommended mitigation to the traffic attributed by the project. The DEA and the TIAR should be revised to provide a	Jade T. Butay, Director of Transportation State of Hawai'i Department of Transportation (3/31/2021)	Comment is acknowledged. Mitigation to the traffic attributed by the project will be addressed in the Final EA.

Table 7-2 DEA Comments Summary and Responses		
Comments	**Commenter and Date of Comment Letter**	**Responses**
discussion on mitigation recommendations to the project traffic.		
On Page 12, 3.1.1 Existing Roadway System states that "Pahoa Bypass Road is under the jurisdiction of the County of Hawaii and it is a north-south two-lane facility with a posted speed limit of 45 mph." We not that Pahoa Bypass Road is part of Route 130 under the State jurisdiction of the HDOT; therefore, the statement should be corrected.	Jade T. Butay, Director of Transportation State of Hawai'i Department of Transportation (3/31/2021)	Comment is acknowledged. The statement will be corrected in the Final EA.
The TIAR for the Alternative Site 2 should be revised or an addendum should be included, since it did not provide a conclusion or any mitigation recommendations.	Jade T. Butay, Director of Transportation State of Hawai'i Department of Transportation (3/31/2021)	If Site 2 is selected as the final site, more detailed analysis will be conducted to identify the appropriate driveway configuration and other needed roadway improvements.
On the Multi-Modal Assessment, we found the two statements below appear to be inconsistent: "People on bicycles may also access the project site from the adjacent residential neighborhoods as well as the Pahoa Village Center via Keaau-Pahoa Road." However, the 3rd paragraph further stated that, "As noted previously, no existing pedestrian or bicycle facilities connect to the proposed library site on Keaau-Pahoa Road." Therefore, the study should be revised for clarity.	Jade T. Butay, Director of Transportation State of Hawai'i Department of Transportation (3/31/2021)	Comment is acknowledged. The statement will be clarified in the Final EA.

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Appendices

Appendix A

Final Traffic Impact Analysis Report
Pāhoa Public Library Site Selection

FEHR PEERS

Pahoa Public Library Site Selection

Final Transportation Impact Analysis Report

Prepared for: G70

February 9, 2018
(Revised June 2021)

SD17-0243

FINAL REPORT

Transportation Impact Analysis for the Pahoa Public Library Site Selection in Puna, Hawaii

Prepared for:
Group 70 International Inc.

February 9, 2018 (Revised June 16, 2021)

SD17-0243

FEHR PEERS

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1.0 EXECUTIVE SUMMARY

The following findings are documented in this transportation impact analysis report (TIAR):

- The proposed project is the construction of a new library on a 19.5-acre undeveloped parcel which, is adjacent to the Pahoa Fire Station and the Pahoa Police Station Vehicle Registration and Licensing Division on Keaau-Pahoa Road. The new project site would include a 15,000 square foot library facility with an adjacent 17,500 square foot parking lot. The Library parking facility would contain 50 parking stalls.

- The proposed project (i.e., the new Pahoa Public Library Facility) is estimated to generate 1,055 weekday daily vehicle trips, including 123 during the PM peak hour (59 inbound/64 outbound). Some of these trips are expected to be diverted from the existing Pahoa Public Library (adjacent to Pahoa High and Intermediate School) to the preferred project site adjacent the existing Pahoa Police Station Vehicle Registration and Licensing Division on Keaau-Pahoa Road. No diversion was included to provide a more conservative analysis.

- Under Existing (2018), Near Term No Project (2021), and Near Term Plus Project (2021) Conditions, the Project Driveway intersection (Keaau-Pahoa Road / Project Driveway) is projected to operate at LOS D or better during the weekday PM peak hour. Accordingly, no roadway improvements at this location are needed or recommended.

- Under Existing (2018), Near Term No Project (2021), and Near Term Plus Project (2021) Conditions, the study intersection of Keaau-Pahoa Road/Pahoa Bypass Road is projected to operate at LOS F during the PM Peak Period. The addition of project trips are expected to exacerbate undesirable operations in the PM peak hour. Reducing delay at the Keaau-Pahoa Road/Pahoa Bypass Road intersection would essentially require widening the roundabout to provide an additional circulation lane or a right-turn bypass lane (to reduce the circulating volume). However, heavy congestion at this intersection is primarily attributed to regional traffic demand, and the cost to widen the roundabout is beyond the scope of a small, single development. Furthermore, project-generated traffic is estimated to be only 2% of the total traffic at that intersection in the PM peak hour.

- Providing alternate vehicular access via Auina Street only would not change the overall study findings, but it would require more traffic to travel through the roundabout, which is already expected to operate at an undesirable level at project buildout as noted above. Under this scenario, project-generated traffic would be 3% of the total PM peak hour volume.

2.0 INTRODUCTION

This transportation impact analysis report (TIAR) presents the results of the study conducted by Fehr & Peers for the proposed new library in the community of Pahoa on the island of Hawaii. The TIAR includes a description of the assumptions and methods used to conduct the study, as well as a discussion of the results. This TIAR was conducted in accordance with the guidelines and standards of the affected government agencies. A schematic site plan of the favored location was used as a reference during this study and is shown in **Figure 1**.

2.1 PROJECT DESCRIPTION

The proposed project is the development of a new library site in Pahoa, Hawaii which will replace the current Pahoa Public Library. The existing library is located on the southeastern side of Pahoa High and Intermediate School, adjacent to Pahoa Village Road. Access to the existing library site is provided via an unnamed road that connects to Pahoa Village Road mauka of Pahoa Bypass Road. The existing library parking capacity is limited with only six (6) visitor stalls, four (4) designated staff parking spaces, and a single accessible parking space.

The preferred library site is a 19.5-acre undeveloped parcel that is adjacent to the Pahoa Fire Station and the Pahoa Police Station Vehicle Registration and Licensing Division on Pahoa Bypass Road. The new project site would include a 15,000 square foot library facility with an adjacent 17,500 square foot parking lot. The Library parking facility would contain 50 parking stalls in addition to vehicular circulation areas. The project site is located approximately 0.3 miles north of the Keaau-Pahoa Road and Pahoa Village Rd roundabout intersection, and it would share driveway access with the Pahoa Fire Department and the Pahoa Police Station Vehicle Registration and Licensing Division along Keaau-Pahoa Road. The location of the project site and the immediate study area are shown on **Figure 2**.

Figure 1

Pahoa Public Library
Site Plan

2.2 PROJECT STUDY AREA

The study analyzed the potential project-related traffic impacts under the typical weekday PM peak hour traffic conditions under current conditions and future project full build out conditions. The transportation analysis evaluated the operations at two (2) intersections in the vicinity of the proposed project. The analyzed intersections are listed below and are shown on **Figure 2**:

1. Keaau-Pahoa Road / Project Driveway
2. Keaau-Pahoa Road – Pahoa Bypass Road/ Pahoa Village Road

The operations of the study intersections were evaluated during the weekday evening (PM) peak hours for the following scenarios:

- **Existing Conditions** – The analysis of existing traffic conditions was based on 2018 counts collected for the analyzed PM peak hour. The existing conditions analysis also includes a description of key area roadways and an assessment of bicycle, pedestrian, and transit facilities and services near the site.

- **Near Term (2021) Baseline Conditions** – Existing peak-hour volumes were increased to account for approved (but not yet occupied) development projects and growth in the area until the opening year of the project in 2021. Traffic growth was estimated based on an annual growth factor to account for ambient growth *plus* traffic generated from approved but not yet constructed developments in the study area. This scenario forms the baseline for identifying project impacts.

- **Near Term (2021) Plus Project Conditions** – This traffic scenario analyzes projected traffic volumes and an assessment of operating conditions under Near Term Baseline Conditions *plus* the addition of project-generated traffic. The near term impacts of the proposed project on future traffic conditions were identified.

While impact analyses are normally conducted for both the morning (AM) and evening (PM) peak periods, the library is expected to generate a negligible amount of traffic during the AM commute peak hour. The current facility opens at 10AM and the new facility is not expected to open before 9AM. Thus, no AM peak period analysis was conducted for this project.

Figure 2

Site Location & Study Intersections

2.3 TRAFFIC ANALYSIS METHODS

The analysis of roadway operations performed for this study is based on procedures presented in the *Highway Capacity Manual* (HCM), published by the Transportation Research Board in 2010. The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, with the least congested operating conditions, to LOS F, with the most congested operating conditions. LOS E represents "at-capacity" operations. Operations are designated as LOS F when volumes exceed capacity, resulting in congested conditions. The methodologies for un-signalized intersections are described below.

2.3.1 UNSIGNALIZED INTERSECTIONS

The Keaau-Pahoa Road / Project Driveway intersection is currently side-street stop controlled with vehicles on the Project Driveway approach controlled by a stop sign. The Keaau-Pahoa Road / Pahoa Village Road intersection is a single lane yield-on-entry roundabout. For side-street stop control, the intersection LOS is assigned based on the highest approach or movement delay. Roundabout LOS has the same delay thresholds as unsignalized intersections and the LOS is based on a volume-weighted average of all of the intersection approaches. The average control delay for unsignalized intersections is calculated using Synchro 9.0 analysis software and is correlated to a LOS designation as shown in **Table 1**.

TABLE 1: UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delay.	≤ 10.0
B	Short traffic delay.	> 10.0 to 15.0
C	Average traffic delays.	> 15.0 to 25.0
D	Long traffic delays.	> 25.0 to 35.0
E	Very long traffic delays.	> 35.0 to 50.0
F	Extreme traffic delays with intersection or approach capacity exceeded.	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.
Notes:
[1] For approach-based and intersection-wide assessments, such as that used for AWSC intersections, LOS is defined solely by control delay.

2.3.2 SIGNIFICANT IMPACT CRITERIA

The analysis of Near Term Conditions compares future baseline operations with conditions when the project is fully built out to determine whether or not project traffic is expected to result in a significant impact on the surrounding roadways. Based on previous studies conducted for HDOT and the County of Hawaii, the minimum desirable operating level for roadways is LOS D. If a facility operates or is projected to operate at LOS E or F, feasible capacity enhancements or other improvements may be needed to improve operations. Unacceptable vehicle operations may be permitted to occur if potential vehicle improvements will result in substantial secondary impacts to other travel modes including walking, bicycling and transit.

Each of the identified significant impacts is categorized as either a project-related or cumulative impact.

For the stop-sign controlled intersection in this study, the project is determined to have a significant project-specific impact if the addition of project traffic causes the intersection to degrade from LOS D or better to LOS E or F and if the peak hour signal warrant is satisfied. An impact is considered a cumulative impact when it adds traffic to a study location that includes a controlled approach that operates at an undesired level (i.e., LOS E or F) and if the peak hour signal warrant is satisfied. For a roundabout intersection, the first criteria only applies in each case (i.e., degradation of operations from LOS D to E or F for a project-specific impact, and an increase in delay for a location already operating at LOS E or F).

Neither the County of Hawaii, nor HDOT, specify impact criteria for pedestrian, bicycle, and transit impacts. However, these impacts are generally evaluated based on whether a proposed project would: 1) conflict with existing or planned pedestrian, bicycle, or transit facilities, or 2) create walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility. The existing amenities for pedestrians, bicycles, and transit users were inventoried to evaluate the quality of the facilities in place today.

2.4 REPORT ORGANIZATION

This report is divided into eight chapters. The existing transportation system serving the project site and the current operating conditions of the key intersections are described in **Chapter 3** Existing Conditions.

Chapter 4 summarizes the methodologies used to forecast future cumulative project traffic volumes and the resultant forecasts, and presents the analysis for Near Term (2021) Baseline Conditions. **Chapter 5** describes the project trip generation, distribution, and assignment used in the transportation impact analysis. **Chapter 6** presents the analysis of the Near Term (2021) Plus Project Conditions, assesses any traffic impacts at study intersections, and identifies mitigation measures to address any project impacts. **Chapter 7** includes an assessment of the potential future effect of the project on existing and future transit, bicycle, and pedestrian facilities.

3.0 EXISTING CONDITIONS

This chapter describes the existing roadway network and includes a discussion of the bicycle, pedestrian, and transit facilities located in the project study area. This chapter also includes a discussion of the existing intersection LOS results.

3.1 EXISTING TRANSPORTATION FACILITIES

A comprehensive data collection effort was undertaken to identify existing transportation conditions in the vicinity of the proposed project. The assessment of existing conditions relevant to this study includes an inventory of the street system, traffic volumes on these facilities, and operating conditions at key intersections. Existing public transit service and bicycle and pedestrian facilities are also described.

3.1.1 EXISTING ROADWAY SYSTEM

The key roadways providing access to or in the vicinity of the site are described below. **Figure 2** illustrates the proposed project location and the surrounding roadway system.

Keaau-Pahoa Road (State Route 130) is operated and maintained by Hawaii Department of Transportation (HDOT) and is a two-lane roadway in the vicinity of the project site. The portion of Keaau-Pahoa Road that within the study area is oriented in the north-south direction, and it connects to Keeau-Pahoa Bypass Road and Pahoa Village Road at the existing roundabout. Keaau-Pahoa Road connects the communities of Keaau and Pahoa, and also provides access to Hilo via State Route 11. At the project driveway, Keaau-Pahoa Road includes two acceleration lanes (one each for the westbound left-turn and right-turn movements exiting the driveway), in addition to a northbound right turn pocket and a southbound left turn pocket. The posted speed limit is 45 miles per hour (mph).

Pahoa Village Road is under the jurisdiction of the County of Hawaii and is a two-lane facility within the study area with a posted speed limit of 30 mph. Keaau-Pahoa Pahoa Village Road connects Pahoa Bypass Road to Pahoa Kalapana Road, and transitions to Kapoho Road south of Pahoa Kalapana Road. It provides direct access to retail centers, single family residential units, the Pahoa High & Intermediate School, and the existing Pahoa Public Library.

Pahoa Bypass Road is under the jurisdiction of HDOT and is a north-south two-lane facility with a posted speed limit of 45 mph. Pahoa Bypass Road begins at the Keaau-Pahoa Road roundabout intersection and extends in the southern direction where it transitions into Pahoa Kalapana Road south of Pahoa Village

Road/Kapoho Road. There are minimal driveways along Pahoa Bypass Road and is primarily fronted by open space.

3.1.2 EXISTING TRANSIT SERVICES

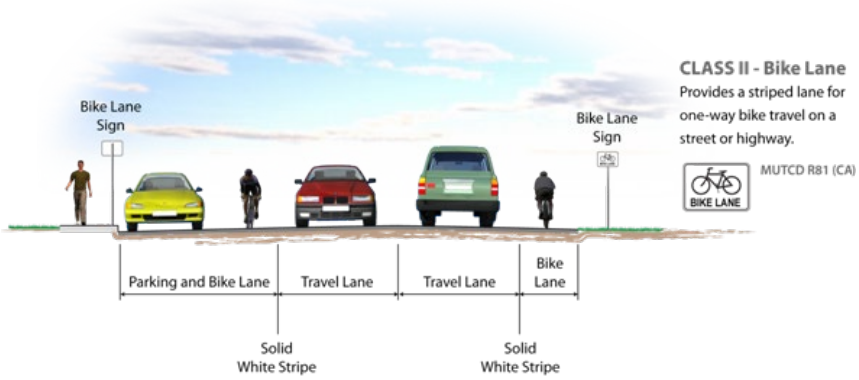
"Hele-On Bus" is the County of Hawaii's primary form of public transit that offers a fixed-route transit service between Pahoa and Hilo. There are currently no bus stops directly serving the project site on Keaau-Pahoa Road; however the Pohoiki-Pahoa-Hilo bus route travels in front of the project site along Keaau-Pahoa Road. The closest bus stop to the project site is approximately a half mile away, adjacent to the intersection of Pahoa Village Rd and Kahakai Blvd. **Figure 3** shows the location of the bus transit route as well as the closest bus stop in the vicinity of the project site.

3.1.3 EXISTING BICYCLE FACILITIES

Bicycle facilities generally consist of three types of facilities, which are outlined below:

- *Bike or Shared Use Paths* provide a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized. Generally, the recommended pavement width for a two-directional shared use path is ten (10) feet.

- *Bike Lanes* provide a restricted right-of-way and are designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.



- *Bike Route or Signed Shared Roadways* provide for a right-of-way designated by signs or shared lane pavement markings, or "sharrows," for shared use with pedestrians or motor vehicles.

As depicted in **Figure 4**, no bicycle infrastructure is provided within the direct proximity of the project site; thus, bicyclists are required to share the roadway along Keaau-Pahoa Road, Kahakai Blvd, and Pahoa Village Rd. However, Keaau-Pahoa Road currently has "Share the Road" signs installed along the roadway.

3.1.4 EXISTING PEDESTRIAN FACILITIES

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. Since the proposed project is located in a semi-rural area and surrounded by limited development the existing pedestrian activity is considerably low, and pedestrian facilities are limited. There is one crosswalk across project driveway, but there are no pedestrian sidewalks provided on Keaau-Pahoa Road, so pedestrians are required to walk in the shoulders of the roadway. The closest pedestrian facilities are located ¼ of a mile south of the project site at the roundabout intersection of Keaau-Pahoa Road and Pahoa Village Rd. High visibility crosswalks and pedestrian sidewalks are provided across all legs of the roundabout intersection. **Figure 4** shows the location of existing sidewalks and high-visibility crosswalks within the study area.

Figure 3

Existing Bus Transit

Figure 4

Existing Pedestrian Facilities

3.2 EXISTING INTERSECTION VOLUMES AND LANE CONFIGURATIONS

The operations of the two existing study intersections were evaluated during weekday evening (3:30 to 5:30 PM) peak-period conditions. Traffic counts were collected during the weekday PM peak periods at the study intersections in January 2018, when local schools were in session. During the weekday evening, the PM peak hour of traffic generally occurs between the hours of 3:30 PM to 4:30 PM.

Existing lane configurations and traffic controls were obtained through field observations. **Figure 5** presents the existing PM peak-hour turning movement volumes, corresponding lane configurations, and traffic control devices. Raw traffic count data sheets are provided in **Appendix A**.

3.2.1 FIELD OBSERVATIONS

Field observations were conducted to identify existing multimodal traffic patterns and potential deficiencies on a typical weekday in January 2018. Conditions were observed in the vicinity of the proposed library location along Keaau-Pahoa Rd and at the current library location next to Pahoa High and Intermediate School. During the time of the observations, Pahoa High and Intermediate School were in session and midday observations showed that the existing Pahoa library parking demand exceeded parking supply, as library patrons driving to the facility had to use the access road for overflow parking. The parking deficit was verified by several patrons in the library, and the existing parking supply of six visitor spaces (excluding the accessible space) was insufficient during peak demand times.

Vehicle queues, pedestrian and bicycle activity, and parking conditions in close proximity of the project site were observed at the project driveway along Keaau-Pahoa Road to the Pahoa Village Rd roundabout intersection. The traffic traveling on Keaau-Pahoa Road at the project driveway was generally free-flowing during the PM peak hour. Minor Pahoa-bound vehicle queues (i.e., fewer than five cars) were observed for vehicles turning left from the project driveway onto Keaau-Pahoa Road; however the southbound acceleration lane provided on Keaau-Pahoa Road was sufficient to prevent any long-term queuing.

Traffic congestion was observed at the Keaau-Pahoa Road and Pahoa Village Road roundabout intersection during the PM peak hour with slow moving southbound queues waiting to enter the roundabout. While the single-lane roundabout intersection experiences temporary congestion during the PM peak hour, primarily along Keaau-Pahoa Road in the southbound direction, traffic flow and multimodal safety is greatly improved compared to the previous three-way stop-controlled intersection. Some slowing is caused by southbound drivers that allow right-turning vehicles from the adjacent shopping center to enter the traffic

stream prior to entering the roundabout. Additional conflicting volume occurs because traffic from Pahoa Village Road destined for the Pahoa Marketplace shopping center must circulate through the roundabout before entering the retail area. Minimal pedestrian and bicycle activity was observed on Keaau-Pahoa Road in the immediate vicinity of the project site potentially due to the lack of facilities and proximate development.

3.3 EXISTING INTERSECTION LEVELS OF SERVICE

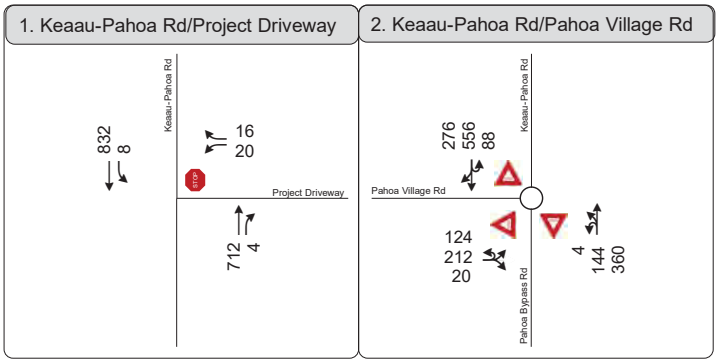
Peak hour intersection capacity analysis was performed for the study intersections using the methodology described above and the recently collected traffic count data. **Table 2** below shows the results of the intersection operations analysis for Existing Conditions, and the detailed LOS Worksheet can be found in **Appendix B**. Keaau-Pahoa Road

TABLE 2: EXISTING (2018) INTERSECTION LEVEL OF SERVICE

Intersection	Traffic Control[1]	Peak Hour	Delay (sec/veh)[1]	LOS[2]
1. Keaau-Pahoa Road/Project Driveway	SSSC	PM	18.0	C
2. Keaau-Pahoa Road/Pahoa Village Rd	Roundabout	PM	**61.1**	**F**

Source: Fehr & Peers, 2018.
Notes:
[1] Whole intersection weighted average stopped delay expressed in seconds per vehicle for roundabout intersections. The vehicular delay for the worst movement is reported for side-street stop-controlled (SSSC) intersections.
Bold indicates undesirable operations (i.e. LOS E or LOS F).

Table 2 shows the Keaau-Pahoa Road/Project Driveway intersection currently operates at the minimum desirable operating level of LOS C during the PM peak hours. As noted under field observations, westbound drivers may experience only temporary delays at this intersection turning from the project driveway onto southbound Keaau-Pahoa Road. However, the typical operations at this location during the study time period include meet or exceed the desirable operating level of LOS C. The Keaau-Pahoa Road/Pahoa Village Rd operates at LOS F during the PM peak hour. Heavy traffic flow at this intersection is mainly due to regional traffic demand traveling north to south from Hilo to the Pahoa area during the PM peak hour.



xx - PM Peak Hour Volume

Figure 5

Peak Hour Traffic Volume and Lane Configurations-Existing Conditions

4.0 NEAR TERM (2021) BASELINE CONDITIONS

To evaluate the potential impacts of traffic generated by the proposed project on the surrounding street system, it was necessary to first develop estimates of future traffic conditions in the area without the project. Future traffic conditions without the project reflect traffic increases due to regional growth and development, as well as traffic increases generated by other specific developments near the project site. This scenario is referred to as baseline or "no project" conditions. The forecasted future traffic volumes were then used as a baseline to identify impacts on the roadway system from the project.

4.1 NEAR TERM (2021) TRAFFIC ESTIMATES

Future baseline traffic projections include two elements: 1) annual growth in the existing background volumes to reflect the effects of overall growth and development in and around the study area (referred to as ambient growth); and 2) traffic generated by future projects located in the vicinity of the study area.

4.1.1 AREAWIDE OR AMBIENT TRAFFIC GROWTH

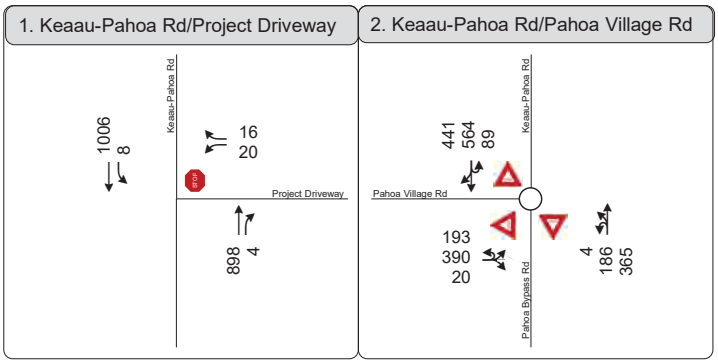
The Hawaii Regional Long-Range Land Transportation Plan (LRLTP) prepared by HDOT included development of an island-wide travel demand forecasting model for purposes of forecasting future traffic volumes. The model includes land use and socioeconomic attributes in Traffic Analysis Zones (TAZs) to generate trips and assign traffic across the roadway network, which can then be used to provide AM and PM volume projections along major facilities across the island. A review of the model forecasts shows that significant employment and housing growth is projected between 2007 and 2035, especially new housing units within the Pahoa community.

Model growth rates derived between base year (2007) and the horizon year (2035) traffic projections provided by the LRLTP model were applied linearly to the existing traffic counts. The calculated annual growth rate of the project study roadways are estimated to be 0.5 percent per year. The annual growth factor was applied to existing intersection traffic volumes collected in January 2018 to account for regional growth. The growth rates were compounded over the three-year timeframe (2018 to 2021) up to the projected opening year (2021) of the proposed project.

4.1.2 APPROVED PROJECT TRAFFIC GENERATION AND ASSIGNMENT

Future base traffic forecasts also include the effects of individual planned/approved development projects, expected to be constructed by the project's opening year (2021), and expected to add traffic in the vicinity of the project site.

The only identified project in the immediate vicinity that is anticipated to be built and operating by the year 2021 is the Puna Kai Shopping Center along Pahoa Village Road and adjacent to the Kahakai Boulevard-Pahoa Village Road intersection. The 9.93 acre site will contain approximately 104,000 square feet of commercial space. According to the project's description and the applied ITE trip generation rates the shopping center is estimated to generate 6,175 daily trips, with 559 trips (269 inbound / 291 outbound) occurring during the PM peak hour. The trip generation and assignment for the commercial development was added to the future year traffic volumes previously discussed. **Figure 6** shows the peak hour traffic volumes for the Near Term (2021) Baseline Conditions.



xx- PM Peak Hour Volume

Figure 6

Peak Hour Traffic Volume and Lane Configurations-Baseline Conditions (2021)

4.2 NEAR TERM (2021) BASELINE LEVELS OF SERVICE

Levels of service calculations were conducted to evaluate the operating levels of the study intersections under Near Term (2021) Baseline Conditions based on the anticipated growth in traffic. The results of the LOS analysis are presented in **Table 3.** The corresponding LOS calculation sheets are included in **Appendix C.**

TABLE 3: NEAR TERM (2021) BASELINE INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control[1]	Peak Hour	Delay (sec/veh)[1]	LOS[2]
1. Keaau-Pahoa Road/Project Driveway	SSSC	PM	22.4	C
2. Keaau-Pahoa Road/Pahoa Village Rd	Roundabout	PM	**174.7**	**F**

Source: Fehr & Peers, 2018.Notes:
[1] Whole intersection weighted average stopped delay expressed in seconds per vehicle roundabout intersection intersections. The vehicular delay for the worst movement is reported for side-street stop-controlled (SSSC) intersections.
Bold indicates undesirable operations (i.e. LOS E or F).

The analysis results shown in **Table 3** indicate that the Keaau-Pahoa Road/Project Driveway intersection is forecasted to operate at LOS C under Near Term (2021) Baseline Conditions. However, LOS F operations at the Keaau-Pahoa Road/Pahoa Village Rd roundabout intersection are expected to be significantly exacerbated under Near Term (2021) Baseline Conditions with an anticipated delay increase of more than 113 seconds (or nearly a 200 percent increase) compared to Existing Conditions. The changes in operations from Existing Conditions are the result of the addition of ambient traffic growth and additional traffic from planned/approved projects.

5.0 PROJECT TRAFFIC ESTIMATES

This section describes the anticipated number of vehicle trips and directionality of those trips that would result from implementation of the proposed project. Future traffic added to the roadway system by the project is estimated using a three-step process: (1) project trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of project-generated traffic will be added to the roadway network. The second step estimates the direction of travel to and from the project site. The new trips are assigned to specific street segments and intersection turning movements during the third step. This process is described in more details in the following sections.

5.1 PROJECT TRIP GENERATION ESTIMATES

The amount of traffic anticipated to be added to the surrounding roadway system by the proposed project was estimated based on data published in the Institute of Transportation Engineers (ITE) *Trip Generation 10th* Edition (2017). The results are presented in **Table 4.**

The proposed project will include a new 15,000 square-foot (s.f.) library facility with an adjoining 50-space parking lot. The new library is planned to open in 2021 and it is intended to serve the Pahoa community, as well as other residents in the greater Puna area. For the proposed project, the "Library" (ITE Land Use Code 590) fitted curve equation was used to calculate the daily trips and PM peak trip estimates. The traffic traveling to the existing Pahoa Public Library on Pahoa Village Road was not credited in the trip generation estimates to provide a more conservative analysis. As summarized in **Table 4**, the project is forecasted to generate 1,055 daily trips, with 123 trips (59 inbound/64 outbound) during the PM peak hour.

TABLE 4: PROJECT TRIP GENERATION

Land Use	ITE Land Use Type	Quantity	Daily Total Trips	Peak Hour Trips[1]		
				PM Peak Hour		
				In	Out	Total
Pahoa Public Library	Library[2]	15 ksf	1,055	59	64	123
		TOTAL TRIPS	**1,055**	**59**	**64**	**123**

Notes:

1. Trip rates from Trip Generation, 10th Edition (Institute of Transportation Engineers)
2. Library Trip Rates: Daily (Fitted Curve Equation) Ln(T) = 0.99 Ln(X) + 4.28; PM (Fitted Curve Equation) T = 9.33(X) - 17.13

Fehr & Peers, 2018

5.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of traffic generated by the project onto the roadway system was based on the locations of existing complementary land uses, predominant travel patterns, and existing traffic volumes. Based on these factors, the vehicle trip distribution of the project-generated traffic is estimated to be:

- 60% along Keaau-Pahoa Road to and from the north
- 25% along Pahoa Village Rd to the southwest
- 15% along Pahoa Bypass Rd to the southeast

Figure 7 illustrates the project trip distribution pattern described above.

Using the estimated trip generation and the distribution patterns discussed, the traffic generated by the proposed project was assigned to the study intersections and the individual turning movements. **Figure 8** shows the assignment of trips generated by the project.

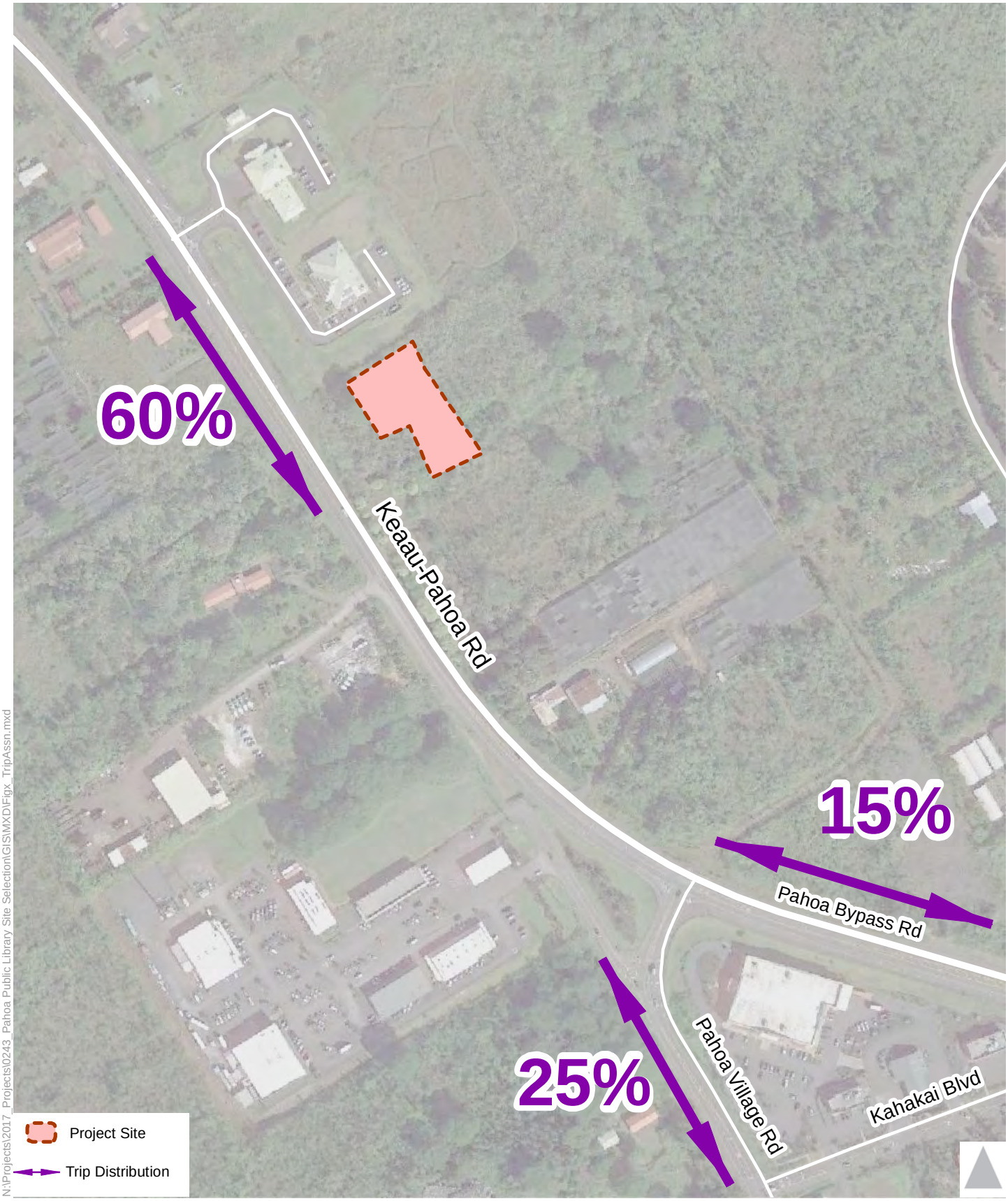
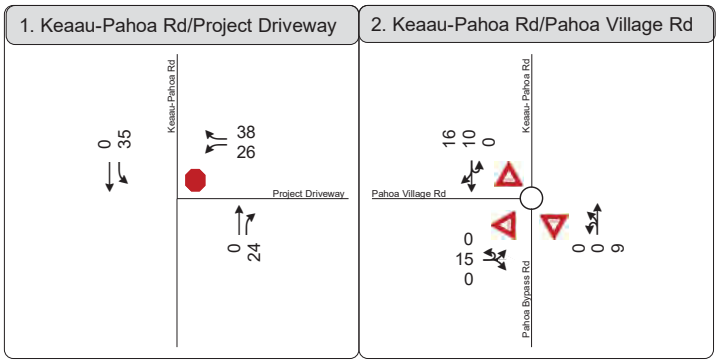


Figure 7

Project Trip Distribution



xx - PM Peak Hour Volume

Figure 8

Peak Hour Traffic Volume and Lane Configurations-Project Trip Assignment

6.0 NEAR TERM (2021) PLUS PROJECT CONDITIONS

This section summarizes and presents an analysis of the potential impacts on the roadway system due to projected increases in traffic, including traffic generated by the project in 2021. The Near Term (2021) roadway network is the same network assumed under the baseline scenario. The analysis compares the project levels of service at each study intersection under future baseline conditions against the "Plus Project" scenario to determine potential Near Term impacts.

6.1 NEAR TERM (2021) PLUS PROJECT INTERSECTION LEVEL OF SERVICE

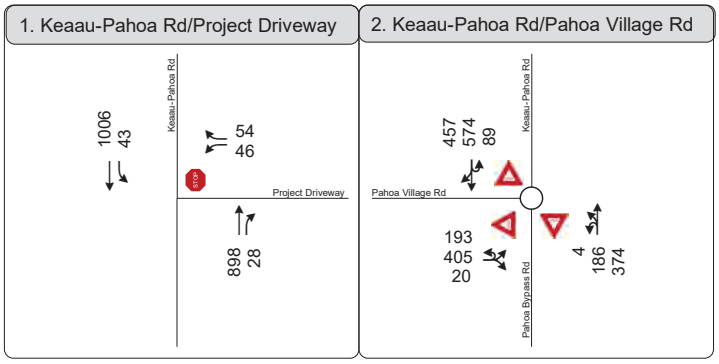
To forecast the peak hour operating conditions at each study intersection, the project trip assignment was superimposed on Near Term (2021) Baseline traffic volumes to yield Near Term (2021) Plus Project volumes. **Figure 9** presents the anticipated Near Term (2021) Plus Project PM peak hour volumes. These volumes were used to analyze operations using the aforementioned LOS methodology.

The results of the LOS analysis for the study intersections are presented in **Table 5**, and detailed LOS results for intersection movements and corresponding LOS calculation sheets are included in **Appendix C**.

TABLE 5: NEAR TERM (2021) PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control[1]	Peak Hour	Near Term Baseline		Near Term Plus Project		Delay Change
			Delay (sec/veh)[1]	LOS[2]	Delay (sec/veh)[1]	LOS[2]	
1. Keaau-Pahoa Road/Project Driveway	SSSC	PM	22.4	C	25.9	A	3.5
2. Keaau-Pahoa Road/Pahoa Village Rd	Roundabout	PM	**174.7**	**F**	**189.7**	**F**	15.0

Source: Fehr & Peers, 2018
Notes:
[1] Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized and all-way stop-controlled intersections. The vehicular delay for the worst movement is reported for side-street stop-controlled intersections.
[2] LOS calculations performed using the *Highway Capacity Manual (HCM) 2010* method. LOS for side street stop-controlled (SSSC) intersections is worst-case movement.



xx - PM Peak Hour Volume

Figure 9

Peak Hour Traffic Volume and Lane Configurations- Baseline Plus Project Conditions (2021)

The results presented in **Table 5** indicate that under Near Term (2021) Plus Project conditions, the Keaau-Pahoa Road / Project Driveway intersection is anticipated to operate at a desirable level (i.e. LOS D or better) without and with the project in the PM peak hour. The proposed project is anticipated to exacerbate LOS F operations Keaau-Pahoa Road / Pahoa Village Rd study intersection during the PM peak hour under this scenario. The potential increase in delay is projected to be an average of 15 seconds per vehicle, although this increase is considered conservative in that no credit was taken for trips generated by the existing library use.

6.2 POTENTIAL TRAFFIC IMPACTS

Based upon County of Hawaii and HDOT significance criteria and the results of the operations analysis, the proposed project is expected to result in a significant traffic impact to Keaau-Pahoa Road/Pahoa Village Road intersection in the PM peak hour. However, this intersection currently operates at undesirable levels and is expected to be much more substantially impacted by the approved retail development located south of the roundabout on Pahoa Village Drive. That development will increase existing delay by more than 200 percent, while the proposed library project will increase near-term baseline delay by slightly more than 8 percent. With or without the proposed library project, the roundabout is projected to operate poorly in 2021 without and with the project. Reducing delay at the roundabout would essentially require widening of the circulation roadway to a two-lane configuration, or other capacity enhancements (e.g., a right-turn bypass lane) that would require complete reconfiguration of access to the adjacent properties.

Heavy congestion on these roadways are primarily attributed to regional traffic demand and widening these roadways is beyond the scope of a small, single development project such as the new library. Furthermore, the project is adding only two (2) percent (i.e., 50 vehicles) to the total traffic volume traveling through the roundabout intersection in the PM peak hour. As stated in the *Project Trip Generation Estimates* section, no credit was taken in the trip estimates for trips traveling to the existing Pahoa Public Library site; thus, the net new project trips added to the Keaau-Pahoa Road – Pahoa Bypass Road / Pahoa Village Road intersection would be less than stated here, and the volume and delay increases cited in this document would not be as severe. The project is expected to contribute its fair share or two (2) percent of the cost of the roundabout capacity improvement to mitigate its proportional impact at this location.

6.3 ALTERNATE SITE ACCESS

An alternate site access was considered after completion of the impact analysis noted above. Instead of vehicular access to the library site provided via the existing police and fire station driveway on Keaau-Pahoa Road, an alternate access could be provided by a driveway connection to Auina Street located southeast of the site. The potential impact of this alternate access was qualitatively assessed as described below.

If vehicle access to the library were provided via a new connection to Auina Street, all project traffic would have to use the east leg of the Kahakai Boulevard/Pahoa Bypass Road intersection to drive to and from the site. The benefit of this configuration is that no roadway improvements would be needed to accommodate project traffic at that intersection. The Kahakai Boulevard/Pahoa Bypass Road intersection already includes separate turn lanes and a refuge lane for vehicles turning left out. A more detailed operations analysis and signal warrant study would be required to verify this conclusion and quantify the results, but no improvements are likely needed based on engineering judgement.

The negative aspect of the Auina Street access is that it would likely require more project traffic to travel through the roundabout, which is already operating with congestion during the PM hour. It is possible that up to an additional 25% (or a total of 65%) project traffic would have to use the roundabout to access the site. This would increase the project's PM peak hour contribution to 3% of total traffic, but the findings in Section 6.2 above are not expected to be significantly different with the alternate access. Specifically, the improvements required to increase vehicle capacity at the roundabout to reduce PM peak hour congestion are beyond the scope of a single development of this size, and the project's fair share contribution would not be sufficient to implement any effective capacity-enhancing improvements.

7.0 SITE ACCESS

This chapter includes a review of the site access and on-site circulation for vehicles, bicyclists and pedestrians. An evaluation of off-site active and transit travel modes is presented in Chapter 8.

7.1 SITE ACCESS AND ON-SITE VEHICLE CIRCULATION

Primary vehicle access to the site will be provided at the existing Pahoa Fire Station / Police Station Vehicle Registration and Licensing Division driveway on Keaau-Pahoa Rd. The existing site driveway includes one inbound lane and two outbound lanes (i.e. one left-turn and one right-turn). The final site plan was still being developed during the time of this study. As the site plan refinements proceed, the following recommendations should be considered to enhance the vehicle circulation and reduce vehicle conflicts in the internal project roadways:

- Since the project is sharing the driveway with the fire station and DMV, proper signage should be installed near the project driveway to direct patrons to the library since the driveway is not directly adjacent to the library entrance
- All two-way circulation aisles be at least 24-feet in width and dead-end aisles should be avoided. If dead-end aisles are created, adequate turn-around space (i.e. hammerheads) should be provided.
- The project applicant should consider vertical speed control measures, such as speed humps to maintain low vehicular speeds around the library entrance and possibly in front of the police station provided it does not impact police/emergency operations

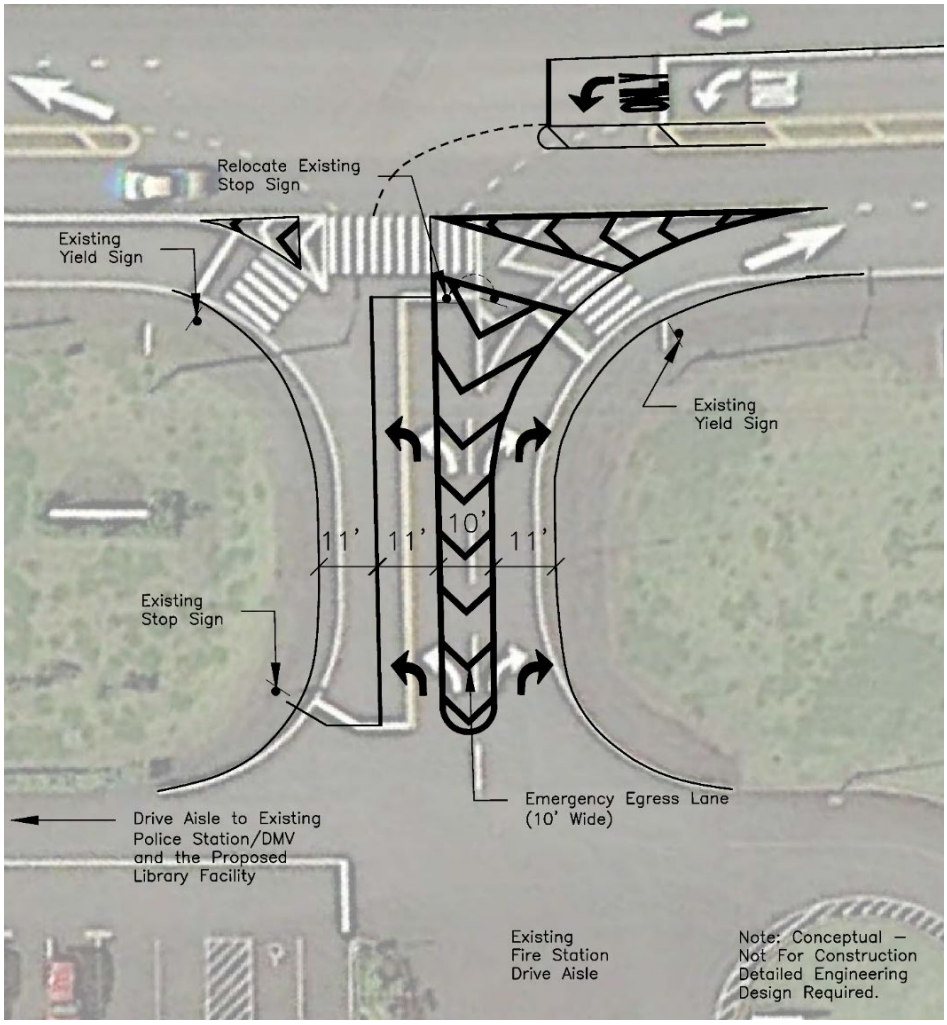
7.2 EMERGENCY VEHICLE ACCESS

With the proposed project in place, the existing driveway on Keaau-Pahoa Road will serve as the access point for both emergency vehicles associated with the fire station and police station, as well as private vehicles accessing the proposed library site and the vehicle registration facility at the police station. The library facility is forecasted to generate an average of approximately one outbound trip per minute during the PM peak hour. Consequently, it is anticipated that the addition of library-based trips exiting the site will not have a significant impact on emergency vehicle response times.

Currently, emergency vehicles responding to a call may exit the project driveway using either the stop-controlled left turn lane to turn onto southbound Keaau-Pahoa Road, or the yield-controlled right turn lane to head north. If an emergency vehicle with lights and sirens on is turning right out of the driveway to

northbound to Keaau-Pahoa Road, a conflict with private vehicles should not be an issue, as the northbound shoulder is approximately 10 feet wide and provides adequate space for vehicles to pull over. If there is an existing queue of one or more vehicles in the existing outbound left-turn lane, an emergency vehicle trying to turn south has to travel around the queue, via either the inbound lane or through the right-turn lane and the striped median. This situation would be the same with or without the proposed project in place.

Although the project is not expected to have a significant impact to emergency response times, a low-cost alternative driveway configuration was developed for possible implementation at the project site driveway (see conceptual plan below). The existing driveway and intersection lanes could be re-striped to provide a striped median that would allow emergency vehicles to bypass any queued traffic at the intersection. This layout would help to ensure that emergency vehicles could more easily exit the complex when responding to a critical call. Note that this is a conceptual plan only and additional studies are required by others to finalize the design and obtain approvals from appropriate agencies.



8.0 MULTI-MODAL ASSESSMENT

The schematic site plan shows the library building directly adjacent to the proposed parking lot. To highlight the presence of pedestrians and to guide people walking from the parking lot to the building, high visibility crosswalks should be implemented at several locations across the site. The location of these crosswalks and other on-site pedestrian enhancements should be coordinated by project team and local staff when the proposed site plan is fully developed.

People on bicycles may also access the project site from the adjacent residential neighborhoods, as well as the Pahoa Village Center via Keaau-Pahoa Road by using the shoulders as no bike lanes or multi-use paths are provided on this roadway. While no separate bike paths need to be incorporated to the site, secure bike parking should be provided. At a minimum, this would include bike racks at several key locations to encourage the use of non-automobile travel. The final locations for bike racks will be determined by the project team in consultation with local staff.

As noted previously, no existing pedestrian or bicycle facilities connect to the proposed library site on Keaau-Pahoa Road. Given the lack of surrounding land uses in the immediate vicinity facility and the fact that it is a half mile to the closest residential area and a quarter mile to the closest commercial center, pedestrian demand will be generated by the site but it is expected to be minor. Thus, no off-site pedestrian enhancements are recommended as part of the project at this time.

Bike Plan Hawaii (2003), a State master plan for bikeways, is intended to serve as the basis for future bikeway planning and development decisions in Pahoa. No designated bike facility has been identified or proposed immediately at the project frontage along Keaau-Pahoa Road. It is unlikely that the library facility will induce a high volume of people traveling to the site by bicycle given the lack of existing bicycle facilities and the high posted speed (45 mph) along Keaau-Pahoa Road. Thus, the implementation of the project is not expected to significantly impact or conflict with existing or planned bicycle operations.

While it is possible that some project employees might take transit to the project site, it will not be conducive to transit use given the distance to the closest transit stop and the infrequency of the bus service. Again, the project is not expected to conflict with any existing or proposed transit facilities and services.

As noted above, the project is not anticipated to result in any significant impacts to pedestrian, bicycle, or transit facilities within the study area, and no multi-modal improvements are needed.

APPENDIX A: TRAFFIC COUNT DATA

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

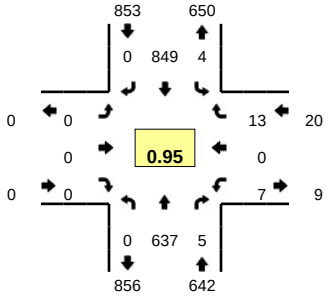
LOCATION: 2. Keaau-Pahoa Rd -- Project Driveway

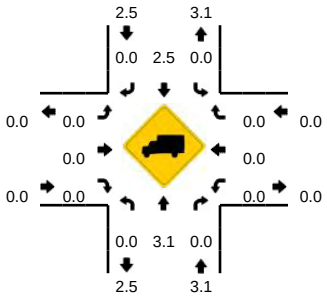
CITY/STATE: Pahoa, HI

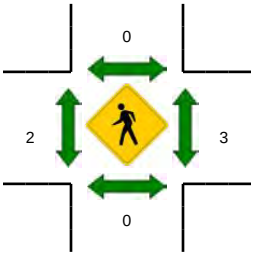
QC JOB #: 14603302

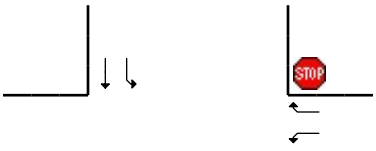
DATE: Wed, Jan 17 2018

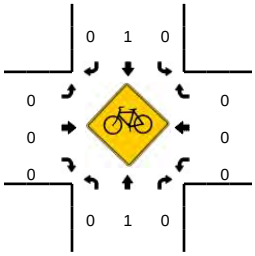
Peak-Hour: 3:35 PM -- 4:35 PM
Peak 15-Min: 3:45 PM -- 4:00 PM

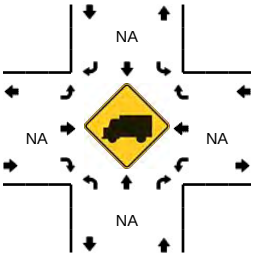


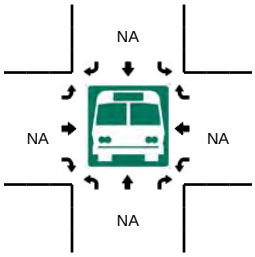












5-Min Count Period Beginning At	2. Keaau-Pahoa Rd (Northbound)				2. Keaau-Pahoa Rd (Southbound)				Project Driveway (Eastbound)				Project Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	0	51	1	0	0	76	0	0	0	0	0	0	0	0	3	0	131	
3:35 PM	0	56	3	0	0	76	0	0	0	0	0	0	0	0	5	0	140	
3:40 PM	0	44	0	0	1	67	0	0	0	0	0	0	0	0	1	0	113	
3:45 PM	0	66	0	0	1	72	0	0	0	0	0	0	2	0	0	0	141	
3:50 PM	0	65	0	0	1	61	0	0	0	0	0	0	1	0	1	0	129	
3:55 PM	0	47	1	0	0	75	0	0	0	0	0	0	2	0	3	0	128	
4:00 PM	0	50	0	0	0	68	0	0	0	0	0	0	0	0	2	0	120	
4:05 PM	0	51	1	0	0	64	0	0	0	0	0	0	1	0	0	0	117	
4:10 PM	0	46	0	0	0	58	0	0	0	0	0	0	0	0	0	0	104	
4:15 PM	0	47	0	0	0	82	0	0	0	0	0	0	0	0	0	0	129	
4:20 PM	0	56	0	0	1	85	0	0	0	0	0	0	1	0	0	0	143	
4:25 PM	0	54	0	0	0	62	0	0	0	0	0	0	0	0	1	0	117	1512
4:30 PM	0	55	0	0	0	79	0	0	0	0	0	0	0	0	0	0	134	1515
4:35 PM	0	44	0	0	0	64	0	0	0	0	0	0	0	0	0	0	108	1483
4:40 PM	0	60	0	0	1	65	0	0	0	0	0	0	0	0	1	0	127	1497
4:45 PM	0	58	0	0	0	77	0	0	0	0	0	0	0	0	0	0	135	1491
4:50 PM	0	37	1	0	0	84	0	0	0	0	0	0	1	0	1	0	124	1486
4:55 PM	0	46	1	0	0	64	0	0	0	0	0	0	0	0	0	0	111	1469
5:00 PM	0	38	1	0	0	66	0	0	0	0	0	0	0	0	0	0	105	1454
5:05 PM	0	53	0	0	0	75	0	0	0	0	0	0	1	0	1	0	130	1467
5:10 PM	0	45	0	1	0	70	0	0	0	0	0	0	0	0	1	0	117	1480
5:15 PM	0	48	0	0	1	68	0	0	0	0	0	0	0	0	0	0	117	1468
5:20 PM	0	38	0	0	0	65	0	0	0	0	0	0	1	0	3	0	107	1432
5:25 PM	0	37	1	1	0	72	0	0	0	0	0	0	0	0	0	0	111	1426

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	712	4	0	8	832	0	0	0	0	0	0	20	0	16	0	1592
Heavy Trucks	0	36	0		0	24	0		0	0	0		0	0	0		60
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 1/24/2018 11:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

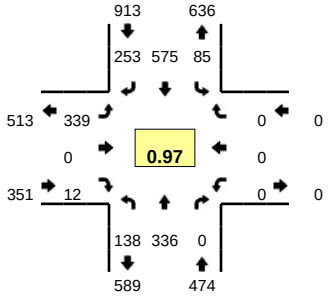
LOCATION: 1. Pahoa Bypass Rd/Keaau-Pahoa Rd -- Keaau-Pahoa Rd

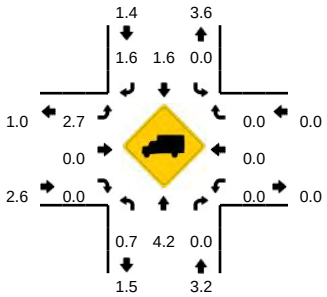
QC JOB #: 14603301

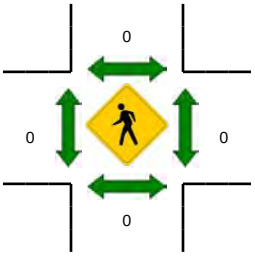
CITY/STATE: Pahoa, HI

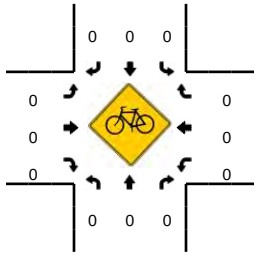
DATE: Wed, Jan 17 2018

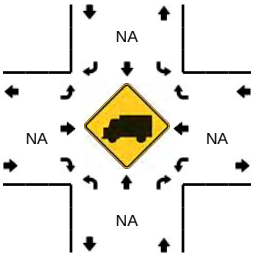
Peak-Hour: 3:50 PM -- 4:50 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

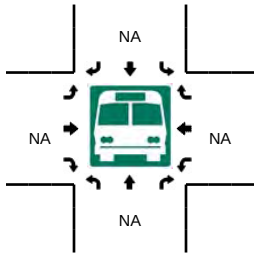












5-Min Count Period Beginning At	1. Pahoa Bypass Rd/Keaau-Pahoa Rd (Northbound)				1. Pahoa Bypass Rd/Keaau-Pahoa Rd (Southbound)				Keaau-Pahoa Rd (Eastbound)				Keaau-Pahoa Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	7	26	0	1	0	44	33	5	23	0	1	11	0	0	0	0	151	
3:35 PM	11	34	0	0	0	51	16	5	16	0	3	10	0	0	0	0	146	
3:40 PM	17	30	0	0	0	48	19	2	13	0	1	8	0	0	0	0	138	
3:45 PM	9	39	0	0	0	34	21	12	17	0	1	11	0	0	0	0	144	
3:50 PM	8	35	0	0	0	45	28	8	21	0	1	11	0	0	0	0	157	
3:55 PM	12	23	0	0	0	47	16	8	18	0	1	10	0	0	0	0	135	
4:00 PM	9	28	0	1	0	47	22	13	14	0	1	8	0	0	0	0	143	
4:05 PM	16	29	0	0	0	47	21	4	15	0	1	14	0	0	0	0	147	
4:10 PM	14	22	0	0	0	44	17	6	18	0	1	8	0	0	0	0	130	
4:15 PM	13	36	0	1	0	42	22	7	17	0	3	11	0	0	0	0	152	
4:20 PM	9	24	0	0	0	49	27	10	15	0	1	9	0	0	0	0	144	
4:25 PM	14	30	0	0	0	48	20	5	21	0	1	11	0	0	0	0	150	1737
4:30 PM	9	20	0	0	0	60	23	6	21	0	1	9	0	0	0	0	149	1735
4:35 PM	11	27	0	0	0	44	20	9	20	0	0	10	0	0	0	0	141	1730
4:40 PM	11	25	0	0	0	49	20	5	19	0	1	8	0	0	0	0	138	1730
4:45 PM	10	37	0	0	0	53	17	4	16	0	0	15	0	0	0	0	152	1738
4:50 PM	10	26	0	0	0	51	20	2	11	0	2	7	0	0	0	0	129	1710
4:55 PM	16	23	0	0	0	41	18	14	13	0	1	6	0	0	0	0	132	1707
5:00 PM	8	20	0	0	0	63	14	9	15	0	3	5	0	0	0	0	137	1701
5:05 PM	13	26	0	0	0	52	19	4	20	0	0	10	0	0	0	0	144	1698
5:10 PM	9	26	0	0	0	41	22	10	15	0	1	3	0	0	0	0	127	1695
5:15 PM	11	19	0	0	0	47	17	5	15	0	1	8	0	0	0	0	123	1666
5:20 PM	9	24	0	0	0	48	18	10	8	0	0	8	0	0	0	0	125	1647
5:25 PM	12	23	0	0	0	63	13	4	10	0	1	4	0	0	0	0	130	1627

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	144	360	0	4	0	556	276	88	212	0	20	124	0	0	0	0	1784
Heavy Trucks	0	8	0		0	4	0		12	0	0		0	0	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 1/24/2018 11:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

APPENDIX B: EXISTING LOS WORKSHEETS

Lanes, Volumes, Timings
1: Keaau Pahoa Rd & Project Driveway

02/09/2018

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	16	712	4	8	832
Future Volume (vph)	20	16	712	4	8	832
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		320	350	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1845	1583	1770	1845
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1845	1583	1770	1845
Link Speed (mph)	15		45			45
Link Distance (ft)	169		1129			1035
Travel Time (s)	7.7		17.1			15.7
Confl. Peds. (#/hr)				3	3	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	2%	2%	3%
Adj. Flow (vph)	21	17	749	4	8	876
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	17	749	4	8	876
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 53.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	16	712	4	8	832
Future Vol, veh/h	20	16	712	4	8	832
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	320	350	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	2	2	3
Mvmt Flow	21	17	749	4	8	876

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1645	752	0	0	752	0
Stage 1	752	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	109	410	-	-	858	-
Stage 1	466	-	-	-	-	-
Stage 2	400	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	108	409	-	-	858	-
Mov Cap-2 Maneuver	244	-	-	-	-	-
Stage 1	465	-	-	-	-	-
Stage 2	396	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	244	409	858	-
HCM Lane V/C Ratio	-	-	0.086	0.041	0.01	-
HCM Control Delay (s)	-	-	21.1	14.2	9.2	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0	-

Lane Group	EBU	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	124	212	20	4	144	360	88	556	276
Future Volume (vph)	124	212	20	4	144	360	88	556	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992						0.959	
Flt Protected		0.955				0.986		0.995	
Satd. Flow (prot)	0	1754	0	0	0	1811	0	1777	0
Flt Permitted		0.955				0.986		0.995	
Satd. Flow (perm)	0	1754	0	0	0	1811	0	1777	0
Link Speed (mph)		30				45		45	
Link Distance (ft)		275				352		523	
Travel Time (s)		6.3				5.3		7.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	128	219	21	4	148	371	91	573	285
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	368	0	0	0	523	0	949	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	R NA	Left	Left	R NA	Left	Right
Median Width(ft)		12				0		0	
Link Offset(ft)		0				0		0	
Crosswalk Width(ft)		16				16		16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15	9	9	15		9		9
Sign Control		Yield				Yield		Yield	

Intersection Summary	
Area Type:	Other
Control Type: Roundabout	
Intersection Capacity Utilization 86.1%	ICU Level of Service E
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	61.1
Intersection LOS	F

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	368	523	949
Demand Flow Rate, veh/h	378	541	968
Vehicles Circulating, veh/h	681	450	286
Vehicles Exiting, veh/h	573	609	705
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	21.5	22.8	97.6
Approach LOS	C	C	F

Lane	Left	Left	Left
Designated Moves	LR	LT	LTR
Assumed Moves	LR	LT	LTR
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	378	541	968
Cap Entry Lane, veh/h	572	720	849
Entry HV Adj Factor	0.975	0.967	0.980
Flow Entry, veh/h	368	523	949
Cap Entry, veh/h	557	697	832
V/C Ratio	0.661	0.751	1.140
Control Delay, s/veh	21.5	22.8	97.6
LOS	C	C	F
95th %tile Queue, veh	5	7	28

APPENDIX C: NEAR TERM LOS WORKSHEETS

Lanes, Volumes, Timings
1: Keaau Pahoa Rd & Project Driveway

02/09/2018

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	16	898	4	8	1006
Future Volume (vph)	20	16	898	4	8	1006
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		320	350	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1845	1583	1770	1845
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1845	1583	1770	1845
Link Speed (mph)	15		45			45
Link Distance (ft)	169		1129			1035
Travel Time (s)	7.7		17.1			15.7
Confl. Peds. (#/hr)				3	3	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	2%	2%	3%
Adj. Flow (vph)	21	17	945	4	8	1059
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	17	945	4	8	1059
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	16	898	4	8	1006
Future Vol, veh/h	20	16	898	4	8	1006
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	320	350	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	2	2	3
Mvmt Flow	21	17	945	4	8	1059

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2024	948	0	0	948	0
Stage 1	948	-	-	-	-	-
Stage 2	1076	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	64	316	-	-	724	-
Stage 1	377	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	63	315	-	-	724	-
Mov Cap-2 Maneuver	187	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	323	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.4	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	187	315	724	-
HCM Lane V/C Ratio	-	-	0.113	0.053	0.012	-
HCM Control Delay (s)	-	-	26.7	17.1	10	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	0.4	0.2	0	-

Lane Group	EBU	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	193	390	20	4	186	365	89	564	441
Future Volume (vph)	193	390	20	4	186	365	89	564	441
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995						0.946	
Flt Protected		0.954				0.983		0.996	
Satd. Flow (prot)	0	1757	0	0	0	1808	0	1755	0
Flt Permitted		0.954				0.983		0.996	
Satd. Flow (perm)	0	1757	0	0	0	1808	0	1755	0
Link Speed (mph)		30				45		45	
Link Distance (ft)		275				352		523	
Travel Time (s)		6.3				5.3		7.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	199	402	21	4	192	376	92	581	455
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	622	0	0	0	572	0	1128	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	R NA	Left	Left	R NA	Left	Right
Median Width(ft)		12				0		0	
Link Offset(ft)		0				0		0	
Crosswalk Width(ft)		16				16		16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15	9	9	15		9		9
Sign Control		Yield				Yield		Yield	

Intersection Summary	
Area Type:	Other
Control Type: Roundabout	
Intersection Capacity Utilization 119.3%	ICU Level of Service H
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	174.7
Intersection LOS	F

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	622	572	1128
Demand Flow Rate, veh/h	638	591	1151
Vehicles Circulating, veh/h	691	711	403
Vehicles Exiting, veh/h	863	618	899
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	104.3	84.8	259.1
Approach LOS	F	F	F

Lane	Left	Left	Left
Designated Moves	LR	LT	LTR
Assumed Moves	LR	LT	LTR
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	638	591	1151
Cap Entry Lane, veh/h	566	555	755
Entry HV Adj Factor	0.975	0.968	0.980
Flow Entry, veh/h	622	572	1129
Cap Entry, veh/h	552	537	740
V/C Ratio	1.127	1.065	1.524
Control Delay, s/veh	104.3	84.8	259.1
LOS	F	F	F
95th %tile Queue, veh	20	17	56

Lanes, Volumes, Timings
1: Keaau Pahoa Rd & Project Driveway

02/09/2018

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	46	54	898	28	43	1006
Future Volume (vph)	46	54	898	28	43	1006
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		320	350	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1845	1583	1770	1845
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1845	1583	1770	1845
Link Speed (mph)	15		45			45
Link Distance (ft)	169		1129			1035
Travel Time (s)	7.7		17.1			15.7
Confl. Peds. (#/hr)				3	3	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	2%	2%	3%
Adj. Flow (vph)	48	57	945	29	45	1059
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	57	945	29	45	1059
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	54	898	28	43	1006
Future Vol, veh/h	46	54	898	28	43	1006
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	320	350	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	2	2	3
Mvmt Flow	48	57	945	29	45	1059

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2097	948	0	0	948	0
Stage 1	948	-	-	-	-	-
Stage 2	1149	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	57	316	-	-	724	-
Stage 1	377	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	53	315	-	-	724	-
Mov Cap-2 Maneuver	171	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	283	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.9	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	171	315	724	-
HCM Lane V/C Ratio	-	-	0.283	0.18	0.063	-
HCM Control Delay (s)	-	-	34.2	18.9	10.3	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	1.1	0.6	0.2	-

Lane Group	EBU	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	193	405	20	4	186	374	89	574	457
Future Volume (vph)	193	405	20	4	186	374	89	574	457
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996						0.945	
Flt Protected		0.954				0.983		0.996	
Satd. Flow (prot)	0	1759	0	0	0	1808	0	1753	0
Flt Permitted		0.954				0.983		0.996	
Satd. Flow (perm)	0	1759	0	0	0	1808	0	1753	0
Link Speed (mph)		30				45		45	
Link Distance (ft)		275				352		523	
Travel Time (s)		6.3				5.3		7.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	199	418	21	4	192	386	92	592	471
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	638	0	0	0	582	0	1155	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	R NA	Left	Left	R NA	Left	Right
Median Width(ft)		12				0		0	
Link Offset(ft)		0				0		0	
Crosswalk Width(ft)		16				16		16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15	9	9	15		9		9
Sign Control		Yield				Yield		Yield	

Intersection Summary	
Area Type:	Other
Control Type: Roundabout	
Intersection Capacity Utilization 121.3%	ICU Level of Service H
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	189.7
Intersection LOS	F

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	638	582	1155
Demand Flow Rate, veh/h	655	601	1178
Vehicles Circulating, veh/h	702	728	403
Vehicles Exiting, veh/h	879	629	926
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	120.0	97.1	274.7
Approach LOS	F	F	F

Lane	Left	Left	Left
Designated Moves	LR	LT	LTR
Assumed Moves	LR	LT	LTR
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	655	601	1178
Cap Entry Lane, veh/h	560	546	755
Entry HV Adj Factor	0.974	0.968	0.981
Flow Entry, veh/h	638	581	1155
Cap Entry, veh/h	545	528	741
V/C Ratio	1.170	1.101	1.560
Control Delay, s/veh	120.0	97.1	274.7
LOS	F	F	F
95th %tile Queue, veh	22	18	59

Appendix B

Literature Review for the
Proposed Pāhoa Library

Literature Review for the Proposed Pahoa Library, Ahupuaʻa of Makuʻu/Hālona/Pōpōkī, Keonepoko Iki, Keonepoko Nui, and Waiakahiula/Kaʻohe, Puna District, Island of Hawaiʻi

TMK: (3) 1-5-002:020, (3) 1-5-007:077, (3) 1-5-008:001, (3) 1-5-008:003, and (3) 1-5-010:030

Prepared For:

G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

February 2018

Keala Pono Archaeological Consulting, LLC ● PO Box 1645., Kāneʻohe, HI 96744 ● Phone 808.381.2361

Literature Review for the Proposed Pahoa Library, Ahupuaʻa of Makuʻu/Hālona/Pōpōkī, Keonepoko Iki, Keonepoko Nui, and Waiakahiula/Kaʻohe, Puna District, Island of Hawaiʻi

TMK: (3) 1-5-002:020, (3) 1-5-007:077, (3) 1-5-008:001, (3) 1-5-008:003, and (3) 1-5-010:030

Prepared For:

G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Prepared By:

Dietrix Duhaylonsod, BA
and
Windy Keala McElroy, PhD

February 2018

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāneʻohe, HI 96744 ● Phone 808.381.2361

MANAGEMENT SUMMARY

Keala Pono Archaeological Consulting has prepared a cultural and historical resources literature review for the proposed Pahoa Library. The purpose of this review was to identify the range of archaeological, historical, and traditional cultural properties, as well as associated individuals or events, linked to the district of Puna and/or the ahupuaʻa of Makuʻu/Pōpōkī/Hālona, Keonepoko Nui, Keonepoko Iki, and Waiakahiula/Kaʻohe. Many previous archaeological studies have been conducted in these ahupuaʻa, but the majority of resources and properties have been identified in the coastal area of the district and not in the general vicinity of the proposed project. Although the project area TMKs span several ahupuaʻa and covers a vast amount of land, five much smaller plots of land were specifically outlined as the area of interest, and these are located along the Keaʻau-Pāhoa roadway corridor. A site visit to these parcels was conducted.

There are no historic properties identified in surface surveys of the project area due to the lack of pre-contact and post-contact human activity in and modification of the area. However, as a few previous archaeological studies have documented, there are a relatively minimal amount of subsurface deposits, including midden, artifacts and human burials which have been identified in underground lava tubes. Additional lava tubes, or "caves," may be identified during future ground disturbance activities, and these may or may not have archaeological/cultural resources in them.

Once the specific location for the library is selected, the State Historic Preservation Division (SHPD) should be consulted to determine if further archaeological work is necessary.

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INTRODUCTION

At the request of G70, Keala Pono Archaeological Consulting conducted a literature review for a site selection for the proposed Pāhoa Library in the uplands of the Puna District, on the island of Hawai‘i. The potential sites for the library are situated along the Kea‘au-Pāhoa Highway corridor within the ahupua‘a of Maku‘u/Hālona/Pōpōkī, Keonepoko Iki, Keonepoko Nui, and Waiakahiula/Ka‘ohe. This work was designed to identify any historic properties that may be located on the parcels in anticipation of the proposed construction. It consisted of a literature review, with a brief field visit to the possible library sites.

This report is drafted to meet the requirements and standards of state historic preservation law. It will be included in an Environmental Assessment (EA) that is being prepared in accordance with the requirements of Chapter 343, HRS, Hawai‘i Administrative Rules, Title 11, Department of Health.

The report begins with a description of the project area and a historical overview of land use and archaeology in the area. Results of the literature review are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary at the end of the document.

The Project Area

The project area covers five TMKs stretching across four ahupua‘a. For this project, the parcels are designated as 1, 2, 3, 4, and 5 (Figure 1). Two potential sites for the library are on Parcel 3, and these are designated as 3A and 3B in Figure 1. The TMKs are (3) 1-5-007:077 (Parcel 1), (3) 1-5-002:020 (Parcel 2), (3) 1-5-008:001 (Parcel 3), (3) 1-5-008:003 (Parcel 4), and (3) 1-5-010:030 (Parcel 5). Some of the ahupua‘a where the TMKs are located have more than one name, and it is not clear if these names refer to different areas within the same land division, or if these are interchangeable names referring to the entire ahupua‘a as a whole. For the sake of this report, those ahupua‘a with more than one name will be labeled with all possible names separated by a forward slash. Parcel 1 of this project is located in the ahupua‘a of Keonepoko Nui. Parcel 2 is located in the ahupua‘a of Waiakahiula/Ka‘ohe. Parcel 3 is located on the three adjacent ahupua‘a of Keonepoko Iki, Keonepoko Nui, and Maku‘u/Pōpōkī/Hālona. Parcel 4 is located on the ahupua‘a of Maku‘u/Pōpōkī/Hālona. And Parcel 5 spans the two ahupua‘a of Keonepoko Nui and Maku‘u/Pōpōkī/Hālona. To shed further light on the names of these traditional districts, documentation in the Māhele Database (Waihona ‘Aina) recognizes Waiakahiula, Ka‘ohe, and Maku‘u as distinct ahupua‘a in Puna District, but does not recognize Pōpōkī nor Hālona. However, the online database of Hawaiian Place Names does list Pōpōkī and Hālona as distinct ahupua‘a in Puna District. In any event, all of these place names and parcels are situated within the greater district of Puna on Hawai‘i Island.

The Natural Environment

Puna lies partly on the lower slopes of Mauna Loa, but is located mostly on the undissected lava shield of Kīlauea. In its totality, the entire project area is situated within an elevation range from 240 m (787 ft.) above mean sea level to approximately 1,060 m (3,478 ft.) above mean sea level. However, the area of focus for the project site lies closer to the Kea‘au-Pāhoa Road within an elevation range of approximately 500–520 m (1,640–1,706 ft.) above mean sea level (Parcel 4) to approximately 660–680 m (2,165–2,231 ft.) above mean sea level (Parcel 2). The areas of focus in the other parcels all lie within that elevation range.

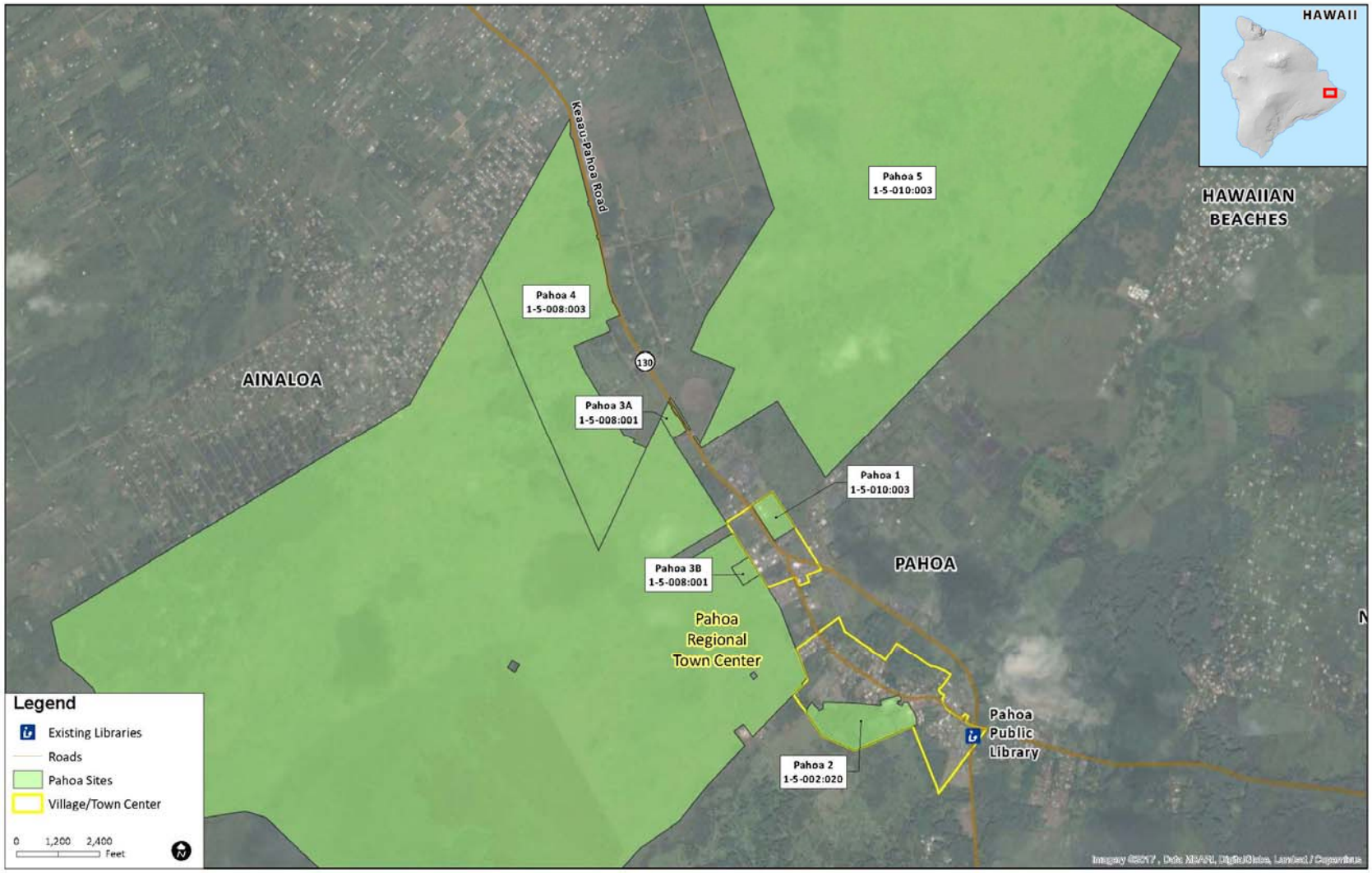


Figure 1. Project area TMK and potential locations for the Pāhoa Library (courtesy of G70).

In the Hawaiian language, puna is translated as "a spring of water", or "well-spring" and therefore, the district is appropriately named. Puna's natural environment is dominated by volcanic activity, unique geological events and formations, and a variety of plant communities that provide habitat for native species. Eruptions of Kīlauea and the nearby volcano Mauna Loa continue to shape the ecology of the region, and even the land itself. Other place names within the project area are found translated in the book, *Place Names of Hawaii*: Makuʻu, probably "canoe end-pieces;" Pōpōkī, "ti leaf bundle;" Hālona, "peering place;" Kaʻohe, "the bamboo;" Keonepoko Iki, "small Keonepoko;" and Keonepoko Nui, "large Keonepoko" (Pukui et al. 1974:39, 85, 86, 108, 143, 189). Keonepoko is further translated as "the short sand" while Waiakahiula is not listed in the book.

The moku of Puna contains many inland and shoreline springs that flow underground from rains having seeped into the porous volcanic rock from Mauna Loa. As such, these underground sources of water are known to be quite pristine, having been filtered through miles of lava rock. The system of underground subterranean lava tubes is also quite extensive throughout much of Puna. These lava tubes, having been accessible through collapsed openings, were used traditionally in the past, and are still looked after by Hawaiians today for their safe keeping.

Rainfall is abundant in Puna. The average annual precipitation falls between approximately 304 and 406 cm (120 and 160 in.) (Juvik and Juvik 1998:57). Temperatures for this area range from between the 60s and 80s, with the cooler temperatures and heavier rainfall occurring in the winter months (October through April), with warmer temperatures and lighter rainfall occurring during the summer months (May through September). Hawaiians traditionally observed this cycle of nature, and recite the ʻōlelo noʻeau, "Ka ua moaniani lehua o Puna / The rain that brings the fragrance of the lehua of Puna" (Pukui 1983:172).

The project area consists almost entirely of Pahoehoe Lava Flows (rLW) with relatively smaller pockets of soils from the Keaukaha Series (rKFD), the Keei Series (rKGD), the Olaa Series (OlD), and the Papai Series (rPAE) (See Figures 2–7). The Pahoehoe Lava Flows, found in Parcels 1, 3, 4, and 5, are described as follows:

> This lava has a billowy, glassy surface that is relatively smooth. In some areas, however, the surface is rough and broken, and there are hummocks and pressure domes. Pahoehoe lava has no soil covering and is typically bare of vegetation except for mosses and lichens. In the areas of higher rainfall, however, scattered ohia trees, ohelo berry, and aalii have gained a foothold in cracks and crevices. This miscellaneous land type is at an elevation from sea level to 13,000 feet. The annual rainfall ranges from 10 inches to more than 140 inches… In areas of higher rainfall, this lava contributes to the ground-water supply. (Sato et al. 1973:34)

Furthermore, the USDA Soil Conservation Service categorizes these lava flows as "Capability Subclass VIIIs, nonirigated." The capability classification is explained:

> Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes… [The small letter designation] s shows that the soil is limited mainly because it is shallow, droughty, or stony. (Sato et al. 1973:55)

The Keaukaha Soil Series, found in Parcels 2, 3, and 4, are described as follows:

> …Well-drained, thin organic soils overlying pahoehoe lava bedrock. These soils occupy the low areas of Mauna Loa. They are at an elevation ranging from near sea level to 1,000 feet and receive from 90 inches to more than 150 inches of rainfall annually. Their mean annual soil temperature is between 72° and 74° F. The natural vegetation consists of ohia,

> tree fern, uluhe fern, and guava… Keaukaha soils are used for woodland, pasture, and homesites. (Sato et al. 1973:27)

More specifically, the Keaukaha soil within the project boundaries is called Keaukaha extremely rocky muck, 6 to 20 percent slopes (rKFD). This soil is further explained:

> It is undulating to rolling and follows the topography of the underlying pahoehoe lava. Rock outcrops occupy about 25 percent of the area. In a representative profile, the surface layer is very dark brown muck about 8 inches thick… underlain by pahoehoe lava bedrock… [and] is strongly acid… The soil above the lava is rapidly permeable. The pahoehoe lava is very slowly permeable, but water moves rapidly through the cracks. Runoff is medium, and the erosion hazard is slight. In places roots are matted over the pahoehoe lava or extend a few feet into the cracks. Most of this soil is in native forest. Some areas are cleared and used for pasture. (Sato et al. 1973:27)

The capability classification for the Keaukaha extremely rocky muck (rKFD) is Capability Subclass VIIs, nonirrigated; pasture group 9. This classification is described as follows:

> Class VII soils have severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife… Unimproved pasture on these soils consists mostly of californiagrass, carpetgrass, ricegrass, and honohonograss. Ohia, tree fern, waiwi, and melastome grow in uncleared areas. The pasture sites have a 12-month growing season, but the best quality of forage is produced in the summer. The annual production is 3,000 to 5,000 pounds of air-dry forage per acre. (Sato et al. 1973:55, 65)

The Keei Soil Series, found in Parcel 3, are described as follows:

> …Well-drained, thin organic soils overlying pahoehoe lava bedrock. These are gently sloping to moderately steep soils on uplands. They are at an elevation ranging from 1,000 to 3,500 feet and receive from 90 to 150 inches of rainfall annually. Their mean annual soil temperature is between 62° and 65° F. The natural vegetation consists of ohia, tree fern, uluhe fern, and waiwe… Keei soils are used mostly for woodland and watershed. Small acreages are cleared and used for pasture. (Sato et al. 1973:27, 28)

More specifically, the Keei soil within the project boundaries is called the Keei extremely rocky muck, 6 to 20 percent slopes (rKGD). This soil is further explained:

> This soil is at intermediate elevations on Mauna Loa and Mauna Kea. Rock outcrops occupy 25 to 50 percent of the surface. In a representative profile the surface layer is very dark brown muck about 10 inches thick. It is underlain by pahoehoe lava bedrock. This soil is strongly acid… The soil above the lava is rapidly permeable. The lava is very slowly permeable, but water moves rapidly through the cracks. Runoff is medium and the erosion hazard is slight. In places roots are matted over the bedrock or extend a few feet into the cracks. This soil is used for pasture. (Capability subclass VIIs, nonirrigated, pasture group 9). (Sato et al. 1973:28)

The Papai Soil Series, found in Parcel 3, are described as follows:

> …Well-drained, thin, extremely stony organic soils over fragmental Aa lava. These soils are gently sloping to moderately steep. They are on uplands at an elevation ranging from near sea level to 1,000 feet and receive from 90 inches to more than 150 inches of rainfall annually. Their soil temperature is between 72° and 74° F. The natural vegetation consists

> of ohia, tree fern, uluhe fern, and guava… Papai soils are used mostly for woodland. Small areas are used for pasture, orchards, and truck crops. (Sato et al. 1973:46)

More specifically, the Papai soil within the project boundaries is called the Papai extremely stony muck, 3 to 25 percent slopes (rPAE). This soil is further explained:

> In a representative profile, the surface layer is very dark brown, extremely stony muck about 8 inches thick. It is underlain by fragmental Aa lava. This soil is slightly acid… Permeability is rapid, runoff is slow, and the erosion hazard is slight. (Capability subclass VIIs, nonirrigated; pasture group 9; woodland group 13). (Sato et al. 1973:46)

The Olaa Soil Series, found in Parcel 2, are described as follows:

> …Well-drained silty clay loams that formed in volcanic ash. These soils are nearly level to moderately steep. They are on uplands at an elevation ranging from 200 to 1,000 feet and receive from 100 to 175 inches of rainfall annually. Their mean annual soil temperature is between 71° and 73° F. The natural vegetation consists of ohia, tree fern, guava, and hilograss… Olaa soils are used for sugarcane. (Sato et al. 1973:42)

More specifically, the Olaa soil within the project boundaries is called the Olaa extremely stony silty clay loam, 0 to 20 percent slopes (OlD). This soil is further explained:

> This soil is undulating to rolling and has a dominant slope of about 12 percent. In a representative profile the surface layer is very dark brown extremely stony silty clay loam about 16 inches thick. It is underlain by Aa lava. This soil dehydrates irreversibly into gravel-size aggregates. It has a medium acid surface layer and a slightly acid subsoil. In places the surface layer is nonstony… Permeability is rapid, runoff is slow, and the erosion hazard is slight. Roots penetrate to the fragmental Aa lava. This soil is used for sugarcane. (Capability subclass VIIs, nonirrigated; pasture group 9; woodland group 7). (Sato et al. 1973:42)

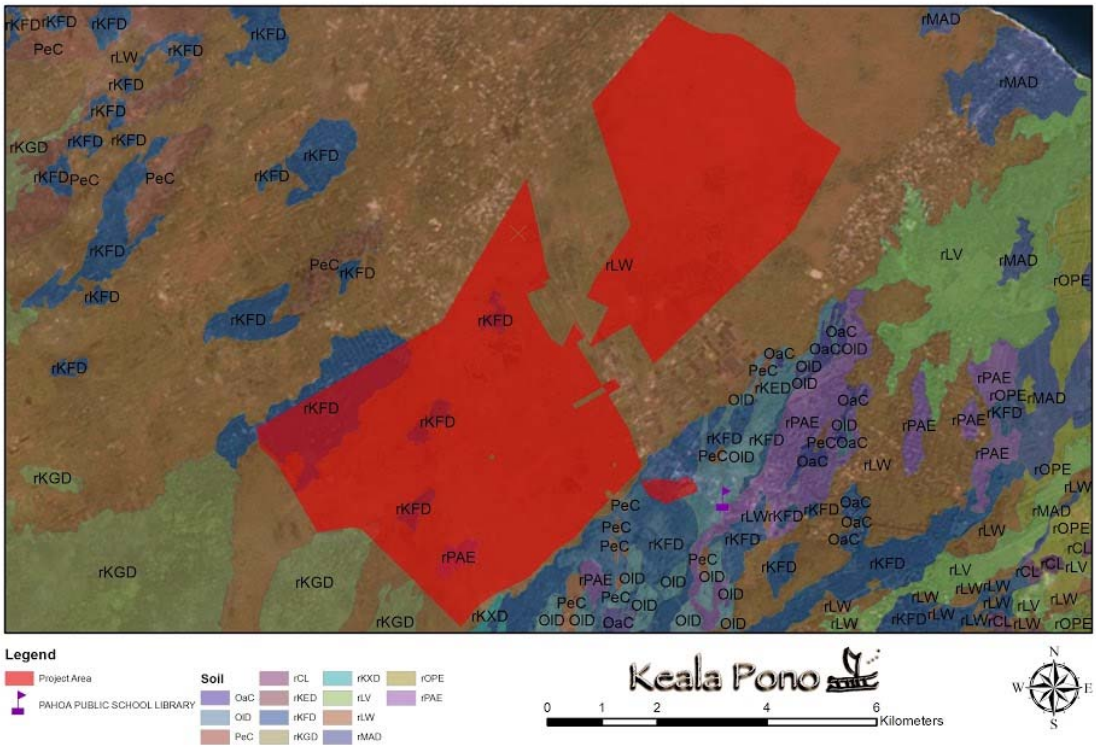


Figure 2. Soils of all five parcels of the Pāhoa Library project.

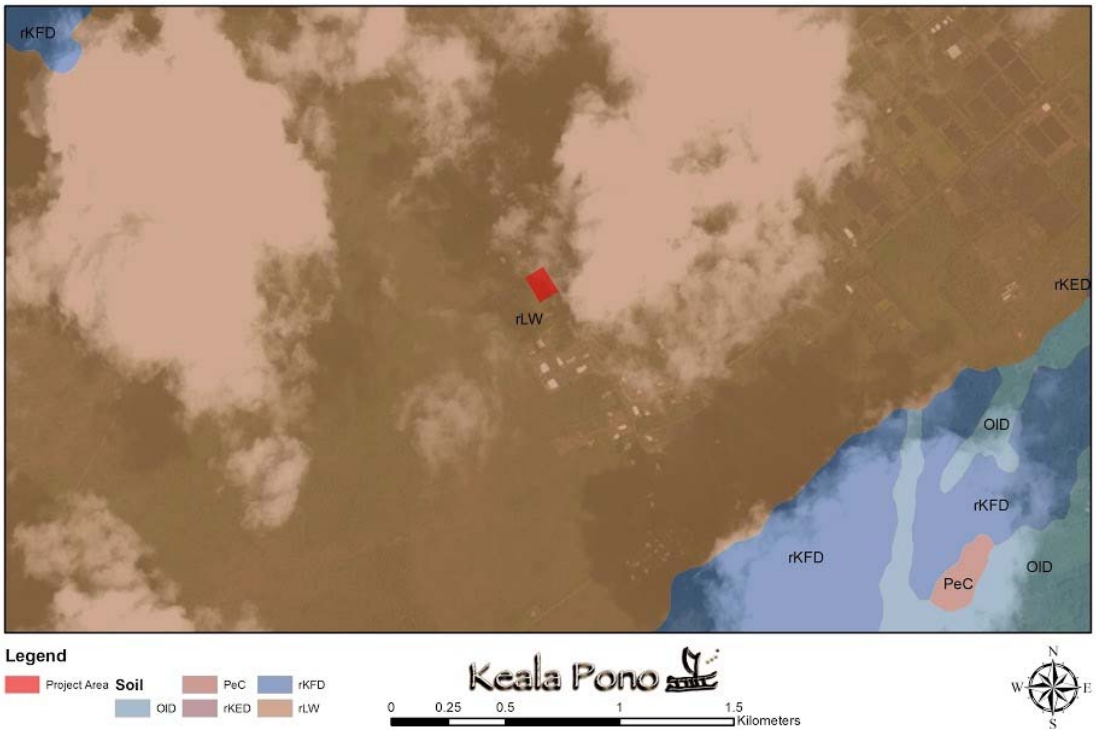


Figure 3. Parcel 1 of the Pāhoa Library project. Soils are rLW.

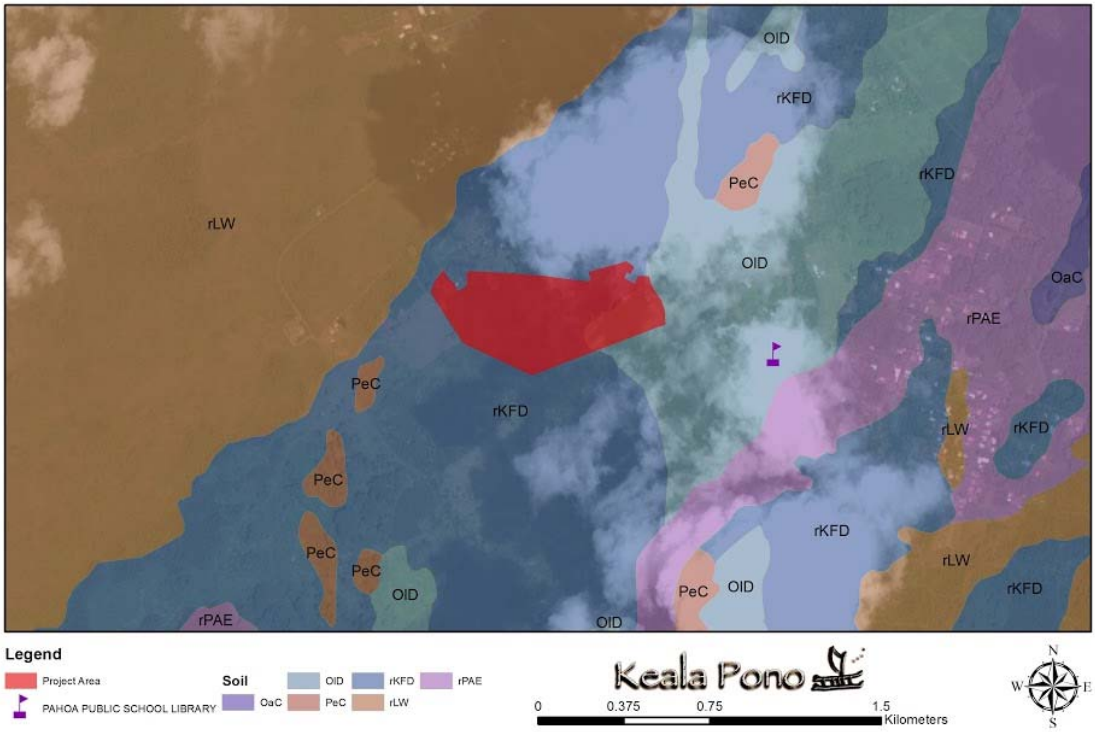


Figure 4. Parcel 2 of the Pāhoa Library project. Soils are rFKD and OlD.

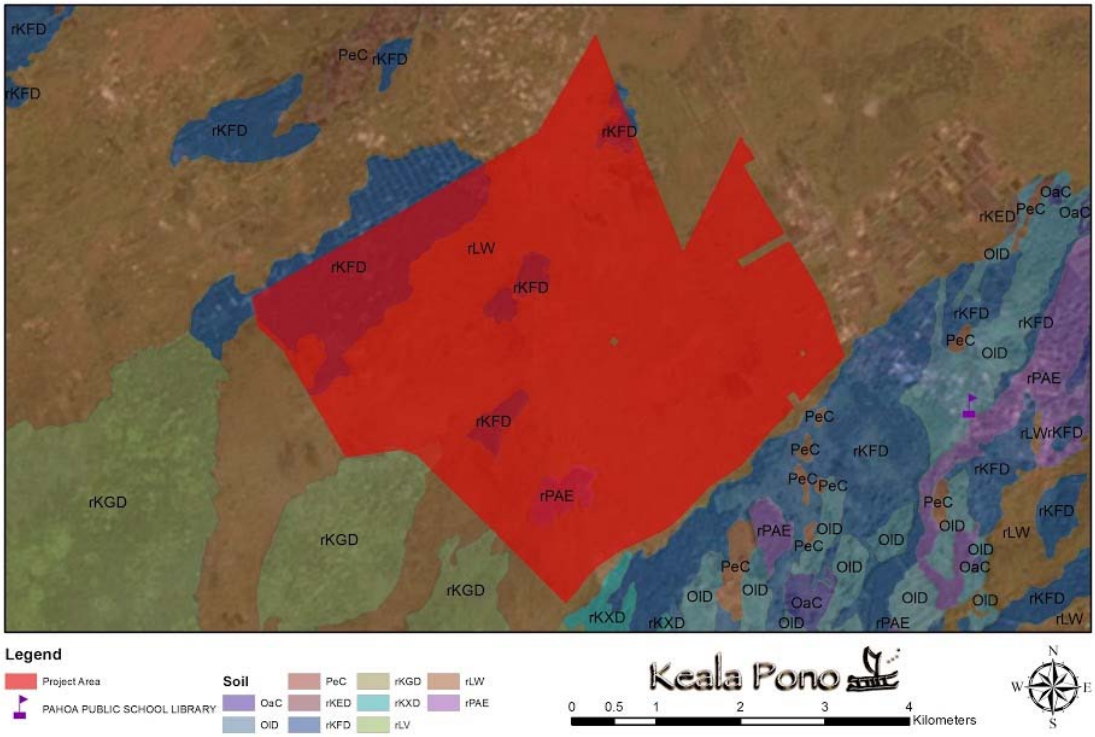


Figure 5. Parcel 3 of the Pāhoa Library project. Soils are rLW, rKFD, rPAE, and rKGD.

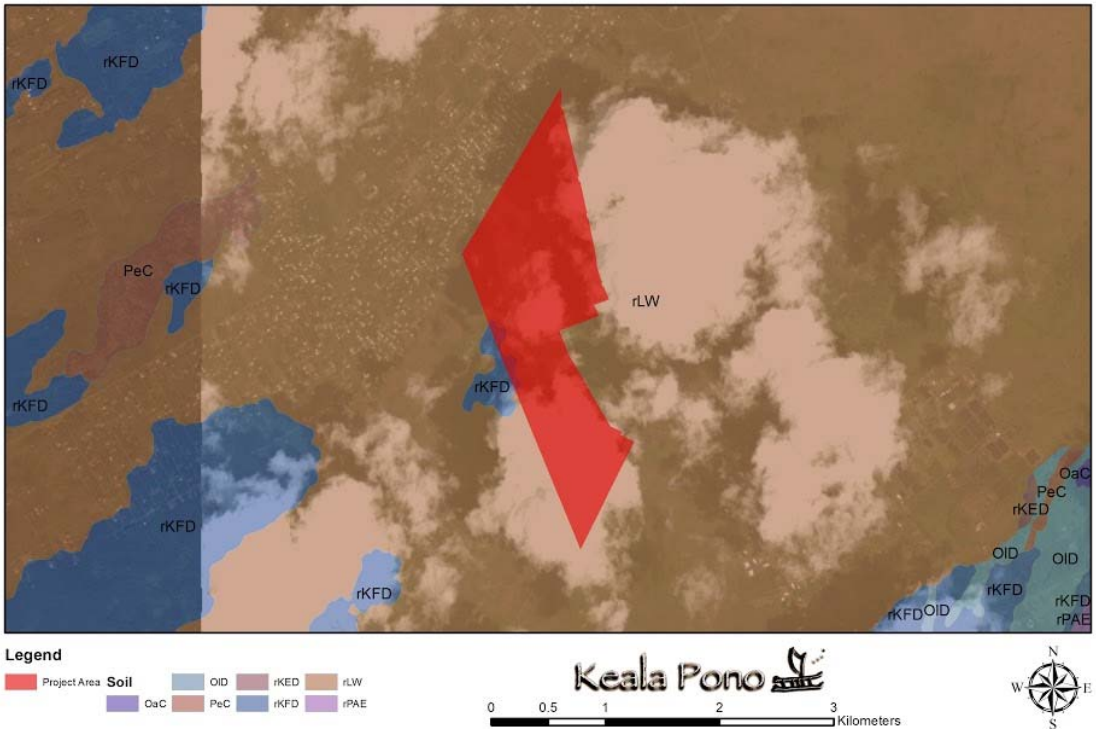


Figure 6. Parcel 4 of the Pāhoa Library project. Soils are rLW and rKFD.

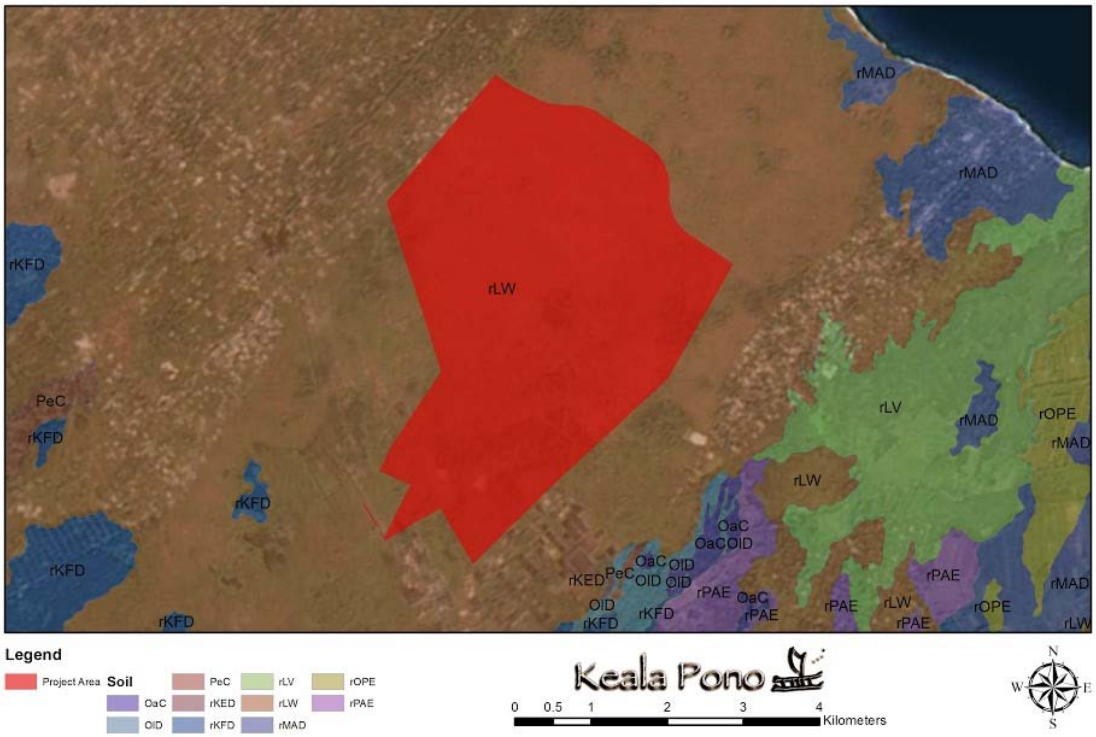


Figure 7. Parcel 5 of the Pāhoa Library Project. Soils are rLW.

The land and vegetation surrounding the project area have been significantly transformed by modern activity. These lands were once wet forests and woodlands before human settlement changed their character. Juvik and Juvik (1998) describe the flora of these ecosystems:

> Vegetation: closed canopy forest of ʻōhiʻa [Metrosideros polymorpha], sometimes with koa or ʻōlapa codominant; dense tree fern (Cibotium species) understory; also, opencanopy forests or woodlands of ʻōhiʻa and uluhe (Dicranopteris linearis). Forests of hala (Pandanus tectorius) in coastal lowlands. Shrublands of ʻōhiʻa and ferns; also, ʻākala (Rubus hawaiensis) shrublands. Rare bogs and mosses (Racomitrium species), sedges, grasses, and native shrubs, Fauna: primary habitat of most extant Hawaiian honeycreepers and other forest birds ... great diversity of native invertebrates. Endangered species consist of more than 50 plants species ... birds include ʻoʻū (Psittirostra psittacea), Maui parrotbill (Pseudonestor xanthophrys), and ʻākohekohe (Palmeria dolei). (Juvik and Juvik 1998:126–127)

Nearly the entire crest of Kīlauea's east rift zone, all in Puna, has been covered by lava erupted within the past 400 years. And a few small, isolated patches of lava flows ranging in age from 750 to 2,500 years old are still exposed at the surface. But of the approximately 500 square miles in Puna, 50 square miles have been covered since 1983. Since ancient times, human settlement has been affected by lava flows. Oral history accounts speak of the collapse of the shoreline from Kaʻū all the way to Kumukahi that submerged many of the traditional Hawaiian resource features (Maly and Maly 2004). In spite of these dangers, early Hawaiians lived along the coast in villages around small coves where they could also access the inland areas of the ahupuaʻa for gathering and planting.

Most recently in June 2014, a lava flow called "the June 27th flow" erupted from a vent from the spatter cone Puʻu ʻŌʻō on the east rift zone of Kīlauea. It traveled in a northwest direction and stopped short of the town of Pāhoa. The June 27th lava flow continues to advance to the northeast of its vent on the flank of Puʻu ʻŌʻō. Scattered breakouts continue to be active northeast of Puʻu ʻŌʻō.

BACKGROUND

A brief historic review of the project vicinity is provided below, to offer a better holistic understanding of the use and occupation of the area. In the attempt to record and preserve both the tangible (i.e., traditional and historic archaeological sites) and intangible (i.e., moʻolelo, ʻōlelo noʻeau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaiʻi State Library, the University of Hawaiʻi at Mānoa libraries, the SHPD libraries, and online on the Office of Hawaiian Affairs website and the Waihona ʻAina, Huapala, and Ulukau databases. Archaeological reports and historical reference books were among the materials examined.

Moʻolelo

Moʻolelo show Puna prominently associated with both legendary and historical figures including Kāne, Pele, Hiʻiaka, Halemano, Papalauahi, Kumukahi, and Kaliʻikuku.

Kāne, a Hawaiian god and ancestor of the chiefs and commoners, is the god of sunlight, fresh water, verdant growth, and forests (Pukui 1983). It is said that before Pele migrated to Hawaiʻi from Kahiki, there was "no place in the islands . . . more beautiful than Puna" (Pukui 1983:11).

Contributing to that beauty were the groves of fragrant hala and forests of ʻōhiʻa lehua for which Puna was famous:

> *Puna pāia ʻala i ka hala* (Puna, with walls fragrant with pandanus blossoms)
>
> Puna, Hawaiʻi, is a place of hala and lehua forests. In olden days the people would stick the bracts of hala into the thatching of their houses to bring some of the fragrance indoors. (Pukui 1983:301)

Although Kāne apparently had a hand in cultivating the ancestral land, no doubt that Pele's womb was ready to pour forth and rebirth the land, a living force that is undeniable, as recent events have shown. As such, Puna is the focus of regenerative power. It is the easternmost district of the Hawaiian Islands, the land where the sun first rises (Kāne's eye). It is the district where the volcano continuously creates new land, and new vegetation comes to life on this newly formed ʻāina.

McGregor (2007:147) notes that "Throughout all of the folklore for Puna, Pelehonuamea and her family of deities emerge as the natural primal elements that dominate and shape the lives of the chiefs and people of Puna."

Puna, along with Hāʻena, Hōpoe, Keaʻau, and Nanahuki, are the lands that inspire hula creation because of the natural movements of waves, wind, and trees. "Ke Haʻa La Puna" is the first recorded hula in the Pele and Hiʻiaka story.

Hiʻiaka, the youngest of the sisters, after gathering beautiful flowers for lei by the Puna sea, feels inspired by the natural beauty and interactions between the northeast tradewinds and the hala forests of Puna, and accepts her sister Pele's challenge to dance the hula and chants "Ke Haʻa La Puna I Ka Makani." The passage below was translated by Emerson (1915).

> Ke haʻa la Puna i ka makani;
> Puna's a dance in the breeze;

Haʻa ka ulu hala i Keaau;
The hala groves of Keaau shaken;

Haʻa Haʻena me Hopoe;
Haʻena and Hopoe are swaying;

Haʻa ka wahine,
The thighs of the dancing nymph.

Ami I kai o Nana-huki, la
Quiver and sway, down at Nana-huki

Hula leʻa wale,
A dance most slightly and pleasing,

I kai o Nana-huki, e-e!
Down by the sea Nana-huki

The Moʻolelo of Halemano

Other stories significant to the land of Puna, are found in Abraham Fornander's *Collections of Hawaiian Antiquities and Folk-lore* (1919), and include the account of "Kaʻao no Halemano." Here we see the status of Puna to other islands and its relationship between various ahupuaʻa of the district. This account is set in the period of ca. AD 1500, just before ʻUmi's rise to power.

Having been heart-stricken from not meeting the woman of his dreams, Halemano dies, but is brought back to life by his sorceress sister, Laenihi. Halemano describes this woman to his sister,

> …She is very beautiful; her eyes and body are perfect; she has long, straight, black hair; is tall, dignified and seems to be of very high rank like a chiefess...her dress seems to be scented with pele and mahuna of Kauai, and her pa-u is made of some very light material dyed red. She wears a hala wreath and a lehua wreath on her head and around her neck.

Laenihi then says:

> "It is in Puna and Hilo that the lehua blossoms are found. It is in Puna that the ouholowai of Laa and the pukohukohu are found; therefore, your lover must be a woman of Puna; she is not of the west."

In Halemano's dream, he meets her again and asks,

> "What is the name of the land of your birth and what is your name?"
>
> "Kapoho in Puna, Hawaii, is the land of my birth; it is where the sun rises, and not in the west. My name is Kamalalawalu." (Fornander 1919 Volume V, Part II:228–236)

Kamalalawalu was the daughter of Hanakaulua and Haehae, chiefs of the land of Kapoho. Having been brought up under very strict kapu, no one was allowed to see her and she had no companions other than her own brother, Kumukahi.

Laenihi traveled to Puna to find the woman wahine o ka pō or dream woman that her brother sought, and verified that it was she, the woman of Halemano's dreams. To be able to meet Kamalalawalu, Laenihi transformed herself into a fish, and caused the wind from the sea to blow (called the unuloa),

so that the surf off Kaimū would roll and bring out the people for surf riding. Kamalalawalu and her brother, Kumukahi took to the beach, and Kamalalawalu saw Laenihi as a special fish and asked her brother to capture it and bring it home for her. Laenihi then transformed herself into a rooster and crowed until dawn, when she then became a woman and was able to meet Kamalalawalu and make plans so that Halemano could come and steal her from Puna to marry her.

This moʻolelo tells of the trials and tribulations of Halemano's and Kamalalawalu's relationship, where they move to live on many of the Hawaiian Islands, separate to have other spouses, and try again to be together only to separate again.

Halemano, who was becoming experienced at the art of singing and chanting, once again met up with Kamalalawalu. He exhibited his prowess at the game of kilu, and chanted:

> A kapu is placed over the roads of Puna by the fire of Laka,
> For I see its reflection in my eyes.
> It is like the breadfruit in the lowlands of Kookoolau;
> I am almost tempted to pick it;
> Being repelled by shame, I touch it not.
> Alas, my love!
>
> My love from the big sea of Puna
> Whose waves beat on the sea cliffs.
> You forget your lover while you went astray in Kaimu,
> Your mouth was closed, refusing to call.
> My love of the home where we were friendless,
> That home to which we had no claim, though I made no complaint,
> Where I drew warmth from the sun at Maliu.
> Take heed to my supplications
> My own, my love!

Kamalalawalu, supplanted by the undoing's of Kikekaʻala, chanted her woe:

> The wind is blowing; it is the Koolauwahine
> You will surely see Haili,
> Haili the plain of lehua entwined by the birds;
> They are carrying away the awa of Puna that grow on trees,
> The sweet sound oo of the forest,
> Whose sweet notes can be heard at eventide.
> My companion of the cold, watery home of Hilo,
> That cold wet home where you and I lived,
> O my own beloved husband!

Eventually, Halemano returned to Oʻahu, and then to Kauaʻi, and Kamalalawalu tried to follow. Heartbroken, she settled on Oʻahu but was taken back to Hawaiʻi after a fierce battle was waged by the Puna aliʻi Huaʻa and the Hilo aliʻi Kulukuluʻa, after they were advised by the Kalapana astrologer to bring her home to Hawaiʻi.

The Moʻolelo of Papalauahi

There was an aliʻi of the district of Puna who organized sporting events and festivities where all the neighboring chiefs would rally. His name was Papalauahi, and he was a very accomplished athlete. On one occasion, Pele arrived as a beautiful young woman and challenged him to a hōlua race. After looking on from above, gathering in all the excitement and impulsively borrowing a sled from one

of the chiefs to race with him, she was abruptly defeated. Pele became angry and stamped on the ground so that floods of lava broke out, destroying many of the chiefs as they fled in every direction. They and the spectators were transformed into pillars of stone (Westervelt 1916:30).

The Moʻolelo of Kumukahi

Kumukahi was a notable chief of Puna. He was a tall and strikingly handsome man who was a great aficionado of the ancient games. Pele found delight in this man and his love for the games; but one day, disguised as an old woman with fiery eyes, she showed up insisting that he include her in the game rivalry. When Kumukahi rebuffed her, Pele chased and entrapped him on the beach by enveloping him in a great mound of lava, which she also poured far out into the ocean. Thus it is said that Cape Kumukahi, the southeast point of the island of Hawaiʻi, was formed by Pele's retribution when her anger flashed out in a great fountain of volcanic fire into the sea (Westervelt 1916:27–28).

The actual name of the cape came from Kumukahi, who was the mythological figure from Kahiki at the time when the gods still walked on earth. He was represented as a red stone, and his wives, also stones, transformed the seasons by pushing the sun back and forth. The stones have been used to calculate the solstices (Pukui et al. 1974:124). At some point Pele destroyed Kumukahi and his family as mortal beings. However, they were powerful ʻaumākua. Kumukahi could take the form of a man or a kōlea bird, while Palamoa could take the form of a rooster.

Kumukahi translates to "first beginning" (Pukui et al. 1974:124). In the traditional processional chants "Hoʻopuka e ka Lā ma ka Hikina" and "Hiki mai ka Lā ma ka Hikina," Kumukahi served as the eastern gateway through which sun and dancer passed on a journey that "floods the earth with light and brings forth vitality to all [they touch]" (Pukui n.d.).

The Moʻolelo of Kaliʻikuku

Puna's moʻolelo tell of its Eden-like natural environment, where ʻōhiʻa and hala trees and other plants grew in abundance. A chief of Puna, Kaliʻikuku, while on Oʻahu once bragged to a prophet of Pele, Kaneakalau, little knowing that Pele had destroyed all that he cherished. He said "My country is charming. Abundance is found there. Rich, sandy plains are there, where everything grows wonderfully" (Westervelt 1916:31). The prophet informed him that Pele had desolated Puna, that the trees are no longer in the mountains, the people burned, and the land is now barren. Upon returning home, Kaliʻikuku came around the eastern side of the island, landed his canoe, and climbed to a point where he could see Puna. He witnessed his once fertile plains now covered with smoking lava, and what remained of the forests were still burning. Because of Kaliʻikuku boasting, Pele demonstrated her power for all to see.

Traditional Land Use

Traditional land use in Hawaiʻi was founded on the vertical arrangement of a volcanic island's natural ecosystems, with subsistence systems based on several biological resource zones, including the upland/inland forest zone, or the wao nahele, the agricultural zone, or the wao kanaka, and the coastal zone, or the kahakai. This latter zone included the strand area, fringing reefs, limu beds, lagoons, fishponds, and estuaries. The muliwai are mostly on the windward side of the islands and are part of another biological resource zone, the kaha wai or freshwater ecosystems and streams. The ocean (kai), near the shore can also be considered a biological resource zone (Mueller-Dombois 2007).

Since the ahupuaʻa served as the complete subsistence system for Hawaiian family groups (the ʻohana) prior to European contact in 1778, many important features would be inherent within the resource zones. Besides habitation sites in the kahakai and wao kanaka, there were also transitional habitation sites near and in the wao nahele. Both the wao kanaka and kahakai included temples (heiau) and burial places (hē) as well as irrigated terraces (loʻi kalo) for taro cultivation (Mueller-Dombois 2007).

In pre-contact Hawaiʻi, all natural resources extending from the mountaintops to the deep sea were held in "trust" by the chiefs (mōʻī, aliʻi ʻai moku, or aliʻi ʻai ahupuaʻa). The right to use resources of lands and oceans was given to the hoaʻāina at the prerogative of the aliʻi and their representatives or land agents (konohiki or haku ʻāina). Following a strict code of conduct, which was based on ceremonial and ritual observances, the people of the land were generally able to harvest the land and ocean resources for their own sustenance, and to pay tribute to the class of chiefs and priests who oversaw them.

Coastal regions of the east and southern shores of Puna were noted for anchialine ponds from which ʻōpaeʻula were harvested for bait in ʻōpelu fishing. Puna was noted for the ʻōpelu fisheries, and for ulua fisheries and techniques of fishing with puhi. Kūkaula fisheries in Puna included those for prized eating fish such as the ʻulaʻula koaʻe and ʻōpakapaka. Paʻakai (salt) making was also an important practice along the southern coastline of Puna (Maly and Maly 2004).

The people of ʻŌlaʻa and other interior parts of Puna were known to produce very fine mats and kapa made from the bark of the māmaki (Burtchard et al. 1994:48). Olonā fiber was made into fishing nets and line because of its durability and resistance to seawater. Its excellence made it a highly valued item, not only among Hawaiians but also among foreign sailors (Abbott 1992:59). Whalers would pay high prices for olonā for making lines for whales (MacCaughey 1920:241). The olonā trade was a source of considerable profit to the aliʻi (Kamakau 1996:53). Also in the uplands, ʻōʻō birds were captured for their precious yellow feathers that were fashioned into prized items such as cloaks (MacCaughey 1920:240).

A general model of pre-contact settlement patterns for the Puna coastline includes both habitation sites and agricultural complexes along with ceremonial and burial areas, all associated with a fairly dense population. Regional trade networks would have provided connections facilitating the traditional Hawaiian land tenure system of subsistence farming abounding with well-cultivated plantations of kalo, ʻuala, and kō; as well the collection of forest resources. In *The Hawaiian Planter*, E.S. Craighill Handy related several methods of cultivation common and unique to Puna:

> In the wet, lowland forests of Puna, taro used to be planted under the pandanus trees, which were felled and cleared to let in the sun after the taro had rooted and put forth the first growth of leaves. It is said that here the cutting was planted wrapped in a roll of dry pandanus leaf to keep it moist and give it nourishment in the stony ground of the lava-covered lowlands. (Handy 1940:53)
>
> Despite the fact that sweet potatoes were planted almost universally and many patches are still maintained [in 1931–1932], the Puna natives seem to regard this vegetable with little interest, probably because Puna people prided themselves upon and relished their breadfruit, and also because potato was nowhere and at no time the staple for this rain swept district. (Handy 1940:165)

Power and Conquest in Puna

Historical accounts of the ruling chiefs of Hawaiʻi and Puna have been largely drawn from the works of Fornander (1969, 1973), Fornander and Thrum (1996), and Kamakau (1961); as well as Dorothy

Barrere‘s *Political History of Puna* (1959). These accounts tell of many ruling chiefs who constantly vied for power. Their ruling scenarios fluctuated widely, some reigning over one or more ahupua‘a; and others holding command over several or entire districts.

By the time of Līloa (ca. 1475), Hawai‘i had been divided into the six major districts that are extant today. While each of the districts were ruled by independent chiefs, all of them recognized Līloa as the supreme chief (Kamakau 1961:1). When ‘Umi-a-Līloa, the son of Līloa ascended to the throne of his father (ca. 1525), he brought all of the districts directly under his rule, subjugating rebel chiefs. Kamakau (1961) reports that:

> Hua‘a was the chief of Puna, but Puna was seized by ‘Umi and his warrior adopted sons, … Hua‘a was killed by Po‘i-mai-wa‘a on the battle field of Kuolo in Kea‘au, and Puna became ‘Umi-a-Līloa’s. (Kamakau 1961:17–18)

Fornander (1969) also notes that at this time, parts of Puna came under the rule of the famed, blind chief ‘Ī-mai-ka-lani, of Ka‘ū. It was only after lengthy battles, that ‘Umi was able to secure all of Puna and Ka‘ū under his rule (Fornander 1969:34).

In 1760 Kalani‘ōpu‘u became the ali‘i nui of Hawai‘i by defeating all of his rivals. Kalani‘ōpu‘u’s son, Kīwala‘ō was named his heir, and Kalani‘ōpu‘u’s nephew, Kamehameha, was set in charge of the god Kūkā‘ilimoku. At the time of Captain Cook’s arrival (1778), Kalani‘ōpu‘u was on the island of Maui. Kalani‘ōpu‘u returned to Hawai‘i and met with Cook on January 26, 1779, exchanging gifts, including an ‘ahu‘ula and mahiole that he was wearing. Cook also received pieces of kapa, feathers, hogs, and vegetables. In return, Cook gave Kalani‘ōpu‘u a linen shirt and a sword; Cook later gave other presents to Kalani‘ōpu‘u, among which one of the journals mentions “a complete tool chest.”

Kalani‘ōpu‘u died shortly thereafter (1782). Before his death, Kalani‘ōpu‘u gave an injunction to Kīwala‘ō and Kamehameha, and to all the chiefs that Kīwala‘ō would be the heir to Ka‘ū, Kona, and Kohala. Disagreements arose over the division and redistribution of lands following Kalani‘ōpu‘u’s death. John Papa ‘Ī‘ī (1959) records that while the division of lands to be made by Kīwala‘ō was being discussed, his half-brother, Keōua, was told by one of his advisers:

> “Perhaps you should go to the chief and ask that these lands be given to us. Let Waiakea and Keaau be the container from whence our food is to come and Olaa the lid.” Keoua did so, but the other Kau chiefs objected to this and spoke disparagingly to him. When Keoua returned, his advisor asked, “How was your venture?” When Keoua told him all that had been said, the man remarked seriously, “A break in a gourd container can be mended by patching, but a break in the land cannot be mended that way.” (‘Ī‘ī 1959:14)

Soon after Kalani‘ōpu‘u’s death, Kīwala‘ō was killed in combat by Kamehameha‘s forces. After many years of warfare, Kamehameha went on to conquer all of Hawai‘i Island and unify the island chain. Kīwala‘ō’s daughter, Keōpūolani, would end up marrying Kamehameha and mothering three heirs of the dynasty: Liholiho (Kamehameha II), Kauikeaouli (Kamehameha III), and the princess Nāhienaena.

19th Century Puna

There is relatively very little documentation of Puna, and especially of nā ahupua‘a in the project area, in the 19th century compared to that of the major population centers throughout the archipelago. Most of the records of Puna in the early 19th century come from missionaries documenting their work. In the second half of the century, Puna is mentioned in land claims following the division of land through the Māhele.

1820s

Reverend William Ellis recorded his observations during a two-month journey around Hawai‘i Island in 1823. His account is the first description of an entire island and includes many observations on Hawaiian agricultural areas, practices, crops, and demography. References made by Ellis were used to define the perimeters of the agricultural zones on Hawai‘i Island during the period of his tour. Ellis' main purpose, along with members of the American Board of Commissioners for Foreign Missions (ABCFM), was to seek out communities in which to establish church centers for the growing Calvinist mission. His trek along the Puna coast to Hilo Bay generated the earliest overland description of the coastal zone:

> Kaimu is pleasantly situated near the sea shore, on the S.E. side of the island, standing on a bed of lava considerably decomposed, and covered over with a light and fertile soil. It is adorned with plantations, groves of cocoa-nuts, and clumps of kou-trees. It has a fine sandy beach, where canoes may land with safety; and, according to the houses numbered to-day, contains about 725 inhabitants. (Ellis 1963:196)

> [W]e reached Kaau [Kea‘au], the last village in the division of Puna. It was extensive and populous, abounding with well-cultivated plantations of taro, sweet potatoes, and sugarcane; and probably owes its fertility to a fine rapid stream of water, which, descending from the mountains, runs through it into the sea. (Ellis 1963:212)

> Its [Puna‘s] shore line, including its bends and flexures, is more than seventy miles in extent. For three miles inland from the sea it is almost a dead level, with a surface of pahoehoe or field lava, and a-a or scoriaceous lava, interspersed with more or less rich volcanic soil and tropical verdure, and sprinkled with sand-dunes and a few cone and pitcraters… The rains are abundant, and subterranean fountains and streams are numerous, carrying the waters down to the sea level, and filling caverns, and bursting up along the shore in springs and rills, even far out under the sea… Puna has many beautiful groves of the cocoa-palm, also breadfruit, pandanus, and ohia, and where there is soil it produces under cultivation, besides common vegetables, arrowroot, sugar-cane, coffee, cotton, oranges, citrons, limes, grapes, and other fruits. On the highlands, grow wild strawberries, cape gooseberries, and the ohelo, a delicious berry resembling our whortleberry. (Coan 1882:26)

1830s

The appointed minister of the Hilo Mission, Reverend Titus Coan, made repeated tours through the Puna and Hilo Districts as part of his regular duties in 1834 and recorded what he saw:

> Its [Puna‘s] shore line, including its bends and flexures, is more than seventy miles in extent. For three miles inland from the sea it is almost a dead level, with a surface of pahoehoe or field lava, and a-a or scoriaceous lava, interspersed with more or less rich volcanic soil and tropical verdure, and sprinkled with sand-dunes and a few cone and pitcraters… The rains are abundant, and subterranean fountains and streams are numerous, carrying the waters down to the sea level, and filling caverns, and bursting up along the shore in springs and rills, even far out under the sea… Puna has many beautiful groves of the cocoa-palm, also breadfruit, pandanus, and ohia, and where there is soil it produces under cultivation, besides common vegetables, arrowroot, sugar-cane, coffee, cotton, oranges, citrons, limes, grapes, and other fruits. On the highlands, grow wild strawberries, cape gooseberries, and the ohelo, a delicious berry resembling our whortleberry. (Coan 1882:26)

An article written by someone named Barenaba and dated April 13, 1836, in the Hawaiian language newspaper, *Ke Kumu Hawaii,* tells of the preaching of the Word of God to the people in Waiakahiula, Kaʻohe, and Makuʻu, among other places. It also mentions the preaching at a place called Keonepako, which is probably a misspelled version of Keonepoko Iki or Keonepoko Nui.

> HILO, Ianuari 22, 1836.
>
> Aloha oukou a o'u hoahanau a pau iloko o Kristo.
>
> Ke hoike aku nei au ia oukou i ko'u hele ana, a me ka'u hana ana, i ko'u kaahele ana i ka aina o Puna…. A kakahiaka, hai aku la au i ka olelo a ke Akua i ka poe malaila, a ma Kula, a ma Koae, a ma Kahuwai, a ma Nanawale poeleele, a kakahiaka, hai aku au i ka olelo a ke Akua ma Waiakahiula, a me Kaohe, a ma Keonepako, a ma Makuu, a ma Waikahekahe, alaila hiki ma Keaau i ka poaha o ka lua o ko Sabati o Ianuari, loaa ka'u Wahine malaila. Elua au hai ana aku i ka olelo a ke Akua i na kanaka malaila.
>
> A i ka poaono, puka makou ma Hilo, a halawai pu me na hoahanau me ka olioli i ka Haku. Na'u na BARENABA. (Barenaba 1836)

1840s–1860s

Another article, taken from the newspaper, *Ka Elele Hawaii,* gives a list of the names of the various land divisions around the islands (*Ka Elele Hawaii* 1848). For the Island of Hawaiʻi, Kaʻohe, Keonopoko [probably Keonepoko], Pōpōkī, Hālona, and Makuʻu are listed as ahupuaʻa in the district of Puna. Notice that Waiakahiula is not mentioned here.

The Old Government Road (also referred to as the Puna Trail) was previously studied by Lass (1997) and Maly (1999) within the ahupuaʻa of Keaʻau, well to the east of the current project area. Currently, this road is dirt-covered and maintained for vehicular access. Maly (1999) relates that the current alignment of the Old Government Road, which evolved from earlier trail routes, was under construction by the 1840s. The road remained the preferred route of travel between Hilo and the outlying areas of Puna until 1895, when the Keaʻau-Pāhoa Road (Highway 130) was established to access the growing inland population centers and agricultural areas (Maly 1999:6).

Puna and the Changes in Land Tenure

In the mid-1800s, during the reign of Kamehameha III, the Hawaiian kingdom became increasingly exposed to outside influences, and the Hawaiian monarchy faced a crossroads of major change. "The Constitution of 1840 confirmed that only two offices could convey allodial title. These were the mōʻī and the kuhina nui. The Māhele was an instrument that began to settle the constitutionally granted vested rights of three groups in the dominium of the kingdom—mōʻī, aliʻi, and the makaʻāinana" (Beamer 2014:143). However, the king felt the difficulty of governing a land where the influence of foreigners had been growing. Dr. David Keanu Sai describes this predicament:

> Kamehameha III's government stood upon the crumbling foundations of a feudal autocracy that could no longer handle the weight of geo-political and economic forces sweeping across the islands. Uniformity of law across the realm and the centralization of authority had become a necessity. Foreigners were the source of many of these difficulties. (Sai 2008:62)

"Several legislative acts during the period 1845–1855 codified a sweeping transformation from the centuries-old Hawaiian traditions of royal land tenure to the western practice of private land

ownership" (Moffat and Fitzpatrick 1995:11). Most prominent of these enactments was the Māhele of 1848 which was immediately followed by the Kuleana Act of 1850.

> The Mahele was an instrument that began to settle the undefined rights of three groups with vested rights in the dominion of the Kingdom --- the government, the chiefs, and the hoaʻāina. These needed to be settled because it had been codified in law through the Declaration of Rights and laws of 1839 and the Constitution of 1840, that the lands of the Kingdom were owned by these three groups… Following the Mahele, the only group with an undefined interest in all the lands of the Kingdom were the native tenants, and this would be later addressed in the Kuleana Act of 1850. (Beamer 2008:194,195)

Although the Māhele had specifically set aside lands for the King, the government, and the chiefs, this did not necessarily alienate the makaʻāinana from their land. On the contrary, access to the land was fostered through the reciprocal relationships which continued to exist between the commoners and the chiefs. Perhaps the chiefs were expected to better care for the commoners' rights than the commoners themselves who arguably might have been less knowledgeable of foreign land tenure systems. Indeed, the ahupuaʻa rights of the makaʻāinana were not extinguished with the advent of the Māhele, and Beamer points out that there are "numerous examples of hoaʻāina living on Government and Crown Lands Post-Mahele which indicate the government recognized their rights to do so" (Beamer 2008:274).

> Hoaʻāina who chose not to acquire allodial lands through the Kuleana Act continued to live on Government and Crown Lands as they had been doing as a class previously for generations. Since all titles were awarded, "subject to the rights of native tenants." The hoaʻāina possessed habitation and use rights over their lands. (Beamer 2008:274)

For those commoners who did seek their individual land titles, the process that they needed to follow consisted of filing a claim with the Land Commission; having their land claim surveyed; testifying in person on behalf of their claim; and submitting their final Land Commission Award to get a binding royal patent. However, in actuality, the vast majority of the native population never received any land commission awards recognizing their land holdings due to several reasons such as their unfamiliarity with the process, their distrust of the process, and/or their desire to cling to their traditional way of land tenure regardless of how they felt about the new system. In 1850, the king passed another law, this one allowing foreigners to buy land. This further hindered the process of natives securing lands for their families.

According to the Waihona ʻAina Māhele database, a claim was made for multiple land parcels stretching across over two dozen ahupuaʻa throughout Hawaiʻi Island, to include Waiakahiula in Puna District. The claimant was Chiefess Mikahela Kekauʻōnohi, and the award was LCA 11216. The database also lists a single claim for land (LCA 5207) in Kaʻohe ahupuaʻa by Ulumaheihei.

For the ahupuaʻa of Makuʻu, there are 5 land claims, and they are as follows:

LCA 9494 for Kamaliikapu

LCA 9496 for Malule

LCA 10139 for Moemoe

LCA 10139B for Puulau

LCA 11293 for Isaaka Kaiama

According to the Waihona ʻAina database, there are no LCAs documented for the ahupuaʻa listed as Pōpōkī, Hālona, Keonepoko Iki, Keonepoko Nui, or Keonepoko. In a separate previous study done by the Hawaiʻi Volcanoes National Park (Allen 1979), it is said that the ahupuaʻa of Keonepoko Iki was one of seven areas in Puna that was left unassigned during the Māhele, and it was decided in 1888 that these would be Government lands. It is also said that the ahupuaʻa of Keonepoko was returned by Lunalilo and retained by the kingdom (Allen 1979). A final thing to note is that the boundaries of Keonepoko Nui were surveyed in 1880 for the estate of Charles Kanaʻina, the father of Lunalilo.

1870s–1890s

By the 1870s a number of business opportunities were being developed in Puna; they included ranching operations, the cultivation and export of ʻawa and coffee, woods, and pulu, and as a result, further work on the Puna Government Road alignment was undertaken. Another modified alignment of the road was laid out in 1875 (as surveyed by J.M. Lydgate), and remained in use and under periodic maintenance until about 1895. The Hilo Railway Company was established during this time period, and in 1900, it extended tracks along the coast to the sugar fields in Kapoho and stretching inland to Pāhoa and Kamaliʻi.

The 19th century ended with the overthrow of the Hawaiian monarchy and the subsequent attempt of the United States of America to annex the Hawaiian Islands. By 1890, there were only 800 people in Puna compared to 2,200 in 1862 (Schmitt 1968:71). The population decline of Puna was attributed to several factors. In 1882, Titus Coan wrote, "Our people are now greatly diminished by death, and by being drawn away to the numerous plantations of the islands, upon ranches, in various industries with foreigners, and by hundreds into Honolulu, and on board vessels..." (Coan 1882:121).

One of the earliest maps found for the Puna district comes from 1893, the same year as the overthrow of the Hawaiian monarchy (Figure 8). The map is labeled "Map of the Puna District, Hawaii", and it is compiled from data collected by Frank Dodge. Interestingly, Makuʻu, Pōpōkī, and Hālona appear to be in the makai portion of Waiakahekahe ahupuaʻa. There seems to be nothing out of the ordinary for Keonepoko Nui ahupuaʻa, but for Keonepoko Iki, its makai section appears to be where Kaʻohe is located. Waiakahiula also is interesting in that it is illustrated as disjointed with a makai section and a mauka section separated by a few ahupuaʻa or other land parcels in between.

By the turn of the century, the Government was opening up large tracts of homestead lands throughout Puna, which were sold for residential and agricultural use. Because the rich agricultural parcels were generally situated three or more miles inland, above the 400-ft. elevation, homestead lands could be better accessed and their produce better transported by a new and more direct inland route between Puna and Hilo. As a result, the basic alignment of the Keaʻau-Pāhoa Highway (now Highway 130) was established and construction was underway by 1895. The route ran along the coastal area as the Old Government Road (Site 21273), extending from Hilo to at least Kalapana.

Puna in the 20th Century and Beyond

Also at the turn of the century, coffee was becoming an important agricultural industry in Puna. The Shipman family, a major landowner in the district, ran the Shipman Ranch in Keaʻau. The pineapple industry had also been started, for export to California. And in 1908, the Hawaiian Mahogany Company erected a lumber mill in Pāhoa and sent out its first shipment of 20,000 ʻōhiʻa log ties to the Santa Fe Railroad. In 1910, the company became the Pāhoa Lumber Mill and obtained cutting rights to 12,000 ac. of Territorial Forest in Puna. Economic development in the district during the

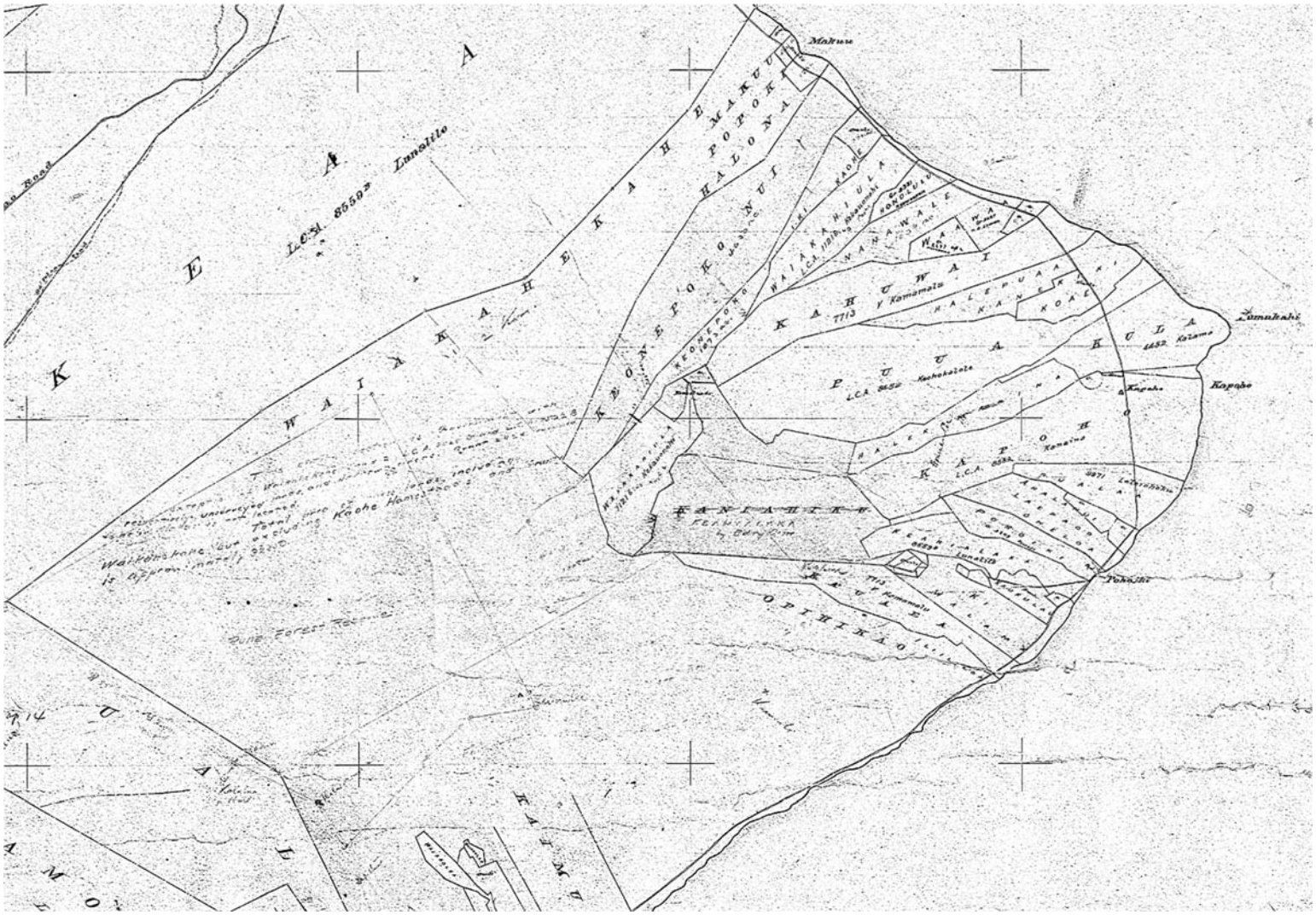


Figure 8. Portion of a Puna district map (Dodge 1893).

territorial years centered at ʻŌlaʻa, with a ranch and a sugar plantation, and around Pāhoa with the ʻōhiʻa and koa lumber operations. Lower Puna was described as remaining predominantly a traditional Hawaiian subsistence area.

During the first half of the 20th century, Puna was dominated by the sugar industry. Thousands of acres of land were turned into sugar plantations, stretching from the south Hilo border to Cape Kumukahi, then west to the inland areas of south Puna, and these were connected by an extensive railway system. The Olaa Sugar Company acquired large plots of land and established a sugar mill in Keaʻau, north of the project area. The Olaa Sugar Company also took over the Puna Sugar Company, which had its base of operations in Pāhoa. A diverse population of laborers were brought in to attend the fields, and at first they lived in ethnically-segregated camps in the vicinity of Old Plantation Road. Eventually the descendants of these workers intermarried and moved beyond segregated camps. The imprint of large-scale sugarcane cultivation would transform the landscape of Puna and the fabric of its community, and its effects continue into the 21st century long after the decline of sugar in Hawaiʻi.

Several historic maps from this period depict the project area ahupuaʻa. The first is dated 1900, and it is noted as a "Map showing the Center Line of the Right of Way, of the Hilo Railroad Puna Section" (Figure 9). According to this map, the Hilo Railroad entered the Puna district between Olaa Plantation and Keaʻau near the Olaa Mill. The railroad eventually crossed into the project area at a place labeled only as "Makuu." From Makuʻu, the railroad crossed into Keonepokonui and Keonepokoiki before extending into Waiakahiula. From there it left the project area and continued into the neighboring ahupuaʻa of Nanawale.

Another historic map is titled "Puna Govt. Tracts, Puna, Hawaii" (Figure 10). This map shows the various Land Commission Awards which have been recognized in Puna, and it also points out several homestead developments throughout the district that are mentioned in archival documentation. In contrast to the 1893 map above, this map shows Makuʻu, Pōpōkī, and Hālona to be in the makai section of the same ahupuaʻa as Kaʻohe. This mauka area labeled "Kaohe" and its adjacent ahupuaʻa of Keonepoko Nui and Keonepoko Iki are all noted to be a huge area of land leased to W.H. Shipman. There appears to be a handful of land grants on the coastal edge of the district in Makuʻu, Pōpōkī (written as "Popoiki"), and Hālona. Like the 1893 map, Waiakahiula is illustrated as disjointed, but both its mauka portion and its makai portion are shown to be awarded to the chiefess Kekauʻōnohi. Besides displaying the land awards and leased lands in and around the project area, two homesteads of interest are also noted. The familiar rectangular shape of the Keonepoko Homestead is shown extending across both Keonepoko Iki and Keonepoko Nui. And east of that, in the uplands above the mauka portion of Waiakahiula, there is a bigger parcel of homestead development labeled as the Kaohe Homesteads.

A map showing the Puna Forest Reserve dates to 1927 (Figure 11). Regarding the current project area, from north to south, the first ahupuaʻa is only labeled as Makuʻu and Hālona, and they are shown as being government land. Note that the name Pōpōkī has been dropped. The coastal area of this ahupuaʻa shows three land grants still in existence, one given to Kapohana, another given to Kea, and the third given to someone who's name is not written clearly on the map. The next ahupuaʻa shown is Keonepoko Nui, and it is labeled as belonging to the government. Then comes Keonepoko Iki, and it, too, is labeled as belonging to the government, but along its coast there is one land grant still in existence and belonging to Kekoa. And lastly, the disjointed ahupuaʻa of Waiakahiula is still shown under the name of the chiefess Kekauʻōnohi. The mauka portion of Waiakahiula also appears to have many little land grants within in it or adjacent to it, but the map does not make the boundary clear. This 1927 map clearly shows that the Hilo Railroad is still traversing the district.

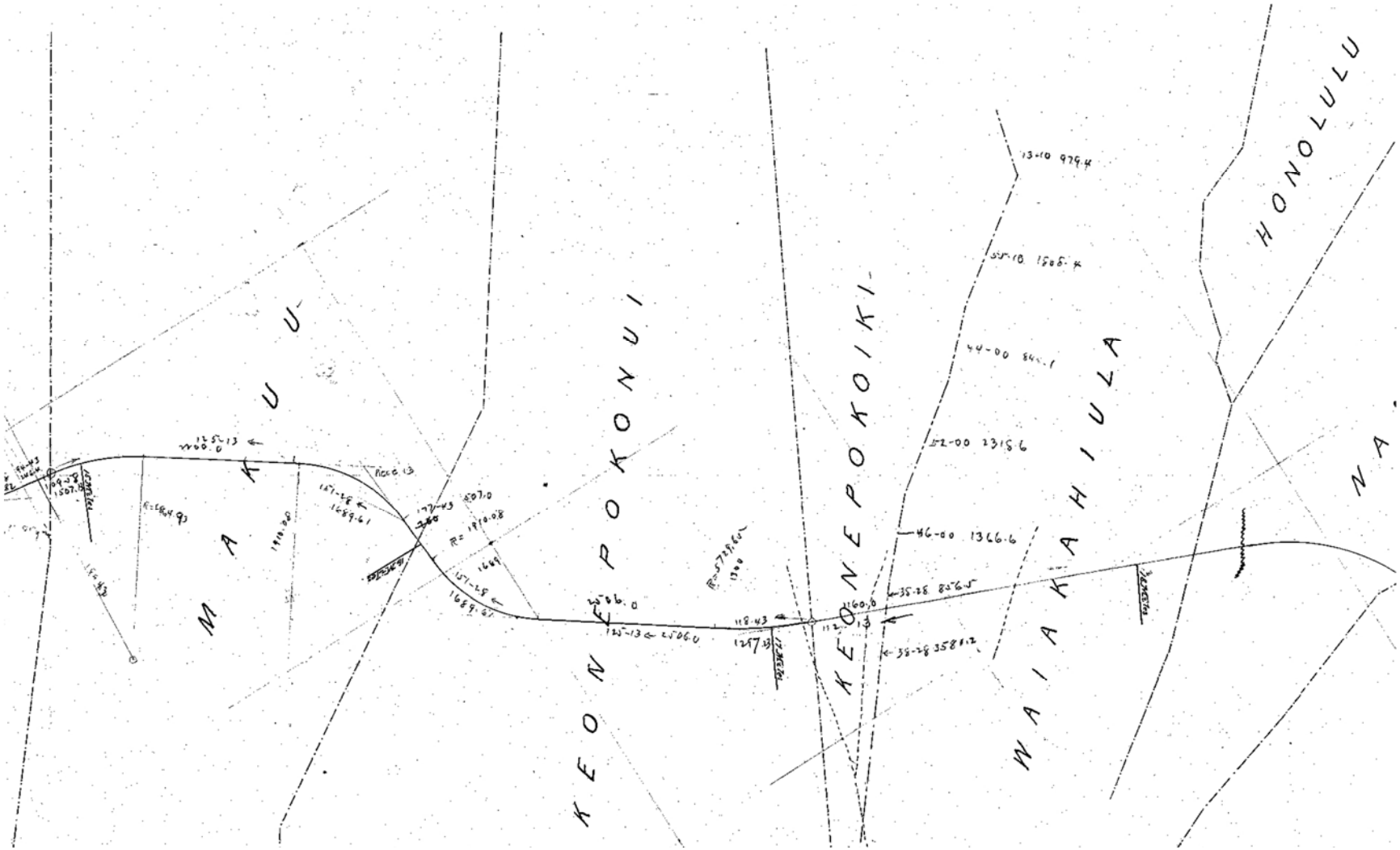
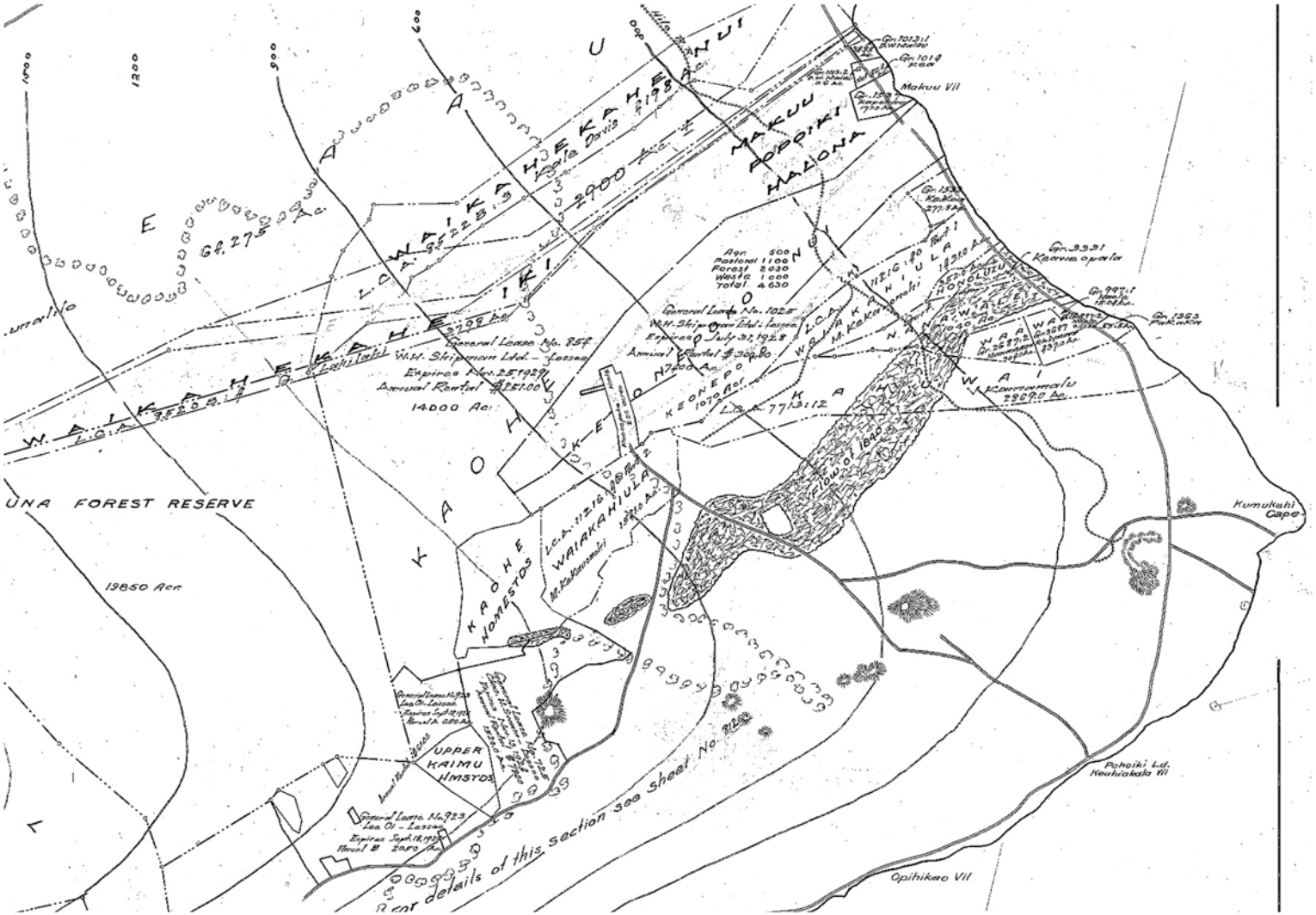


Figure 9. Portion of a map showing the Hilo Railroad (Anonymous 1900).


UNA FOREST RESERVE
19850 Acr
UPPER
KAIMU
HMSTDS
Kumukahi
Cape
Opihikao Vil
Makuu Vil
Pohoiki Ld.
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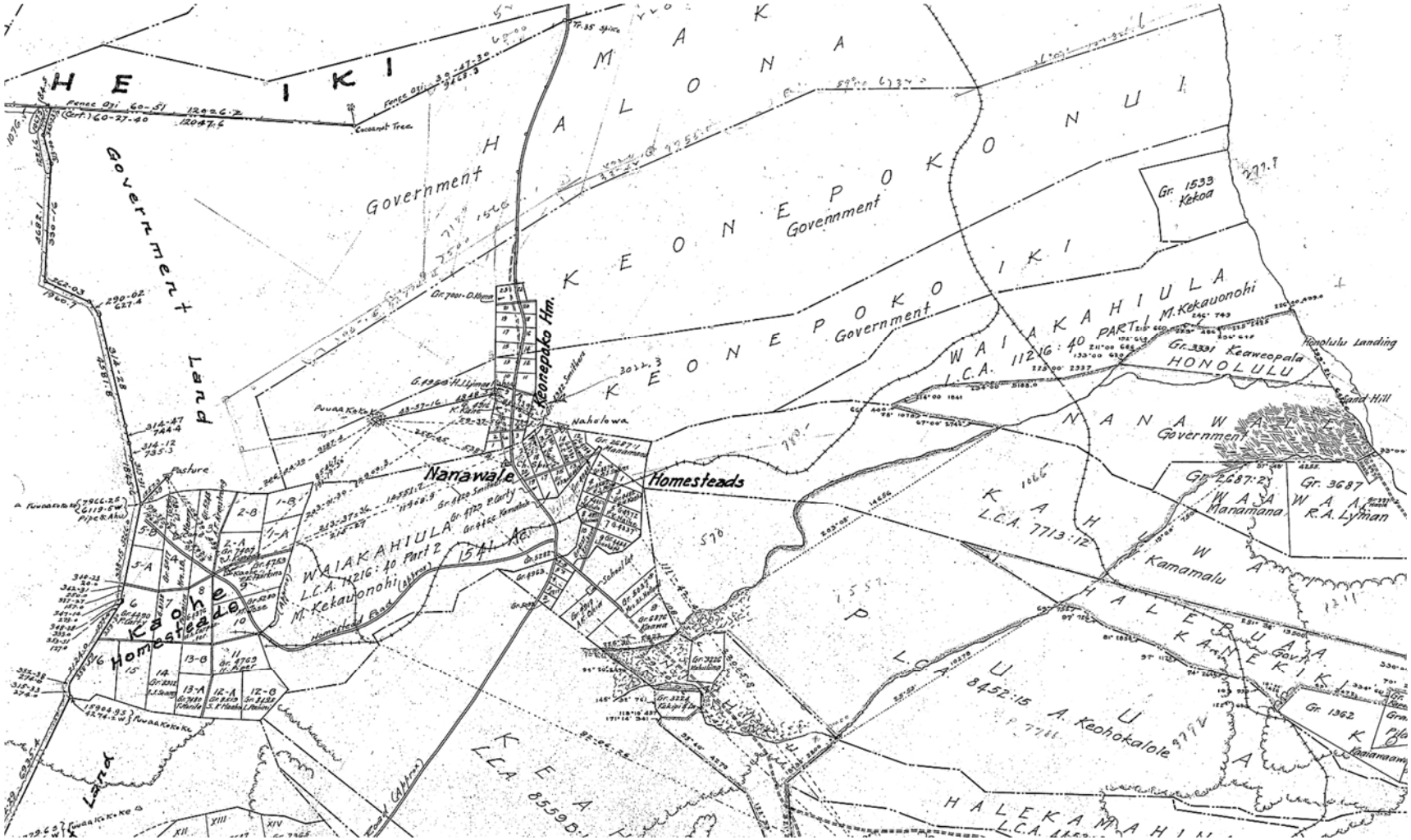


Figure 11. Portion of a Puna Forest Reserve map (Evans 1927).

Finally, a 1928 Hawaii Territory Survey map was annotated to show the network of railroads in East Hawai‘i (Figure 12). The rail line extends all the way from Pa‘auilo to Kamaili, crossing through all of the project ahupua‘a. At Pahoa there is a junction that leads a short ways inland.

Contemporary Puna

According to a census taken in 2000, the population of Hawai‘i County was at 148,677. Of that figure, the population of Puna was 31,335, and it had been marked as the fastest growing district on the island. Today, there is a good mix of residential and commercial land use in Puna, and the primary economic activity of the district continues to be centered on agriculture, although no longer sugarcane, pineapple, and timber, but rather, papaya, anthurium, orchid, and other types of farming (Nishimura 2005:13).

Previous Archaeology

There have been many archaeological studies conducted in the Puna region (Figure 13 and Table 1). The following is a review of the archaeological work in the vicinity of the project area, organized chronologically.

Early archaeological work in the Puna region includes large scale surveys by Thrum (1909) and Hudson (1932). Thrum's research focused on recording heiau throughout the islands, although none were identified near the project area. Working throughout east Hawai‘i Island, Hudson recorded a wide range of archaeological features including heiau, burials, caves, habitations, trails, and agricultural features from Waipi‘o Valley to the Ka‘ū District. Stokes and Dye (1991) later used these early works to compile information on heiau of the island. The first evidence of traditional lava tube use in the Puna district was documented by Emory (1945), who identified habitation and burial functions for the tubes.

An early study for the project area was conducted in 1974, where a reconnaissance survey was completed for the proposed Kapoho-Keaukaha Highway (Ewart an Luscomb 1974). A total of 118 sites were identified during the survey, including platforms, walls, alignments, mounds, petroglyphs, and complexes. In addition, 10 burials were recorded. Of the 118 sites recorded, the burials and four other sites were recommended for preservation. Those four other sites were not specified in the report, however. The rest of the sites were recommended for further study.

In 1977, an archaeological reconnaissance survey was conducted for the Federal Aviation Administration for a proposed radar site and access road in Maku‘u, north of the current project area (Bordner 1977). One site was identified: State Inventory of Historic Places (SIHP) 50-10-46-21217, a small ahu built with stacked pāhoehoe. The ahu was located in the proposed access road, approximately 76 m from State Route 130. The age of the ahu is uncertain.

In 1982, an investigation was conducted concerning a report of human burials within a lava tube system at Pāhoa Cave (Kam 1982). A memo to the State Parks Administrator mentioned the presence of at least 20 human burials. The remains were likely post-Contact in age. Yent (1983) surveyed and mapped portions of the lava tube/cave system. The lava tube exhibited several entrances, and modifications observed within the tubes include platforms, terraces, walls, and a ramp. Several human burials were also noted in various parts of the lava tubes. The Pāhoa Cave system was given the site number 50-10-45-14900. Several years later, the cave was reexamined (Stone and Tashima 1989) to determine the cave's extent beneath the Pāhoa Phase II Agricultural. This took place near the current project area, to the northeast. A total of eight sites were recorded, including habitation areas and human burials. It appears that no SIHP numbers were given to the eight sites.

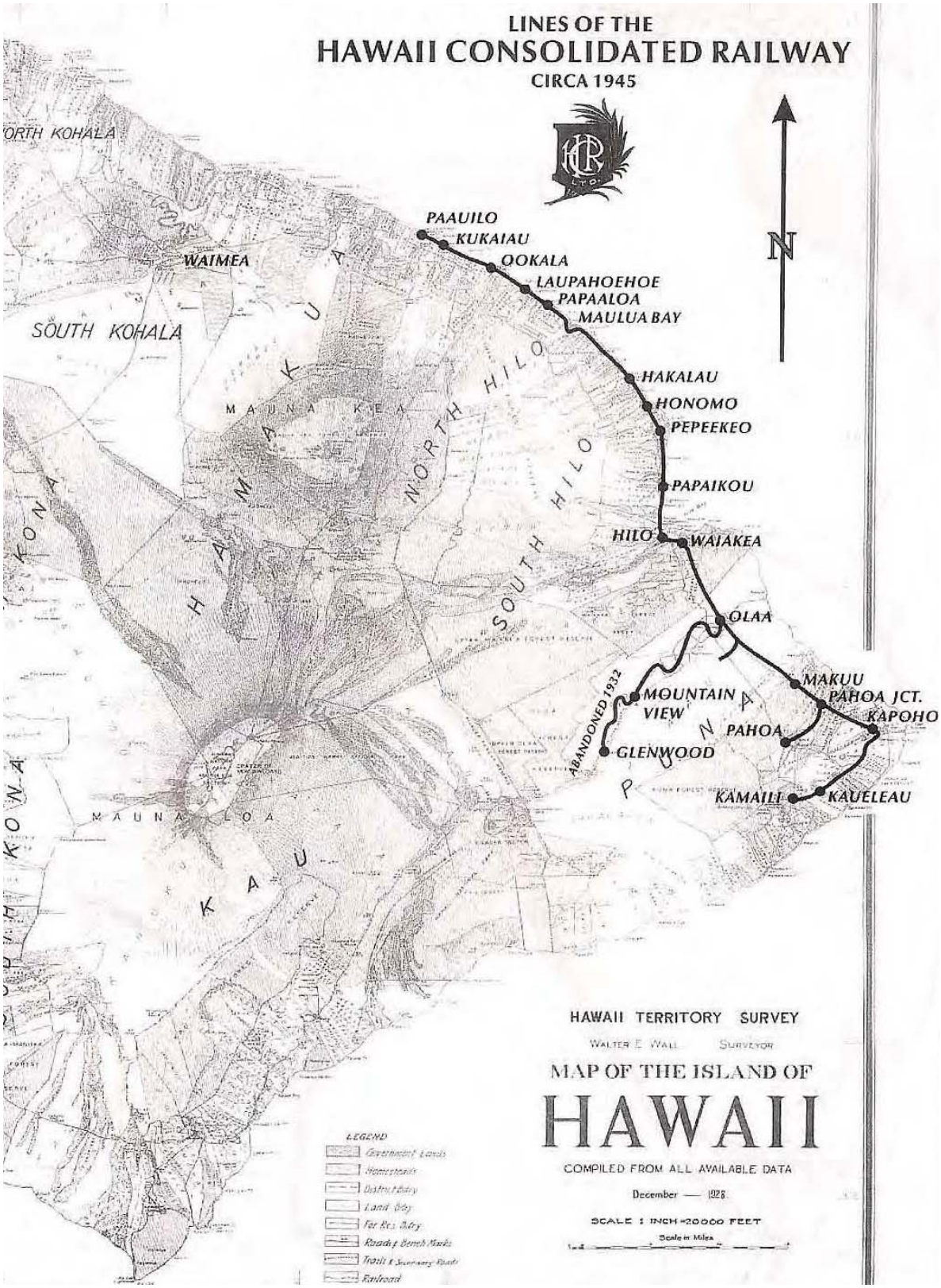
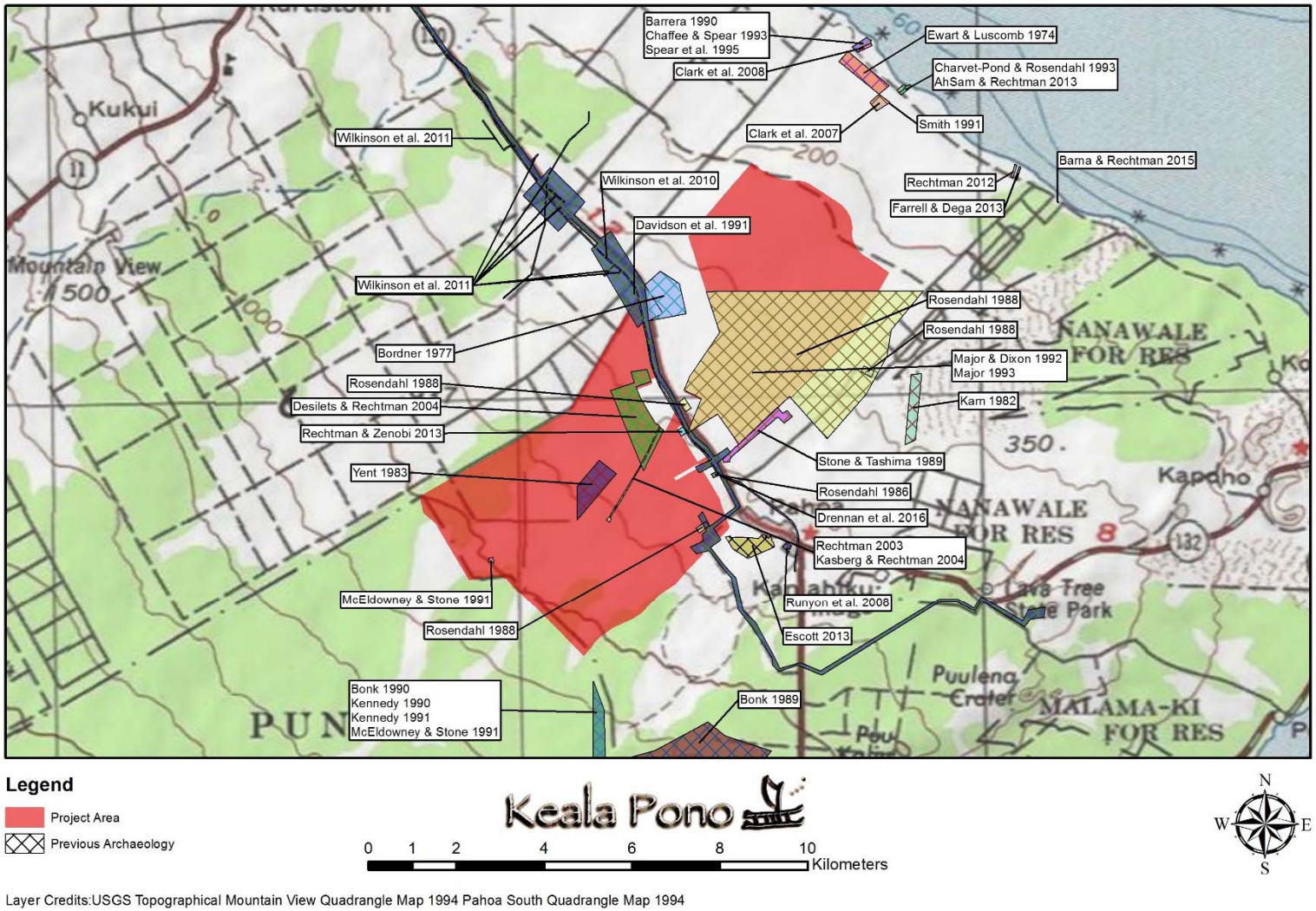


Figure 12. Portion of a 1928 Hawaii Territory Survey map, annotated to show railroads in East Hawai'i (adopted from Treiber 2005:59).



Layer Credits:USGS Topographical Mountain View Quadrangle Map 1994 Pahoa South Quadrangle Map 1994

Figure 13. Previous archaeological studies in the vicinity of the project area.

Table 1. Previous Archaeology in the Vicinity of the Project Area

Author	Location	Work Completed	Findings
Ewart and Luscomb 1974	Kapoho-Keaukaha Roadway	Reconnaissance Survey	Identified 10 burials; 118 other sites also recorded including walls, mounds, platforms, alignments, and petroglyphs.
Bordner 1977	FAA Air Traffic Control Beacon System Facility in Pāhoa	Reconnaissance Survey	Documented SIHP 50-10-46-21217, a small marker (ahu), constructed of pāhoehoe. Not dated.
Kam 1982	Pāhoa Cave at TMK: (3) 1-5-009:005	Description of a Cave	Located and described sections of the Pāhoa Cave system. Identified two large lava tubes containing at least 20 burials.
Yent 1983	Pāhoa Caves	Archaeological Survey	Documented SIHP 50-10-45-14900, the Pāhoa Cave (lava tube system).
Rosendahl 1986	Pahoa Main Post Office	Reconnaissance Survey	None.
Rosendahl 1988	Pahoa Elementary School	Reconnaissance Survey	None.
Bonk 1989	Geothermal Resource Subzone	Reconnaissance Survey and Archaeological Monitoring	None.
Stone and Tashima 1989	Pahoa Phase II Agricultural Lots	Archaeological Survey	Eight historic properties identified within Pāhoa Cave.
Barrera 1990	Makuu Aqua Farm	Inventory Survey	Recorded 4 possible habitation sites, Features C and AP of SIHP 14675, Feature E of SIHP 14981, and Feature M of SIHP 14985; 2 possible burials, Feature J of SIHP 14765 and Feature L of SIHP 14985; numerous agricultural features, and some midden remains.
Bonk 1990	Geothermal Resource Subzone	Reconnaissance Survey	None.
Davidson et al. 1991	69KV Pohoiki Geothermal Transmission Line #1	Inventory Survey	Identified previously recorded lava tubes; newly identified lava tubes not given SIHP numbers.
Kennedy 1991	Well Site SOH-3	Inventory Survey	None.
McEldowney and Stone 1991	Puna Forest Reserve and Adjacent State Lands	Inventory Survey of Lava Tubes	Four SIHP numbers assigned: 14899, 14901, 14902, 14903.
Smith 1991	Popoki-Halona Water Well Site	Field Inspection	None.

Table 1. (Continued)

Author	Location	Work Completed	Findings
Major and Dixon 1992	Pohoiki #2 Transmission Line Corridor	Inventory Survey	Recorded a lava tube containing burials (SIHP 17962); lava tube containing at least one burial (SIHP 17963); and a core-filled wall probably from the post-contact era (SIHP 17967).
Chaffee and Spear 1993	Makuu Aqua Farm	Archaeological investigations	Features in SIHP 14985 and 14675 interpreted as burials.
Charvet-Pond and Rosendahl 1993	Vaughan Residential Parcel	Inventory Survey	Recorded 59 volcanic glass artifacts; pre-contact coastal trail (SIHP 18418); 2 historic cattle walls (SIHP 18419); a coastal terrace complex (SIHP 18420); a basalt bench with 2 bait cups (SIHP 18421); and a horticultural complex (SIHP 18422).
Major 1993	Pohoiki #2 Transmission Line Corridor	Archaeological Monitoring	Further documented previously identified lava tubes.
Conte and Kolb 1994	Makuʻu DHHL Farm Lots	Inventory Survey	None.
Spear et al. 1995	Makuu Aqua Farm	Data Recovery	Recovered traditional and historic artifacts at SIHP 14985 and 14675.
Rechtman 2003	Makuʻu DHHL well and water system	Inventory Survey	None.
Desilets and Rechtman 2004	Makuʻu DHHL subdivision	Inventory Survey	Documented a small terrace (SIHP 24232) and an enclosure complex (SIHP 24231).
Kasberg and Rechtman 2004	Makuʻu DHHL well and water system	Archaeological Monitoring	None.
Clark et al. 2007	Kulia Farm Parcel	Inventory Survey	Recorded a possible heiau or agricultural shrine (SIHP 26165); post-contact trail/roadway (SIHP 26166); habitation complex (SIHP 26167); agricultural complex remnant (SIHP 26168); and a large agricultural complex (SIHP 26169).
Clark et al. 2008	TMK: (3) 1-5-010:032	Inventory Survey	Identified a core-filled wall (SIHP 26658); historic enclosure/pavement (SIHP 26659); historic habitation complex (SIHP 26660); bedrock hole modified for water collection (SIHP 26661); modified bedrock overhang burial features (SIHP 26662, 26663, & 26664); pre-contact platform burial feature (SIHP 26665); and an agricultural complex (SIHP 26666).
Runyon et al. 2008	Pāhoa Elementary School	Archaeological Monitoring	None.

Table 1. (Continued)

Author	Location	Work Completed	Findings
Wilkinson et al. 2010	Kea‘au-Pāhoa Road	Inventory Survey	Noted possible adverse effects to the Kazumura Cave (SIHP 10001).
Wilkinson et al. 2011	Kea‘au-Pāhoa Road	Addendum Inventory Survey	None.
Rechtman 2012	TMK: (3) 1-5-009:035	Archaeological Assessment	None.
Ah Sam and Rechtman 2013	TMK: (3) 1-5-010:028	Inventory Survey	Identified previously recorded sites.
Escott 2013	Pāhoa Park	Inventory Survey	Recorded historic mounds and modified outcrops (SIHP 29900–29938).
Farrell and Dega 2013	TMK: (3) 1-5-009:042	Inventory Survey	Identified previously recorded sites.
Rechtman and Zenobi 2013	Puna Community Medical Center	Archaeological Assessment	None.
Barna and Rechtman 2015	TMK: (3) 1-5-088:042 and 043	Inventory Survey	Recorded a partially disturbed agricultural complex (SIHP 30226).
Drennan et al. 2016	Kea'au-Pāhoa Road & Old Government Road Intersection	Archaeological Monitoring	None.

In 1986, a reconnaissance survey was conducted at the site of the Pahoa Main Post Office (Rosendahl 1986). No significant archaeological resources were identified.

In 1988, a reconnaissance survey was conducted as part of an environmental impact statement pertaining to sites for the Pahoa Elementary School (Rosendahl 1988). No significant archaeological resources were identified.

In 1989, a reconnaissance survey and archaeological monitoring were completed for work in the Geothermal Resource Subzone of Upper Kaimū, Maku‘u, Ka‘ohe, Kehena Ka‘āpahu, and Kamā‘il‘i (Bonk 1989). No archaeological sites were identified. The following year another reconnaissance survey report was authored for the same project and in the same area. Again, nothing was identified (Bonk 1990).

A 1990 archaeological inventory survey for the Makuu Aqua Farm identified several historic properties (Barrera 1990). Among these were four possible habitation sites, Features C and AP of SIHP 14675, Feature E of SIHP 14981, and Feature M of SIHP 14985; two possible burials, Feature J of SIHP 14765 and Feature L of SIHP 14985; numerous agricultural features, and some midden remains. None of the sites were recommended for preservation, but data recovery was recommended if the sites were slated for destruction. Follow up investigations were conducted three years later to determine if Sites 14765 and 14985 did contain burials (Chaffee and Spear 1993). It was concluded that “Features L and M at site 14985 are interpreted as human burials each containing at least one individual. Similarly, Feature J, Site 14675, is also interpreted as a human burial where the remains of the interred individual have decomposed beyond recognition” (Chaffee and Spear 1993:21–22). More data recovery work was conducted two years later to mitigate adverse impacts from a possible

expansion on the property (Spear et al. 1995). Traditional and historic artifacts were recovered at both sites, 14765 and 14985. Furthermore, radiocarbon dating at Feature J of Site 14985 suggested occupation as early as 1660 AD. Archaeological monitoring was recommended for any future subsurface construction activities near the established buffer zone.

In 1991, an archaeological inventory was conducted in the buffer zone for the proposed well site SOH-3 (Kennedy 1991). No significant archaeological resources were identified. Also in 1991, a report was completed for a field inspection for a well site in Pōpōkī-Hālona (Smith 1991). No significant archaeological resources were identified.

In another project the same year for the construction of the 69KV Pohoiki Geothermal Transmission Line #1 across Puna, an archaeological survey sought to determine if augering activities would adversely impact subsurface lava tubes (Davidson et al. 1991). Two previously documented lava tubes were re-identified, and two more lava tubes were recorded but were not formally documented with archaeological site numbers. Complete avoidance of augering into the lava tubes was recommended if possible, and also, smaller diameter augers were to be used along with archaeological monitoring during the future work.

And also in 1991, an archaeological survey documented the lava tubes in the former Puna Forest Reserve and the adjacent State of Hawaiʻi lands (McEldowney and Stone 1991). Four site numbers were assigned: SIHP 50-10-55-14899, 50-10-55-14901, 50-10-55-14902, and 50-10-55-14903.

In 1992, an archaeological inventory survey covered the Pohoiki #2 transmission line corridor between the substations of Pohoiki and Puna (Major and Dixon 1992). Three sites were identified during the survey: SIHP 17962, a lava tube containing burials; 17963, a lava tube containing at least one burial; and 17967, a core-filled wall probably from the post-contact era. Archaeological monitoring was recommended for future stages of work for the project. The following year, an archaeological monitoring report was submitted for the same project (Major 1993). No additional sites were recorded during the monitoring, but the lava tube sites identified in the previous survey were further documented and mapped.

A 1993 archaeological inventory survey for proposed construction on the Vaughan Residential Parcel yielded significant results (Charvet-Pond and Rosendahl 1993). A total of 59 volcanic glass artifacts were identified along with five sites: a pre-contact coastal trail, SIHP 18418; two historic cattle walls, 18419; a coastal terrace complex, 18420; a basalt bench with two bait cups, 18421; and a horticultural complex, 18422. No further work was recommended for the basalt bench and the two cattle walls. The other three sites, however, were recommended for preservation and also for data recovery if they would be affected by the proposed development.

The following year, an archaeological inventory survey was carried out for the Department of Hawaiian Home Lands on their Makuʻu farm and agricultural lots (Conte and Kolb 1994). No archaeological features were identified. Also in Makuʻu, an archaeological assessment and a limited cultural assessment were conducted for a proposed water system (Rechtman 2003). No significant archaeological resources were identified. Archaeological monitoring for the project produced no findings (Kasberg and Rechtman 2004).

In 2004, an archaeological survey for a proposed residential subdivision on Department of Hawaiian Home Lands (DHHL) land in Makuʻu/Pōpōkī/Hālona identified two archaeological sites (Desilets and Rechtman 2004). One was SIHP 24232, a small terrace which was later not considered a historic property and not eligible for the National Register of Historic Places (NRHP). And the other site was SIHP 24231, a complex consisting of an enclosure, a mound, a wall, and a platform. This site

was evaluated to be eligible for listing in the NRHP. Archaeological monitoring was recommended for any future construction activities in the area.

In 2007, an archaeological inventory survey was conducted on the Kulia Farm Parcel in Pōpōkī (Clark et al. 2007). Five archaeological sites were identified during the survey: 26165, a possible heiau or agricultural shrine; 26166, a post-contact trail/roadway; 26167, a habitation complex; 26168, an agricultural complex remnant; and 26169, a large agricultural complex. Site 26165 was recommended for preservation, and Site 26167 was recommended for data recovery. No further work was recommended for the other sites.

Also in 2007, archaeological monitoring for construction activities at a cesspool project at Pāhoa Elementary School did not identify any archaeological features (Runyon et al. 2008). Although some historic bottles and glass marbles were recovered, nothing was deemed significant. Further monitoring was recommended for any future subsurface work.

In 2008, an archaeological inventory survey was conducted for construction on a private property in Makuʻu at TMK: (3) 1-5-10:32 (Clark et al. 2008). Nine archaeological sites containing 67 features were recorded, including SIHP 26658, a core-filled wall; 26659, a historic enclosure/pavement; 26660, a historic habitation complex; 26661, bedrock hole modified for water collection; 26662, 26663, & 26664, three modified bedrock overhang burial features; 26665, a pre-contact platform burial feature; and 26666, an agricultural complex. Sites 26659, 26660, and 26662–26665 were recommended for preservation. Preservation plans were recommended for Sites 26659 and 26660, and a burial treatment plan was recommended for Sites 26662–26665. No further work was recommended for Sites 26658, 26661, and 26666.

In 2011, additional work was undertaken to complement an earlier archaeological survey for the Keaʻau-Pāhoa Road Widening Project (Wilkinson et al. 2010). This subsequent additional survey was done to identify sites within the project area to be recommended for the National Register of Historic Places and the Hawaiʻi Register of Historic Places. No new historic properties were identified during the additional survey, but it was noted that the project might adversely affect subsurface cultural resources, especially the many lava tubes. One in particular is the Kazumura Cave (SIHP 10001) which indicated heavy pre-contact utilization. Archaeological monitoring was recommended for future construction activities (Wilkinson et al. 2011).

A 2012 archaeological assessment was conducted for construction on a private parcel in Keonepoko Iki at TMK: (3) 1-5-009:035 (Rechtman 2012). No archaeological properties were identified, and no further work was recommended.

That same year, a previously surveyed private parcel in Keonepoko Iki at TMK: (3) 1-5-009:042 was re-examined (Farrell and Dega 2013). No additional archaeological/cultural features were recorded, but two previously identified sites on the parcel were revisited: SIHP 18759, a boundary marker wall with a perpendicular fence; and 18578, a complex consisting of 10 features such as planting circles, modified depressions, dry-stacked walls, and a terrace. A preservation plan was prepared to preserve the extant archaeological features.

Also in 2012, an archaeological inventory survey was conducted on former sugarcane lands for the Pāhoa Park Expansion Project (Escott 2013). A total of 39 archaeological sites, consisting of 80 rock mounds and/or modified outcrops, and two garden beds were documented during the survey. All of the features were determined to be from the post-contact era, and the mounds and modified outcrops were interpreted to be associated with land-clearing activities for sugarcane cultivation. In addition, 13 trenches were excavated, but no cultural materials were identified. Based on the research, it was concluded that, "It is possible that there were no pre-Contact era sites on the property given its remote

upland location. In addition, field clearing activities during the Historic-era would have eliminated any pre-Contact remains, if they existed" (Escott 2013:251). No further archaeological work was recommended.

In 2013, an archaeological assessment was conducted for the proposed Puna Community Medical Center (Rechtman and Zenobi 2013). No archaeological properties were identified during the assessment, but due to thick vegetation on the parcel, further inspection was recommended after the site was cleared and grubbed for initial construction activities.

Also in 2013, an archaeological inventory for construction on a private parcel in Pōpōkī at TMK: (3) 1-5-10:028 revisited two previously recorded features (Ah Sam and Rechtman 2013). These consist of SIHP 18419 Feature A, a core-filled wall; and 18418 Feature A, a section of a coastal trail. Site 18419 was previously accepted by SHPD with a "no further work" recommendation. Site 18418 was previously accepted by SHPD with recommendation for preservation, and so the current survey recommended that a preservation plan be submitted for this particular site. No new sites were identified during this survey.

In 2015, an archaeological inventory survey was conducted for construction on two private parcels in Waiakahiula at TMK: (3) 1-5-088:042 and :043 (Barna and Rechtman 2015). One partially disturbed agricultural complex was identified and recorded as SIHP 30226. The site consisted of five features constructed with pāhoehoe cobbles. No further work was recommended for the site.

In 2016, archaeological monitoring was completed for the construction of a roundabout at the intersection of Keaʻau-Pāhoa Road and the Old Government Road in Puna (Drennan et al. 2016). No significant archaeological or cultural resources were identified during the construction activities.

Settlement Patterns

Archival research suggests that the settlement of Puna was fairly dense, emerging along its coast. The district was known for its fisheries which provided ulua, ʻōpelu, ʻulaʻula, and ʻōpakapaka. Its anchialine pools provided ʻōpae ʻula, and its salt pans were a source of paʻakai. There is also mention of a population in ʻŌlaʻa from which came a fine craftsmanship of mamaki kapa and mamaki mats.

The pre-contact settlement of the Puna coastline has yielded habitation and agricultural complexes, as well as ceremonial and burial features. Among the plant food sources of significance in the area were taro, breadfruit, sugarcane, and sweet potato. As the population grew, the interaction of Puna's population with that of other parts of Hawaiʻi Island increased, and thus developed the network of intra-district and inter-district trails and roads.

The project area pertains to only four of approximately more than two dozen ahupuaʻa which make up the Puna district. Of these four ahupuaʻa, a great majority of their total land area remained in the hands of the high-ranking or of the government after the Māhele The lack of individual land claims in the project area corresponds to the dearth of evidence of human occupation and human activity in this interior region of Puna.

Summary of Background Information

Most of the archaeological features in the Puna ahupuaʻa of Makuʻu/Hālona/Pōpōkī, Keonepoko Iki, Keonepoko Nui, and Waiakahiula/Kaʻohe, are situated in the vicinity of the Puna coastline. These include habitation complexes, agricultural complexes, walls, alignments, and burials. In contrast, the uplands of these ahupuaʻa are relatively archaeologically barren. The exception to this is found in the lava tubes in the interior of the district which have yielded cultural resources to include traditional

and historic artifacts, midden, and burials. This suggests that the majority of initial human occupation and activity within these ahupuaʻa of Puna had taken place along the sea where the near shore and deep sea waters would have provided food to sustain the population. The extent to which the coastal Puna population ventured into the uplands in the vicinity of the project site is not known, but the evidence, or lack thereof, suggests that it was minimal.

The historic period is marked with increased activity in the interior of Puna. Not long after the changes in land tenure in the latter half of the 19th century, large-scale capitalist ventures began operating in Puna's uplands. Ranching, coffee farming and ʻawa farming spurred work on the Old Puna Government Road. By the turn of the century, the railroad extended across Puna. Coffee farming continued into the 20th century, and the new industries of pineapple and lumber export made their mark in the Puna uplands. Finally, the large scale operations of sugarcane agriculture gained a foothold in the district, and this would have one of the biggest impacts on the landscape and fabric of life in Puna.

Many archaeological projects have taken place in the aforementioned ahupuaʻa of Puna. These, along with historic maps, documented a variety of features and artifacts that date to the pre- and post-contact periods. Archaeological remains in the particular project area are limited to the few lava tubes which contain cultural resources. More subsurface caves may or may not be discovered during future ground-disturbance construction activities. The surface, however, is either in its natural untouched state with no likely evidence of human occupation, or it is a surface previously disturbed due to human activity in recent history with no significant archaeological remains.

SITE VISIT

A site visit was conducted on Wednesday, March 8, 2017 including members of the State of Hawai‘i library system, G70, the Department of Accounting and General Services (DAGS), and Dietrix Duhaylonsod of Keala Pono Archaeological Consulting. The group met at the Pāhoa District Park to visit the five parcels being considered for the location of the proposed Puna library.

The site visit began at Parcel 2, which sits in the mauka (eastern) corner of the district park. Currently, only Phase I of the park construction has been finished. If the Pāhoa Library is built here, it will be on the outskirts of Phase II after Phase II is completed. The parcel was overgrown with high brush and tall trees (Figure 14).

Figure 14. Parcel 2, looking from the edge of the baseball field at Pāhoa District Park.

From there, the group evaluated Parcel, 1, a property located adjacent to and along the south boundary of the new Pāhoa Fire Station and Police Station (Figure 15). It was shared that this parcel once had an anthurium farm on it. On the day of the visit, part of the property was freshly mowed, and part of it was overgrown with trees and bushes. The Kea‘au-Pāhoa Road runs along one side of this proposed site.

The team continued further mauka down the road, and on the right side was Parcel 5. Just past Parcel 5 is a water depot station that large trucks drive to and fill their trucks with water. There is a secondary road that goes into the property of Parcel 5, but the secondary road is fenced and locked (Figures 16 and 17).

Figure 15. Looking across the parking lot of the Pāhoa Police Station to the adjacent property along the south boundary. Notice cars on the Kea‘au-Pāhoa Road at the bottom right of the photo.

Figure 16. Looking at Parcel 5 through the chain link fence.

Figure 17. Looking at Parcel 5 from the roadside.

Across the street from Parcel 5 was a huge water tank, and mauka of the water tank was Parcel 3. Parcel 3 lies on a young bed of lava, and ʻuluhe, ʻōhiʻa, and other plants grow there, but this vegetation was not a dense as Parcel 1. No infrastructure appeared to be on Parcel 3 (Figure 18).

Finally, the team drove further mauka up the road, and on the same side of the road as Parcel 3, was Parcel 4 (Figure 19). There are two secondary access roads that lead into Parcel 4. The vegetation at Parcel 4 is similar to that of Parcel 3. Skeletal remains of two pigs were observed on the surface at Parcel 4, which were likely brought in by hunters as they cleaned their catch.

Figure 18. Panorama of Parcel 3, which sits alongside the Keaʻau-Pāhoa Road roughly across from Parcel 5.

Figure 19. Panorama of Parcel 4.

ASSESSMENT AND RECOMMENDATIONS

A literature review was conducted for the proposed construction of a library in Pāhoa, Puna District on the island of Hawaiʻi. The project focuses on approximately 25 to 50 acres stretching across four ahupuaʻa: Keonepoko ʻIki, Keonepoko Nui, Waiakahiula/Kaʻohe and Makuʻu/Pōpōkī/Hālona; and covering five TMKs: (3) 1-5-002:020, 1-5-007:077, 1-5-008:001, 1-5-008:003, and 1-5-010:030. The literature review consisted of archival research and a site visit of the various parcels. Several archaeological implications can be made based on the literature review presented above. Key data include the results of previous archaeological work, archival LCA information, and data concerning previous land use. Although the area of focus comprises about 25 to 50 acres, it is a small proportion of the total project area, which is upwards of 9,500 acres. Likewise, an even smaller proportion of the total project acreage has been developed into residences, roads, businesses and infrastructure. The overwhelming majority of the project area is still untouched land consisting of natural flora which has sprouted on relatively recent lava flows with a very small portion of previously disturbed areas covered with introduced foliage. As such, the surface of the landscape is relatively devoid of archaeological features. However, the environment is known to contain subsurface archaeological/cultural properties and materials by means of the underground lava tubes.

Results of Land Commission Awards Search

According to the Waihona Aina database, most of the ahupuaʻa in the project area have no LCA claims documented except for Makuʻu, Kaʻohe, and Waiakahiula. For Makuʻu, only five claims are listed, and there is a single claim listed for Kaʻohe and Waiakahiula each. This suggests that the majority of the lands under consideration were not altered into private residences, but rather remained undeveloped. Indeed, the current ownership of thousands of these uninhabited acres by the city and state government agencies allude to this illustration of virgin lands. All signs of habitation within the project area are signs of contemporary use closer to and along the Keaʻau-Pāhoa roadway corridor.

Results of Recent Historical Research

Traditional subsistence and habitation in the project ahupuaʻa occurred near the coastline. Nothing significant is documented away from the coast in these ahupuaʻa except for a route to traverse the district that came in later times to connect Puna to other parts of the island. The lack of upland activity did not change until the 20th century when timber operations occurred, and the sugar industry also gained a foothold close to, but outside, the current area of focus. In modern times, relatively minute portions of land along the Keaʻau-Pāhoa corridor have been used for small-scale farming of fruits and flowers.

Knowledge from Previous Archaeological Studies

With the exception of a complex consisting of a wall, platform, mound, and enclosure on Department of Hawaiian Homelands in Makuʻu, no other significant archaeological/cultural features have been documented on the surface near the project's focus area. Over a dozen lava tubes have been recorded in and around the project area, however, some of which have not been assigned site numbers. And of that total, only four of these "caves" have shown evidence of activity. Three of these contained human burials. Several other studies conducted in the project area yielded no significant findings. Of the buildings in the project area, nothing has been deemed architecturally significant.

Summary and Recommendations

Five parcels have been identified as possible sites for the construction of the proposed library. The lands on all of the parcels are either untouched lands or previously disturbed lands, all of which contain no known surface archaeological/cultural features and no historic buildings requiring preservation. The most likely features which may exist within the boundaries of these specific parcels would be subsurface lava tubes that may or may not contain properties of significance within. Any of the parcels chosen for possible construction sites would not be detrimental to the archaeological/cultural resources of the area identified thus far. Once the specific location for the library is selected, the SHPD should be consulted to determine if further archaeological work is necessary.

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GLOSSARY

‘a‘ā Rough, stony lava. Surface appearance is sharp and broken.

‘a‘ali‘i *Dodonaea viscosa*, the fruit of which were used for red dye, the leaves and fruits fashioned into lei, and the hard, heavy wood made into bait sticks and house posts.

‘ahu Garment or covering for the upper part of the body and shoulders, as a cape.

ahupua‘a Traditional Hawaiian land division usually extending from the uplands to the sea.

‘ahu ‘ula Feather cape or cloak worn by ali‘i. Small forest birds such as the ‘ō‘ō, ‘i‘iwi were used to harvest feathers to make them.

‘ai Food or food plant, especially vegetable food as distinguished from i‘a, meat or fleshy food. Or to rule or reign.

‘āina Land.

‘ākala The endemic raspberries (*Rubus hawaiensis* and *R. macraei*); and the thimbleberry (*R. rosaefolius*); lit. pink.

‘ākohekohe The crested honey creeper (*Palmeria dolei*).

ali‘i Chief, chiefess, monarch.

ali‘i ‘ai ahupua‘a Chief of an ahupua‘a.

ali‘i ‘ai moku Chief of a district.

ali‘i nui High chief.

anchialine Near the sea.

anchialine pool A landlocked water body with an underground connection to the ocean.

anthurium Flowering plant native to the Americas; largest genus of the arum family, *Araceae.*

‘aumakua Family or personal gods. The plural form of the word is ‘aumākua.

‘awa The shrub *Piper methysticum*, or kava, the root of which was used as a ceremonial drink throughout the Pacific.

basalt Volcanic rock.

breadfruit See ‘ulu.

California grass The invasive *Brachiaria mutica* that forms dense stands up to 2 m tall.

carpet grass Perennial creeping grass with coarse leaves; *Axonopus compressus.*

coconut The palm tree *Cocos nucifera*.

coffee *Coffea arabica*, introduced to Hawai‘i in 1813, which grows within the 1,000 to 2,000 ft. elevation zone.

‘elele Messenger, ambassador, delegate.

guava The invasive tree or shrub *Psidium guajava*, which forms dense thickets in disturbed areas.

haku Master, owner; to compose, invent, or braid.

haku‘āina Landowner, landlord.

hala The indigenous pandanus tree, or *Pandanus odoratissimus*, which had many uses in traditional Hawai‘i. Leaves were used in mats, house thatch, and basketry; flowers were used for their perfume; keys were utilized in lei and as brushes; roots and leaf buds were used medicinally; and wood was fashioned into bowls and other items.

hala kahiki The pineapple, *Ananas comosus,* probably originating in Brazil; foreign hala.

hē Grave.

heiau Place of worship and ritual in traditional Hawai‘i.

Hi‘iaka Sister of Pele; first part of the names of the twelve younger sisters of Pele.

hoa Companion, friend, associate.

hoa‘āina Native tenants that worked the land.

hōlua Traditional Hawaiian sled used on grassy slopes.

honohono grass An annual or perennial herb native to Asia and the West Indies, also climbing dayflower or spreading dayflower; *Commelina diffusa.*

hula The hula, a hula dancer; to dance the hula.

hummock A small hill or mound.

ka‘ao Legend, tale; to tell a fanciful tale.

kaha To cut open or slice lengthwise; to scratch, mark, or draw. Or a place (often followed by a qualifier, as kahakai, kahaone, kahawai, and used without ke, as hele i kahakai, go to the beach).

kahakai Beach, seashore, coast.

kahawai Stream, creek, river; valley, ravine, gulch, whether wet or dry.

Kahiki A far away land, sometimes refers to Tahiti.

kai Sea, sea water; area near the sea, seaside, lowlands; tide, current in the sea; insipid, brackish, tasteless.

kalo The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.

kanaka Human, person, man, Hawaiian.

Kāne The leading of the traditional Hawaiian deities.

kapa Tapa cloth.

kapu Taboo, prohibited, forbidden.

kilu A small container used for storing precious objects or for feeding a favorite child; a quoit in the kilu game in which a player would attempt to hit an object with the kilu to win a kiss from a member of the opposite sex.

kō The Polynesian introduced *Saccharum officinarum*, or sugarcane, a large grass traditionally used as a sweetener and for black dye.

koa *Acacia koa*, the largest of the native forest trees, prized for its wood, traditionally fashioned into canoes, surfboards, and calabashes.

koa‘e The tropic or boatswain bird.

kōlea The Pacific golden plover *Pluvalis dominica*, a bird that migrates to Hawai‘i in the summer; the native trees and shrubs *Myrsine*, the sap and charcoal of which were used as a dye, the wood used for houses and for beating kapa.

konohiki The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.

Ko‘olauwahine Breeze blowing from the north of Ni‘ihau.

kou The flowering tree, *Cordia subcordata*, either native to Hawai‘i or introduced by Polynesians.

kuhina nui Prime minister or premier. Ka‘ahumanu was the first kuhina nui. The position was abolished in 1864.

kuleana Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

kumu Teacher.

LCA Land Commission Award

lehua The native tree *Metrosideros polymorpha*, the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in musical instruments.

lei Garland, wreath; necklace of flowers.

limu Refers to all sea plants, such as algae and edible seaweed.

lo‘i, lo‘i kalo An irrigated terrace or set of terraces for the cultivation of taro.

Māhele The 1848 division of land.

mahiole Feather helmet.

maka‘āinana Common people, or populace; translates to “people that attend the land.”

makai Toward the sea.

māmaki *Piptarus* spp., a small native tree. Fiber from its bark was used to make a kind of coarse tapa. Sometimes spelled mamake in old texts.

Maui parrotbill *Pseudonestor xanthophrys;* species of Hawaiian honeycreeper endemic to Maui; also kiwikiu.

mauka Inland, upland, toward the mountain.

melastome An annual or perennial shrub, herb, or small tree found mostly in the tropics, from the family *Melastomataceae.*

midden A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum.

mō‘ī King.

moku District, island.

mo‘olelo A story, myth, history, tradition, legend, or record.

muliwai River mouth, estuary, or pool near the mouth of a stream, enlarged by ocean water left there at high tide.

nā Plural definite marker.

nahele	Forest, grove, wilderness.
niu	The Polynesian-introduced tree *Cocos nucifera*, or coconut.
‘ohana	Family.
‘ōhelo	*Vaccinium reticulatum*, a native shrub with small edible berries. Found in higher altitudes.
‘ōhi‘a	Two kinds of forest trees. See also o‘ōhi‘a‘ai and ‘ōhi‘a lehua.
‘ōhi‘a ‘ai	The mountain apple tree, *Eugenia malaccensis*, a forest tree that grows to 50 ft high.
‘ōhi‘a lehua	The native tree *Metrosideros polymorpha*, the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in
‘ōlapa	The native tree *Cheirodendron trigynum*, the leaves of which were used in *lei*, and fruit, leaves, and bark made into dye.
‘ōlelo	Speech, language, word; to speak, to tell.
‘ōlelo no‘eau	Proverb, wise saying, traditional saying.
‘ōlena	The turmeric plant, *Curcuma domestica*, traditionally used as medicine and for spices and dyes.
olonā	The native plant *Touchardia latifolia*, traditionally used for making cordage.
‘ō‘ō	*Moho nobilis,* the extinct black honey eater. Its black and yellow feathers were used in featherwork.
‘ōpae	Shrimp.
‘ōpae‘ula	Red shrimp.
‘ōpakapaka	The blue snapper fish, *Pristipomoides sieboldii, P. microlepis, Aphareus furcatus, A. rutilans*.
‘ōpelu	Mackerel scad (*Decapterus pinnulatus* and *D. maruadsi*).
orchid	Colorfully diverse flowering plant widespread around the globe; from the family, *Orchidaceae.*
‘ō‘ū	*Psittirostra psittacea*, Hawaiian honey creeper endemic to Hawai‘i. Its green feathers were used in various types of featherwork.
pa‘akai	Salt.
pāhoehoe	Smooth lava; surface unbroken.
pandanus	See hala.
papaya	The introduced plant *Carica papaya*, known for its edible fruit.
Pele	Volcano goddess.
pineapple	See hala kahiki.
pō	Night, darkness, the realm of gods.
post-contact	After AD 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.

pre-contact Prior to AD 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.

puhi Eel, considered by some to be an ʻaumakua.

pūkohukohu Kapa, as dyed with noni juice.

pulu Fern fibers obtained from the hāpuʻu pulu (*Cibotium glaucum*), tree fern.

puna Spring.

rice grass A perennial bunchgrass native to North America; also Indian rice grass or sand rice grass; *Oryzopsis hymenoides*.

strawberry guava The invasive tree *Psidium cattleianum*, originating in Brazil and brought to Hawaiʻi in 1825. Fruit are edible and are used in juice, and the tree is used as an ornamental and for firewood.

sugarcane The Polynesian-introduced *Saccharum officinarum*, or kō, a large grass traditionally used as a sweetener and for black dye.

sweet potato See ʻuala.

taro See kalo.

ʻuala The sweet potato, or *Ipomoea batatas*, a Polynesian introduction.

ʻula Red, scarlet; brown, as skin of Hawaiians.

ʻulaʻula The red snapper fish of the family *Lutjanidae*.

ʻulaʻūla koaʻe The red snapper fish of the family *Lutjanidae* thought to been named after the tropic bird for the long streamer on its tail.

ʻulu The Polynesian-introduced tree *Artocarpus altilis*, or breadfruit.

ulua An adult of various Carangid fishes.

uluhe Ferns of the genera *Dicranopteris*, *Hicriopteris*, and *Sticherus*. Also known as the false staghorn fern, they form dense thickets.

ʻUnuloa Name of a wind in Puna, Hawaiʻi.

wahine Woman, wife; femininity. Wāhine is the plural.

wai Water or liquid other than salt water.

waiawī *Psidium cattleianum f. lucidum*, the yellow strawberry guava.

waihona Depository, cabinet, file.

wao A general term for inland areas, usually forested and uninhabited.

wao kanaka An inland region where people may live or occasionally frequent, usually below the wao akua.

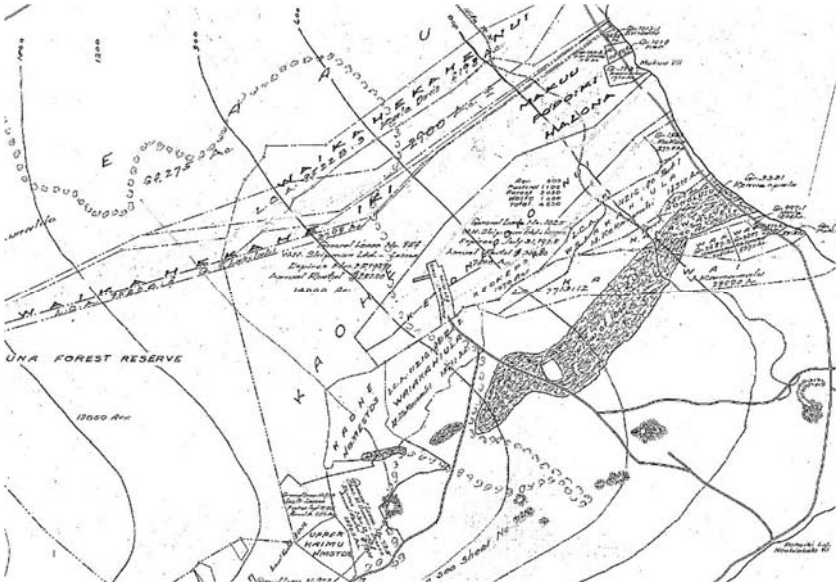
wao nahele Inland forest region.

Appendix C

Cultural Impact Assessment for the
Pāhoa Public Library Site Selection

FINAL—Cultural Impact Assessment for the Pāhoa Public Library Site Selection, Ahupuaʻa of Keonepoko Iki, Keonepoko Nui, and Waiakahiula/Kaʻohe, Puna District, Island of Hawaiʻi

Portions of TMK: (3) 1-5-002:020, (3) 1-5-007:017, (3) 1-5-008:001



Prepared For:

G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

March 2018

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāneʻohe, HI 96744 ● Phone 808.381.2361

FINAL— Cultural Impact Assessment for Pāhoa Public Library Site Selection, Ahupuaʻa of Keonepoko Iki, Keonepoko Nui, and Waiakahiula/Kaʻohe, Puna District, Island of Hawaiʻi

Portions of TMK: (3) 1-5-002:020, (3) 1-5-007:017, (3) 1-5-008:001

Prepared For:

G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Prepared By:

Dietrix Duhaylonsod, BA
and
Windy Keala McElroy, PhD

March 2018

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāneʻohe, HI 96744 ● Phone 808.381.2361

MANAGEMENT SUMMARY

A Cultural Impact Assessment was conducted for the proposed Pāhoa Library in the uplands of the Puna District, on the island of Hawai‘i. Three possible sites for the library are being considered: TMK: (3) 1-5-007:017 (Parcel 1), (3) 1-5-002:020 (Parcel 2), and (3) 1-5-008:001 (Parcel 3). The current study provides information on the three potential library sites by compiling archival data and community mana‘o on the three areas. This took the form of background research and an ethnographic survey consisting of three interviews, all of which are included in this report.

The background research synthesizes traditional and historic accounts and land use history for the Pāhoa region. Community consultations were performed to obtain information about the cultural significance of the subject properties and Pāhoa as a whole, as well as to address concerns of community members regarding the effects of the proposed project on places of cultural or traditional importance. As a result of this work, the cultural significance of Pāhoa and the greater Puna district have been made clear. This is evident in the numerous mele and mo‘olelo that live on until today.

During the early post-contact years, the uplands of Puna played a role in the trade of sandalwood, ‘ōhi‘a, and koa. In the late 1800s, after the Māhele, the area was transformed into a thriving sugar plantation town. However, previous archaeological research did not identify any historic properties in surface surveys of the project areas. Yet, as a few previous archaeological studies have documented, there are subsurface deposits, including midden, artifacts and human burials, which have been identified in underground lava tubes in the vicinity. Additional lava tubes, or “caves,” may be found during future ground disturbance activities, and these may or may not contain archaeological/cultural resources.

Interviews with individuals knowledgeable about Pāhoa produced information on its rich history, although no archaeological resources or cultural practices were identified for the particular project area. The potential for subsurface lava tubes was noted for Parcels 1 and 3. The interviewees shared several concerns and recommendations for the proposed project. Concerns focus on the need for services that the new library could provide, ease of access to the new library site, safety at the new library, and dangers due to the underground lava tube system. Recommendations include providing programs and resources that the community needs, offering expanded hours of operation, considering community mana‘o and cultural practices in planning the library, and planning for possible future lava flows. Other recommendations were related to landscaping, naming of the library, transportation, and safety.

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INTRODUCTION

At the request of G70, Keala Pono Archaeological Consulting conducted a Cultural Impact Assessment (CIA) for site selection for the proposed Pāhoa Public Library in the uplands of the Puna District, on the island of Hawai‘i. The potential sites for the library are situated along the Kea‘au-Pāhoa Highway corridor within the ahupua‘a of Keonepoko Iki, Keonepoko Nui, and Waiakahiula/Ka‘ohe. This CIA was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community's perspectives on the proposed project.

The report begins with a description of the project area and a historical overview of land use and archaeology in the area. The next section presents methods and results of the ethnographic survey. Project results are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary. Also included are appendices with documents relevant to the ethnographic survey, including full transcripts of the interviews.

The Project Area

The project area consists of three TMKs stretching across three ahupua‘a. For this project, the parcels are designated as 1, 2, and 3 (Figure 1). The TMKs are (3) 1-5-007:017 (Parcel 1), (3) 1-5-002:020 (Parcel 2), and (3) 1-5-008:001 (Parcel 3). Parcel 1 straddles the border of Keonepoko Iki and Keonepoko Nui, while Parcel 2 sits within Waiakahiula/Ka‘ohe, and Parcel 3 lies within Keonepoko Iki Ahupua‘a. The ahupua‘a of Parcel 2 has more than one name, and it is not clear if these names refer to different areas within the same land division, or if these are interchangeable names referring to the entire ahupua‘a as a whole. For the sake of this report, those ahupua‘a with more than one name will be labeled with all possible names separated by a forward slash. All of the project area ahupua‘a are situated within the greater district of Puna on Hawai‘i Island.

Parcel 1 is a 2.284-ha (5.644-ac.) project area within the 7.877-ha (19.464-ac.) TMK: (3) 1-5-007:017, also owned by the State of Hawai‘i. Parcel 2 is a 3.311-ha (8.181-ac.) project area within the 28.782-ha (71.121-ac.) TMK: (3) 1-5-002:020, which is owned by the County of Hawai‘i. Parcel 3 is a 2.267-ha (5.601-ac.) project area that lies within the 2,074.390-ha (5,125.93-ac.) TMK: (3) 1-5-008:001, owned by the State of Hawai‘i.

The Natural Environment

Puna lies partly on the lower slopes of Mauna Loa, but is located mostly on the undissected lava shield of Kīlauea. The three project sites are situated in the vicinity of the Kea‘au-Pāhoa Road within an elevation range of 592–704 m (1,972–2,309 ft.) above mean sea level (amsl). Specifically, Parcel 1 is located at 604–606 m (1,982–1,988 ft.) amsl; Parcel 2 is at 700–704 m (2,297–2,309 ft.) amsl; and Parcel 3 is at 592–603 m (1,972–1,978 ft.) amsl.

In the Hawaiian language, puna is translated as "a spring of water", or "well-spring" and therefore, the district is appropriately named. Puna's natural environment is dominated by volcanic activity, unique geological events and formations, and a variety of plant communities that provide habitat for native species. Eruptions of Kīlauea and the nearby volcano Mauna Loa continue to shape the ecology of the region, and even the land itself. Other place names within the project area are found translated in the book, *Place Names of Hawaii*: Ka‘ohe, "the bamboo;" Keonepoko Iki, "small Keonepoko;" and Keonepoko Nui, "large Keonepoko" (Pukui et al. 1974:39, 85, 86, 108, 143, 189). Keonepoko is further translated as "the short sand" while Waiakahiula is not listed in the book.

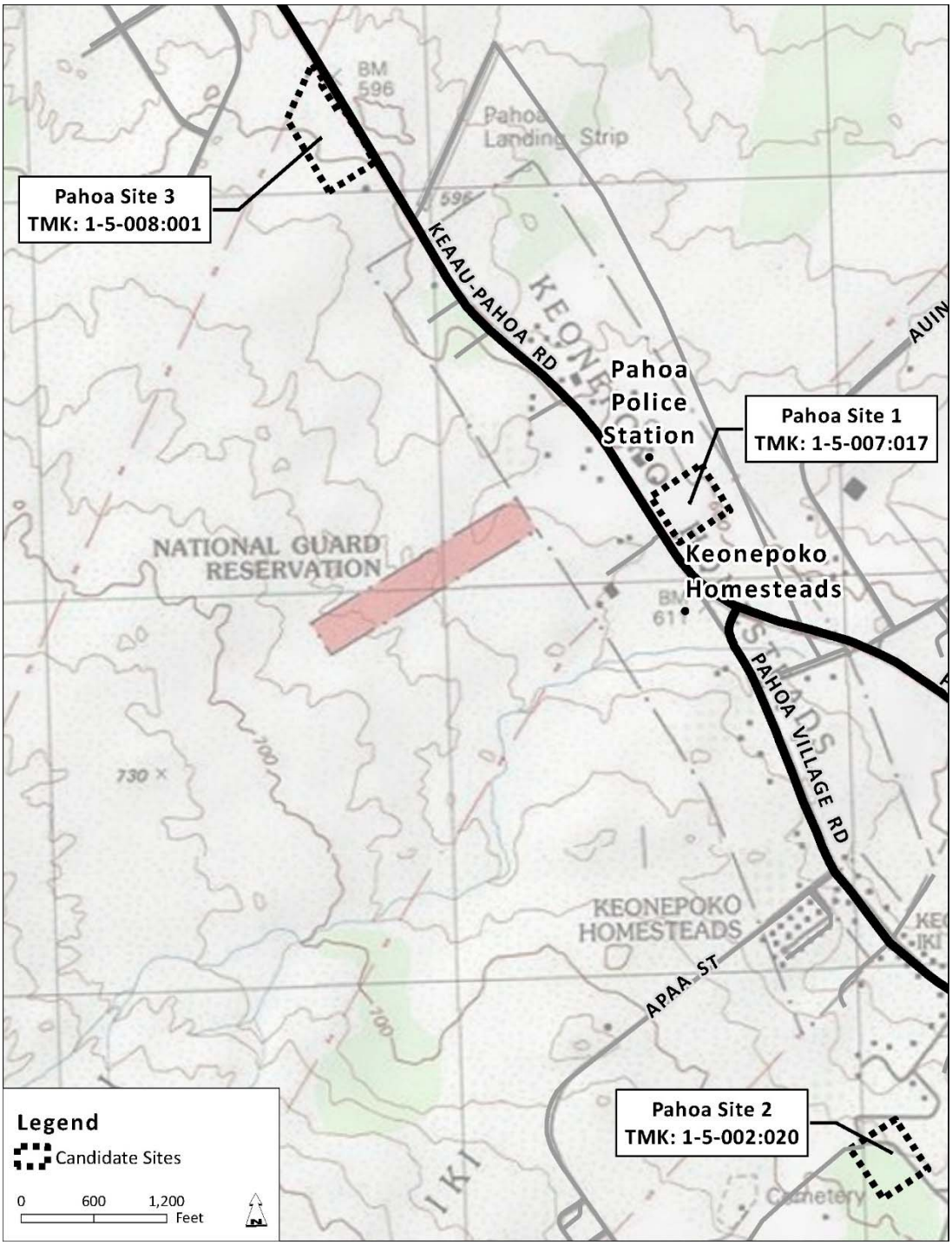


Figure 1. Project area TMK and potential locations for the Pāhoa Public Library (courtesy of G70).

The moku of Puna contains many inland and shoreline springs that flow underground from rains having seeped into the porous volcanic rock from Mauna Loa. As such, these underground sources of water are known to be quite pristine, having been filtered through miles of lava rock. The system of underground subterranean lava tubes is also quite extensive throughout much of Puna. These lava tubes, having been accessible through collapsed openings, were used traditionally in the past, and are still looked after by Hawaiians today for their safe keeping.

Rainfall is abundant in Puna. The average annual precipitation falls between approximately 304 and 406 cm (120 and 160 in.) (Juvik and Juvik 1998:57). Temperatures for this area range from between the 60s and 80s, with the cooler temperatures and heavier rainfall occurring in the winter months (October through April), with warmer temperatures and lighter rainfall occurring during the summer months (May through September). Hawaiians traditionally observed this cycle of nature, and recite the ʻōlelo noʻeau, "Ka ua moaniani lehua o Puna / The rain that brings the fragrance of the lehua of Puna" (Pukui 1983:172).

Parcels 1 and 3 lie entirely within Pahoehoe Lava Flows (rLW), while Parcel 2 is situated on soils from the Keaukaha Series (rKFD) (Figure 2). The Pahoehoe Lava Flows are described as follows:

> This lava has a billowy, glassy surface that is relatively smooth. In some areas, however, the surface is rough and broken, and there are hummocks and pressure domes. Pahoehoe lava has no soil covering and is typically bare of vegetation except for mosses and lichens. In the areas of higher rainfall, however, scattered ohia trees, ohelo berry, and aalii have gained a foothold in cracks and crevices. This miscellaneous land type is at an elevation from sea level to 13,000 feet. The annual rainfall ranges from 10 inches to more than 140 inches… In areas of higher rainfall, this lava contributes to the ground-water supply. (Sato et al. 1973:34)

Furthermore, the USDA Soil Conservation Service categorizes these lava flows as "Capability Subclass VIIIs, nonirigated." The capability classification is explained:

> Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes… [The small letter designation] s shows that the soil is limited mainly because it is shallow, droughty, or stony. (Sato et al. 1973:55)

The Keaukaha Soil Series are described as follows:

> …Well-drained, thin organic soils overlying pahoehoe lava bedrock. These soils occupy the low areas of Mauna Loa. They are at an elevation ranging from near sea level to 1,000 feet and receive from 90 inches to more than 150 inches of rainfall annually. Their mean annual soil temperature is between 72° and 74° F. The natural vegetation consists of ohia, tree fern, uluhe fern, and guava… Keaukaha soils are used for woodland, pasture, and homesites. (Sato et al. 1973:27)

More specifically, the Keaukaha soil within the project boundaries is called Keaukaha extremely rocky muck, 6 to 20 percent slopes (rKFD). This soil is further explained:

> It is undulating to rolling and follows the topography of the underlying pahoehoe lava. Rock outcrops occupy about 25 percent of the area. In a representative profile, the surface layer is very dark brown muck about 8 inches thick… underlain by pahoehoe lava bedrock… [and] is strongly acid… The soil above the lava is rapidly permeable. The pahoehoe lava is very slowly permeable, but water moves rapidly through the cracks.

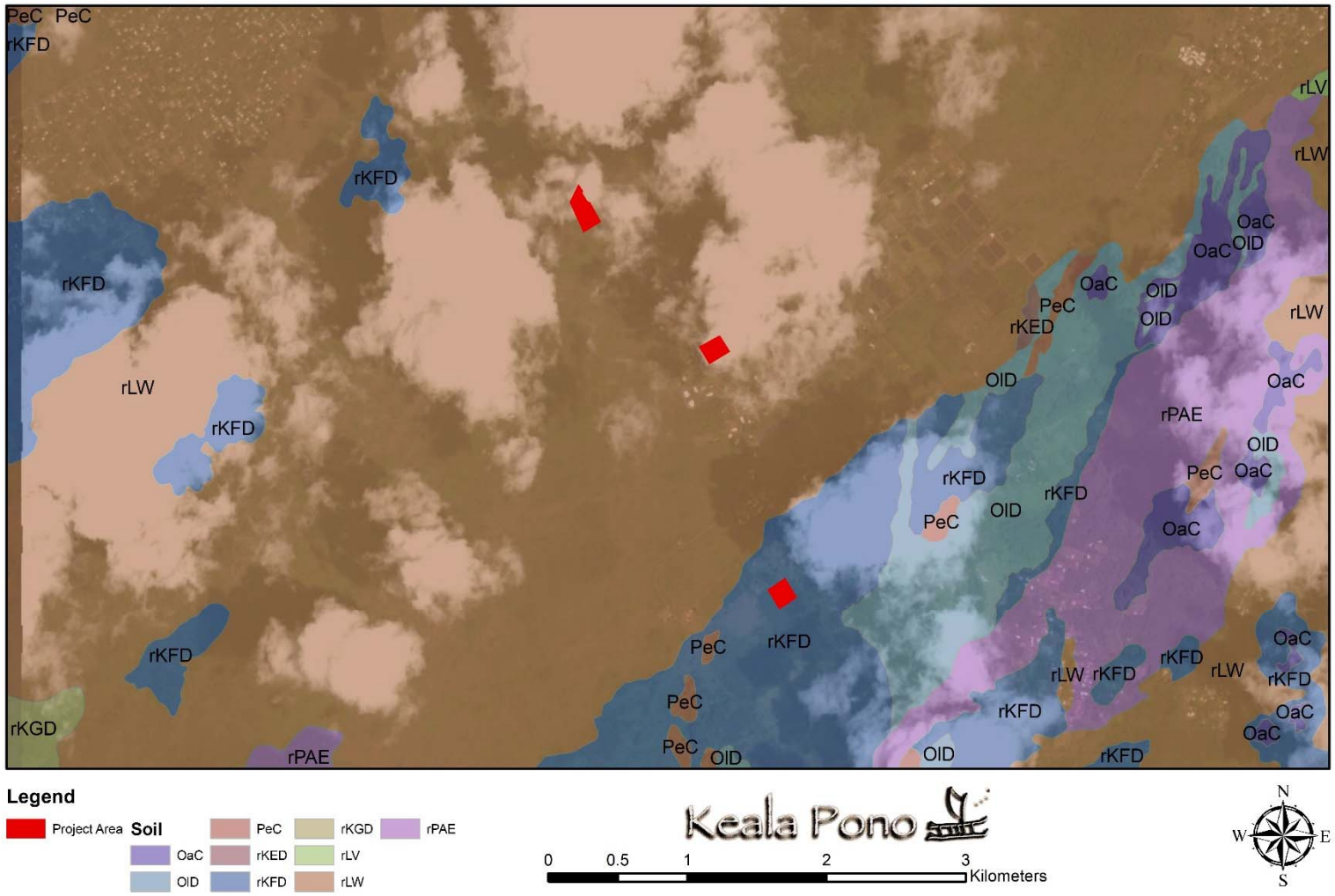


Figure 2. Soils in the vicinity of the project area.

> Runoff is medium, and the erosion hazard is slight. In places roots are matted over the pahoehoe lava or extend a few feet into the cracks. Most of this soil is in native forest. Some areas are cleared and used for pasture. (Sato et al. 1973:27)

The capability classification for the Keaukaha extremely rocky muck (rKFD) is Capability Subclass VIIs, nonirrigated; pasture group 9. This classification is described as follows:

> Class VII soils have severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife… Unimproved pasture on these soils consists mostly of californiagrass, carpetgrass, ricegrass, and honohonograss. Ohia, tree fern, waiwi, and melastoma grow in uncleared areas. The pasture sites have a 12-month growing season, but the best quality of forage is produced in the summer. The annual production is 3,000 to 5,000 pounds of air-dry forage per acre. (Sato et al. 1973:55, 65)

The land and vegetation surrounding the project area have been significantly transformed by modern activity. These lands were once wet forests and woodlands before human settlement changed their character. Juvik and Juvik (1998) describe the flora of these ecosystems:

> Vegetation: closed canopy forest of ʻōhiʻa [Metrosideros polymorpha], sometimes with koa or ʻōlapa codominant; dense tree fern (Cibotium species) understory; also, opencanopy forests or woodlands of ʻōhiʻa and uluhe (Dicranopteris linearis). Forests of hala (Pandanus tectorius) in coastal lowlands. Shrublands of ʻōhiʻa and ferns; also, ʻākala (Rubus hawaiensis) shrublands. Rare bogs and mosses (Racomitrium species), sedges, grasses, and native shrubs, Fauna: primary habitat of most extant Hawaiian honeycreepers and other forest birds ... great diversity of native invertebrates. Endangered species consist of more than 50 plants species ... birds include ʻoʻū (Psittirostra psittacea), Maui parrotbill (Pseudonestor xanthophrys), and ʻākohekohe (Palmeria dolei). (Juvik and Juvik 1998:126–127)

Nearly the entire crest of Kīlauea's east rift zone, all in Puna, has been covered by lava erupted within the past 400 years. And a few small, isolated patches of lava flows ranging in age from 750 to 2,500 years old are still exposed at the surface. But of the approximately 500 square miles in Puna, 50 square miles have been covered since 1983. Since ancient times, human settlement has been affected by lava flows. Oral history accounts speak of the collapse of the shoreline from Kaʻū all the way to Kumukahi that submerged many of the traditional Hawaiian resource features (Maly and Maly 2004). In spite of these dangers, early Hawaiians lived along the coast in villages around small coves where they could also access the inland areas of the ahupuaʻa for gathering and planting.

Most recently in June 2014, a lava flow called "the June 27th flow" erupted from a vent from the spatter cone Puʻu ʻŌʻō on the east rift zone of Kīlauea. It traveled in a northwest direction and stopped short of the town of Pāhoa. The June 27th lava flow continues to advance to the northeast of its vent on the flank of Puʻu ʻŌʻō. Scattered breakouts continue to be active northeast of Puʻu ʻŌʻō.

BACKGROUND

A brief historic review of the project vicinity is provided below, to offer a better holistic understanding of the use and occupation of the area. In the attempt to record and preserve both the tangible (i.e., traditional and historic archaeological sites) and intangible (i.e., moʻolelo, ʻōlelo noʻeau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaiʻi State Library, the University of Hawaiʻi at Mānoa libraries, the SHPD libraries, and online on the Office of Hawaiian Affairs website and the Waihona ʻAina, Huapala, and Ulukau databases. Archaeological reports and historical reference books were among the materials examined.

Moʻolelo

Moʻolelo show Puna prominently associated with both legendary and historical figures including Kāne, Pele, Hiʻiaka, Halemano, Papalauahi, Kumukahi, and Kaliʻikuku.

Kāne, a Hawaiian god and ancestor of the chiefs and commoners, is the god of sunlight, fresh water, verdant growth, and forests (Pukui 1983). It is said that before Pele migrated to Hawaiʻi from Kahiki, there was "no place in the islands . . . more beautiful than Puna" (Pukui 1983:11).

Contributing to that beauty were the groves of fragrant hala and forests of ʻōhiʻa lehua for which Puna was famous:

> *Puna pāia ʻala i ka hala* (Puna, with walls fragrant with pandanus blossoms)
>
> Puna, Hawaiʻi, is a place of hala and lehua forests. In olden days the people would stick the bracts of hala into the thatching of their houses to bring some of the fragrance indoors. (Pukui 1983:301)

Although Kāne apparently had a hand in cultivating the ancestral land, no doubt that Pele's womb was ready to pour forth and rebirth the land, a living force that is undeniable, as recent events have shown. As such, Puna is the focus of regenerative power. It is the easternmost district of the Hawaiian Islands, the land where the sun first rises (Kāne's eye). It is the district where the volcano continuously creates new land, and new vegetation comes to life on this newly formed ʻāina.

McGregor (2007:147) notes that "Throughout all of the folklore for Puna, Pelehonuamea and her family of deities emerge as the natural primal elements that dominate and shape the lives of the chiefs and people of Puna."

Puna, along with Hāʻena, Hōpoe, Keaʻau, and Nanahuki, are the lands that inspire hula creation because of the natural movements of waves, wind, and trees. "Ke Haʻa La Puna" is the first recorded hula in the Pele and Hiʻiaka story.

Hiʻiaka, the youngest of the sisters, after gathering beautiful flowers for lei by the Puna sea, feels inspired by the natural beauty and interactions between the northeast tradewinds and the hala forests of Puna, and accepts her sister Pele's challenge to dance the hula and chants "Ke Haʻa La Puna I Ka Makani." The passage below was translated by Emerson (1915).

> Ke haʻa la Puna i ka makani;
> Puna's a dance in the breeze;

Haʻa ka ulu hala i Keaau;
The hala groves of Keaau shaken;

Haʻa Haʻena me Hopoe;
Haʻena and Hopoe are swaying;

Haʻa ka wahine,
The thighs of the dancing nymph.

Ami I kai o Nana-huki, la
Quiver and sway, down at Nana-huki

Hula leʻa wale,
A dance most slightly and pleasing,

I kai o Nana-huki, e-e!
Down by the sea Nana-huki

The Moʻolelo of Halemano

Other stories significant to the land of Puna, are found in Abraham Fornander's *Collections of Hawaiian Antiquities and Folk-lore* (1919), and include the account of "Kaʻao no Halemano." Here we see the status of Puna to other islands and its relationship between various ahupuaʻa of the district. This account is set in the period of ca. AD 1500, just before ʻUmi's rise to power.

Having been heart-stricken from not meeting the woman of his dreams, Halemano dies, but is brought back to life by his sorceress sister, Laenihi. Halemano describes this woman to his sister,

> …She is very beautiful; her eyes and body are perfect; she has long, straight, black hair; is tall, dignified and seems to be of very high rank like a chiefess...her dress seems to be scented with pele and mahuna of Kauai, and her pa-u is made of some very light material dyed red. She wears a hala wreath and a lehua wreath on her head and around her neck.

Laenihi then says:

> "It is in Puna and Hilo that the lehua blossoms are found. It is in Puna that the ouholowai of Laa and the pukohukohu are found; therefore, your lover must be a woman of Puna; she is not of the west."

In Halemano's dream, he meets her again and asks,

> "What is the name of the land of your birth and what is your name?"
>
> "Kapoho in Puna, Hawaii, is the land of my birth; it is where the sun rises, and not in the west. My name is Kamalalawalu." (Fornander 1919 Volume V, Part II:228–236)

Kamalalawalu was the daughter of Hanakaulua and Haehae, chiefs of the land of Kapoho. Having been brought up under very strict kapu, no one was allowed to see her and she had no companions other than her own brother, Kumukahi.

Laenihi traveled to Puna to find the woman wahine o ka pō or dream woman that her brother sought, and verified that it was she, the woman of Halemano's dreams. To be able to meet Kamalalawalu, Laenihi transformed herself into a fish, and caused the wind from the sea to blow (called the unuloa),

so that the surf off Kaimū would roll and bring out the people for surf riding. Kamalalawalu and her brother, Kumukahi took to the beach, and Kamalalawalu saw Laenihi as a special fish and asked her brother to capture it and bring it home for her. Laenihi then transformed herself into a rooster and crowed until dawn, when she then became a woman and was able to meet Kamalalawalu and make plans so that Halemano could come and steal her from Puna to marry her.

This moʻolelo tells of the trials and tribulations of Halemano's and Kamalalawalu's relationship, where they move to live on many of the Hawaiian Islands, separate to have other spouses, and try again to be together only to separate again.

Halemano, who was becoming experienced at the art of singing and chanting, once again met up with Kamalalawalu. He exhibited his prowess at the game of kilu, and chanted:

> A kapu is placed over the roads of Puna by the fire of Laka,
> For I see its reflection in my eyes.
> It is like the breadfruit in the lowlands of Kookoolau;
> I am almost tempted to pick it;
> Being repelled by shame, I touch it not.
> Alas, my love!
>
> My love from the big sea of Puna
> Whose waves beat on the sea cliffs.
> You forget your lover while you went astray in Kaimu,
> Your mouth was closed, refusing to call.
> My love of the home where we were friendless,
> That home to which we had no claim, though I made no complaint,
> Where I drew warmth from the sun at Maliu.
> Take heed to my supplications
> My own, my love!

Kamalalawalu, supplanted by the undoing's of Kikekaʻala, chanted her woe:

> The wind is blowing; it is the Koolauwahine
> You will surely see Haili,
> Haili the plain of lehua entwined by the birds;
> They are carrying away the awa of Puna that grow on trees,
> The sweet sound oo of the forest,
> Whose sweet notes can be heard at eventide.
> My companion of the cold, watery home of Hilo,
> That cold wet home where you and I lived,
> O my own beloved husband!

Eventually, Halemano returned to Oʻahu, and then to Kauaʻi, and Kamalalawalu tried to follow. Heartbroken, she settled on Oʻahu but was taken back to Hawaiʻi after a fierce battle was waged by the Puna aliʻi Huaʻa and the Hilo aliʻi Kulukuluʻa, after they were advised by the Kalapana astrologer to bring her home to Hawaiʻi.

The Moʻolelo of Papalauahi

There was an aliʻi of the district of Puna who organized sporting events and festivities where all the neighboring chiefs would rally. His name was Papalauahi, and he was a very accomplished athlete. On one occasion, Pele arrived as a beautiful young woman and challenged him to a hōlua race. After looking on from above, gathering in all the excitement and impulsively borrowing a sled from one

of the chiefs to race with him, she was abruptly defeated. Pele became angry and stamped on the ground so that floods of lava broke out, destroying many of the chiefs as they fled in every direction. They and the spectators were transformed into pillars of stone (Westervelt 1916:30).

The Moʻolelo of Kumukahi

Kumukahi was a notable chief of Puna. He was a tall and strikingly handsome man who was a great aficionado of the ancient games. Pele found delight in this man and his love for the games; but one day, disguised as an old woman with fiery eyes, she showed up insisting that he include her in the game rivalry. When Kumukahi rebuffed her, Pele chased and entrapped him on the beach by enveloping him in a great mound of lava, which she also poured far out into the ocean. Thus it is said that Cape Kumukahi, the southeast point of the island of Hawaiʻi, was formed by Pele's retribution when her anger flashed out in a great fountain of volcanic fire into the sea (Westervelt 1916:27–28).

The actual name of the cape came from Kumukahi, who was the mythological figure from Kahiki at the time when the gods still walked on earth. He was represented as a red stone, and his wives, also stones, transformed the seasons by pushing the sun back and forth. The stones have been used to calculate the solstices (Pukui et al. 1974:124). At some point Pele destroyed Kumukahi and his family as mortal beings. However, they were powerful ʻaumākua. Kumukahi could take the form of a man or a kōlea bird, while Palamoa could take the form of a rooster.

Kumukahi translates to "first beginning" (Pukui et al. 1974:124). In the traditional processional chants "Hoʻopuka e ka Lā ma ka Hikina" and "Hiki mai ka Lā ma ka Hikina," Kumukahi served as the eastern gateway through which sun and dancer passed on a journey that "floods the earth with light and brings forth vitality to all [they touch]" (Pukui n.d.).

The Moʻolelo of Kaliʻikuku

Puna's moʻolelo tell of its Eden-like natural environment, where ʻōhiʻa and hala trees and other plants grew in abundance. A chief of Puna, Kaliʻikuku, while on Oʻahu once bragged to a prophet of Pele, Kaneakalau, little knowing that Pele had destroyed all that he cherished. He said "My country is charming. Abundance is found there. Rich, sandy plains are there, where everything grows wonderfully" (Westervelt 1916:31). The prophet informed him that Pele had desolated Puna, that the trees are no longer in the mountains, the people burned, and the land is now barren. Upon returning home, Kaliʻikuku came around the eastern side of the island, landed his canoe, and climbed to a point where he could see Puna. He witnessed his once fertile plains now covered with smoking lava, and what remained of the forests were still burning. Because of Kaliʻikuku boasting, Pele demonstrated her power for all to see.

Traditional Land Use

Traditional land use in Hawaiʻi was founded on the vertical arrangement of a volcanic island's natural ecosystems, with subsistence systems based on several biological resource zones, including the upland/inland forest zone, or the wao nahele, the agricultural zone, or the wao kanaka, and the coastal zone, or the kahakai. This latter zone included the strand area, fringing reefs, limu beds, lagoons, fishponds, and estuaries. The muliwai are mostly on the windward side of the islands and are part of another biological resource zone, the kaha wai or freshwater ecosystems and streams. The ocean (kai), near the shore can also be considered a biological resource zone (Mueller-Dombois 2007).

Since the ahupuaʻa served as the complete subsistence system for Hawaiian family groups (the ʻohana) prior to European contact in 1778, many important features would be inherent within the resource zones. Besides habitation sites in the kahakai and wao kanaka, there were also transitional habitation sites near and in the wao nahele. Both the wao kanaka and kahakai included temples (heiau) and burial places (hē) as well as irrigated terraces (loʻi kalo) for taro cultivation (Mueller-Dombois 2007).

In pre-contact Hawaiʻi, all natural resources extending from the mountaintops to the deep sea were held in "trust" by the chiefs (mōʻī, aliʻi ʻai moku, or aliʻi ʻai ahupuaʻa). The right to use resources of lands and oceans was given to the hoaʻāina at the prerogative of the aliʻi and their representatives or land agents (konohiki or haku ʻāina). Following a strict code of conduct, which was based on ceremonial and ritual observances, the people of the land were generally able to harvest the land and ocean resources for their own sustenance, and to pay tribute to the class of chiefs and priests who oversaw them.

Coastal regions of the east and southern shores of Puna were noted for anchialine ponds from which ʻōpaeʻula were harvested for bait in ʻōpelu fishing. Puna was noted for the ʻōpelu fisheries, and for ulua fisheries and techniques of fishing with puhi. Kūkaula fisheries in Puna included those for prized eating fish such as the ʻulaʻula koaʻe and ʻōpakapaka. Paʻakai (salt) making was also an important practice along the southern coastline of Puna (Maly and Maly 2004).

The people of ʻŌlaʻa and other interior parts of Puna were known to produce very fine mats and kapa made from the bark of the māmaki (Burtchard et al. 1994:48). Olonā fiber was made into fishing nets and line because of its durability and resistance to seawater. Its excellence made it a highly valued item, not only among Hawaiians but also among foreign sailors (Abbott 1992:59). Whalers would pay high prices for olonā for making lines for whales (MacCaughey 1920:241). The olonā trade was a source of considerable profit to the aliʻi (Kamakau 1996:53). Also in the uplands, ʻōʻō birds were captured for their precious yellow feathers that were fashioned into prized items such as cloaks (MacCaughey 1920:240).

A general model of pre-contact settlement patterns for the Puna coastline includes both habitation sites and agricultural complexes along with ceremonial and burial areas, all associated with a fairly dense population. Regional trade networks would have provided connections facilitating the traditional Hawaiian land tenure system of subsistence farming abounding with well-cultivated plantations of kalo, ʻuala, and kō; as well the collection of forest resources. In *The Hawaiian Planter*, E.S. Craighill Handy related several methods of cultivation common and unique to Puna:

> In the wet, lowland forests of Puna, taro used to be planted under the pandanus trees, which were felled and cleared to let in the sun after the taro had rooted and put forth the first growth of leaves. It is said that here the cutting was planted wrapped in a roll of dry pandanus leaf to keep it moist and give it nourishment in the stony ground of the lava-covered lowlands. (Handy 1940:53)

> Despite the fact that sweet potatoes were planted almost universally and many patches are still maintained [in 1931–1932], the Puna natives seem to regard this vegetable with little interest, probably because Puna people prided themselves upon and relished their breadfruit, and also because potato was nowhere and at no time the staple for this rain swept district. (Handy 1940:165)

Power and Conquest in Puna

Historical accounts of the ruling chiefs of Hawaiʻi and Puna have been largely drawn from the works of Fornander (1969, 1973), Fornander and Thrum (1996), and Kamakau (1961); as well as Dorothy

Barrere‘s *Political History of Puna* (1959). These accounts tell of many ruling chiefs who constantly vied for power. Their ruling scenarios fluctuated widely, some reigning over one or more ahupua‘a; and others holding command over several or entire districts.

By the time of Līloa (ca. 1475), Hawai‘i had been divided into the six major districts that are extant today. While each of the districts were ruled by independent chiefs, all of them recognized Līloa as the supreme chief (Kamakau 1961:1). When ‘Umi-a-Līloa, the son of Līloa ascended to the throne of his father (ca. 1525), he brought all of the districts directly under his rule, subjugating rebel chiefs. Kamakau (1961) reports that:

> Hua‘a was the chief of Puna, but Puna was seized by ‘Umi and his warrior adopted sons, … Hua‘a was killed by Po‘i-mai-wa‘a on the battle field of Kuolo in Kea‘au, and Puna became ‘Umi-a-Līloa’s. (Kamakau 1961:17–18)

Fornander (1969) also notes that at this time, parts of Puna came under the rule of the famed, blind chief ‘Ī-mai-ka-lani, of Ka‘ū. It was only after lengthy battles, that ‘Umi was able to secure all of Puna and Ka‘ū under his rule (Fornander 1969:34).

In 1760 Kalani‘ōpu‘u became the ali‘i nui of Hawai‘i by defeating all of his rivals. Kalani‘ōpu‘u’s son, Kīwala‘ō was named his heir, and Kalani‘ōpu‘u’s nephew, Kamehameha, was set in charge of the god Kūkā‘ilimoku. At the time of Captain Cook’s arrival (1778), Kalani‘ōpu‘u was on the island of Maui. Kalani‘ōpu‘u returned to Hawai‘i and met with Cook on January 26, 1779, exchanging gifts, including an ‘ahu‘ula and mahiole that he was wearing. Cook also received pieces of kapa, feathers, hogs, and vegetables. In return, Cook gave Kalani‘ōpu‘u a linen shirt and a sword; Cook later gave other presents to Kalani‘ōpu‘u, among which one of the journals mentions “a complete tool chest.”

Kalani‘ōpu‘u died shortly thereafter (1782). Before his death, Kalani‘ōpu‘u gave an injunction to Kīwala‘ō and Kamehameha, and to all the chiefs that Kīwala‘ō would be the heir to Ka‘ū, Kona, and Kohala. Disagreements arose over the division and redistribution of lands following Kalani‘ōpu‘u’s death. John Papa ‘Ī‘ī (1959) records that while the division of lands to be made by Kīwala‘ō was being discussed, his half-brother, Keōua, was told by one of his advisers:

> “Perhaps you should go to the chief and ask that these lands be given to us. Let Waiakea and Keaau be the container from whence our food is to come and Olaa the lid.” Keoua did so, but the other Kau chiefs objected to this and spoke disparagingly to him. When Keoua returned, his advisor asked, “How was your venture?” When Keoua told him all that had been said, the man remarked seriously, “A break in a gourd container can be mended by patching, but a break in the land cannot be mended that way.” (‘Ī‘ī 1959:14)

Soon after Kalani‘ōpu‘u’s death, Kīwala‘ō was killed in combat by Kamehameha‘s forces. After many years of warfare, Kamehameha went on to conquer all of Hawai‘i Island and unify the island chain. Kīwala‘ō’s daughter, Keōpūolani, would end up marrying Kamehameha and mothering three heirs of the dynasty: Liholiho (Kamehameha II), Kauikeaouli (Kamehameha III), and the princess Nāhienaena.

19th Century Puna

There is relatively very little documentation of Puna, and especially of nā ahupua‘a in the project area, in the 19th century compared to that of the major population centers throughout the archipelago. Most of the records of Puna in the early 19th century come from missionaries documenting their work. In the second half of the century, Puna is mentioned in land claims following the division of land through the Māhele.

1820s

Reverend William Ellis recorded his observations during a two-month journey around Hawaiʻi Island in 1823. His account is the first description of an entire island and includes many observations on Hawaiian agricultural areas, practices, crops, and demography. References made by Ellis were used to define the perimeters of the agricultural zones on Hawaiʻi Island during the period of his tour. Ellis' main purpose, along with members of the American Board of Commissioners for Foreign Missions (ABCFM), was to seek out communities in which to establish church centers for the growing Calvinist mission. His trek along the Puna coast to Hilo Bay generated the earliest overland description of the coastal zone:

> Kaimu is pleasantly situated near the sea shore, on the S.E. side of the island, standing on a bed of lava considerably decomposed, and covered over with a light and fertile soil. It is adorned with plantations, groves of cocoa-nuts, and clumps of kou-trees. It has a fine sandy beach, where canoes may land with safety; and, according to the houses numbered to-day, contains about 725 inhabitants. (Ellis 1963:196)

> [W]e reached Kaau [Keaʻau], the last village in the division of Puna. It was extensive and populous, abounding with well-cultivated plantations of taro, sweet potatoes, and sugarcane; and probably owes its fertility to a fine rapid stream of water, which, descending from the mountains, runs through it into the sea. (Ellis 1963:212)

1830s

The appointed minister of the Hilo Mission, Reverend Titus Coan, made repeated tours through the Puna and Hilo Districts as part of his regular duties in 1834 and recorded what he saw:

> Its [Punaʻs] shore line, including its bends and flexures, is more than seventy miles in extent. For three miles inland from the sea it is almost a dead level, with a surface of pahoehoe or field lava, and a-a or scoriaceous lava, interspersed with more or less rich volcanic soil and tropical verdure, and sprinkled with sand-dunes and a few cone and pitcraters… The rains are abundant, and subterranean fountains and streams are numerous, carrying the waters down to the sea level, and filling caverns, and bursting up along the shore in springs and rills, even far out under the sea… Puna has many beautiful groves of the cocoa-palm, also breadfruit, pandanus, and ohia, and where there is soil it produces under cultivation, besides common vegetables, arrowroot, sugar-cane, coffee, cotton, oranges, citrons, limes, grapes, and other fruits. On the highlands, grow wild strawberries, cape gooseberries, and the ohelo, a delicious berry resembling our whortleberry. (Coan 1882:26)

An article written by someone named Barenaba and dated April 13, 1836, in the Hawaiian language newspaper, *Ke Kumu Hawaii,* tells of the preaching of the Word of God to the people in Waiakahiula and Kaʻohe, among other places. It also mentions the preaching at a place called Keonepako, which is probably a misspelled version of Keonepoko Iki or Keonepoko Nui.

> HILO, Ianuari 22, 1836.
>
> Aloha oukou a o'u hoahanau a pau iloko o Kristo.
>
> Ke hoike aku nei au ia oukou i ko'u hele ana, a me ka'u hana ana, i ko'u kaahele ana i ka aina o Puna…. A kakahiaka, hai aku la au i ka olelo a ke Akua i ka poe malaila, a ma Kula, a ma Koae, a ma Kahuwai, a ma Nanawale poeleele, a kakahiaka, hai aku au i ka olelo a ke Akua ma Waiakahiula, a me Kaohe, a ma Keonepako, a ma Makuu, a ma Waikahekahe,

> alaila hiki ma Keaau i ka poaha o ka lua o ko Sabati o Ianuari, loaa ka'u Wahine malaila. Elua au hai ana aku i ka olelo a ke Akua i na kanaka malaila.
>
> A i ka poaono, puka makou ma Hilo, a halawai pu me na hoahanau me ka olioli i ka Haku. Na'u na BARENABA. (Barenaba 1836)

1840s–1860s

Another article, taken from the newspaper, *Ka Elele Hawaii,* gives a list of the names of the various land divisions around the islands (*Ka Elele Hawaii* 1848). For the Island of Hawaiʻi, Kaʻohe and Keonopoko [probably Keonepoko] are listed as ahupuaʻa in the district of Puna. Notice that Waiakahiula is not mentioned here.

The Old Government Road (also referred to as the Puna Trail) was previously studied by Lass (1997) and Maly (1999) within the ahupuaʻa of Keaʻau, well to the east of the current project area. Currently, this road is dirt-covered and maintained for vehicular access. Maly (1999) relates that the current alignment of the Old Government Road, which evolved from earlier trail routes, was under construction by the 1840s. The road remained the preferred route of travel between Hilo and the outlying areas of Puna until 1895, when the Keaʻau-Pāhoa Road (Highway 130) was established to access the growing inland population centers and agricultural areas (Maly 1999:6).

Puna and the Changes in Land Tenure

In the mid-1800s, during the reign of Kamehameha III, the Hawaiian kingdom became increasingly exposed to outside influences, and the Hawaiian monarchy faced a crossroads of major change. "The Constitution of 1840 confirmed that only two offices could convey allodial title. These were the mōʻī and the kuhina nui. The Māhele was an instrument that began to settle the constitutionally granted vested rights of three groups in the dominium of the kingdom—mōʻī, aliʻi, and the makaʻāinana" (Beamer 2014:143). However, the king felt the difficulty of governing a land where the influence of foreigners had been growing. Dr. David Keanu Sai describes this predicament:

> Kamehameha III's government stood upon the crumbling foundations of a feudal autocracy that could no longer handle the weight of geo-political and economic forces sweeping across the islands. Uniformity of law across the realm and the centralization of authority had become a necessity. Foreigners were the source of many of these difficulties. (Sai 2008:62)

"Several legislative acts during the period 1845–1855 codified a sweeping transformation from the centuries-old Hawaiian traditions of royal land tenure to the western practice of private land ownership" (Moffat and Fitzpatrick 1995:11). Most prominent of these enactments was the Māhele of 1848 which was immediately followed by the Kuleana Act of 1850.

> The Mahele was an instrument that began to settle the undefined rights of three groups with vested rights in the dominion of the Kingdom --- the government, the chiefs, and the hoaʻāina. These needed to be settled because it had been codified in law through the Declaration of Rights and laws of 1839 and the Constitution of 1840, that the lands of the Kingdom were owned by these three groups… Following the Mahele, the only group with an undefined interest in all the lands of the Kingdom were the native tenants, and this would be later addressed in the Kuleana Act of 1850. (Beamer 2008:194,195)

Although the Māhele had specifically set aside lands for the King, the government, and the chiefs, this did not necessarily alienate the makaʻāinana from their land. On the contrary, access to the land was fostered through the reciprocal relationships which continued to exist between the commoners

and the chiefs. Perhaps the chiefs were expected to better care for the commoners' rights than the commoners themselves who arguably might have been less knowledgeable of foreign land tenure systems. Indeed, the ahupuaʻa rights of the makaʻāinana were not extinguished with the advent of the Māhele, and Beamer points out that there are "numerous examples of hoaʻāina living on Government and Crown Lands Post-Mahele which indicate the government recognized their rights to do so" (Beamer 2008:274).

> Hoaʻāina who chose not to acquire allodial lands through the Kuleana Act continued to live on Government and Crown Lands as they had been doing as a class previously for generations. Since all titles were awarded, "subject to the rights of native tenants." The hoaʻāina possessed habitation and use rights over their lands. (Beamer 2008:274)

For those commoners who did seek their individual land titles, the process that they needed to follow consisted of filing a claim with the Land Commission; having their land claim surveyed; testifying in person on behalf of their claim; and submitting their final Land Commission Award to get a binding royal patent. However, in actuality, the vast majority of the native population never received any land commission awards recognizing their land holdings due to several reasons such as their unfamiliarity with the process, their distrust of the process, and/or their desire to cling to their traditional way of land tenure regardless of how they felt about the new system. In 1850, the king passed another law, this one allowing foreigners to buy land. This further hindered the process of natives securing lands for their families.

According to the Waihona ʻAina Māhele database, a claim was made for multiple land parcels stretching across over two dozen ahupuaʻa throughout Hawaiʻi Island, to include Waiakahiula in Puna District. The claimant was Chiefess Mikahela Kekauʻōnohi, and the award was LCA 11216. The database also lists a single claim for land (LCA 5207) in Kaʻohe ahupuaʻa by Ulumaheihei.

According to the Waihona ʻAina database, there are no LCAs documented for the ahupuaʻa listed as Keonepoko Iki, Keonepoko Nui, or Keonepoko. In a separate previous study done by the Hawaiʻi Volcanoes National Park (Allen 1979), it is said that the ahupuaʻa of Keonepoko Iki was one of seven areas in Puna that was left unassigned during the Māhele, and it was decided in 1888 that these would be Government lands. It is also said that the ahupuaʻa of Keonepoko was returned by Lunalilo and retained by the kingdom (Allen 1979). A final thing to note is that the boundaries of Keonepoko Nui were surveyed in 1880 for the estate of Charles Kanaʻina, the father of Lunalilo.

1870s–1890s

By the 1870s a number of business opportunities were being developed in Puna; they included ranching operations, the cultivation and export of ʻawa and coffee, woods, and pulu, and as a result, further work on the Puna Government Road alignment was undertaken. Another modified alignment of the road was laid out in 1875 (as surveyed by J.M. Lydgate), and remained in use and under periodic maintenance until about 1895. The Hilo Railway Company was established during this time period, and in 1900, it extended tracks along the coast to the sugar fields in Kapoho and stretching inland to Pāhoa and Kamaliʻi.

The 19th century ended with the overthrow of the Hawaiian monarchy and the subsequent attempt of the United States of America to annex the Hawaiian Islands. By 1890, there were only 800 people in Puna compared to 2,200 in 1862 (Schmitt 1968:71). The population decline of Puna was attributed to several factors. In 1882, Titus Coan wrote, "Our people are now greatly diminished by death, and by being drawn away to the numerous plantations of the islands, upon ranches, in various industries with foreigners, and by hundreds into Honolulu, and on board vessels..." (Coan 1882:121).

One of the earliest maps found for the Puna district comes from 1893, the same year as the overthrow of the Hawaiian monarchy (Figure 3). The map is labeled "Map of the Puna District, Hawaii", and it is compiled from data collected by Frank Dodge. There seems to be nothing out of the ordinary for Keonepoko Nui ahupuaʻa, but for Keonepoko Iki, its makai section appears to be where Kaʻohe is located. Waiakahiula also is interesting in that it is illustrated as disjointed with a makai section and a mauka section separated by a few ahupuaʻa or other land parcels in between.

By the turn of the century, the Government was opening up large tracts of homestead lands throughout Puna, which were sold for residential and agricultural use. Because the rich agricultural parcels were generally situated three or more miles inland, above the 400-ft. elevation, homestead lands could be better accessed and their produce better transported by a new and more direct inland route between Puna and Hilo. As a result, the basic alignment of the Keaʻau-Pāhoa Highway (now Highway 130) was established and construction was underway by 1895. The route ran along the coastal area as the Old Government Road (Site 21273), extending from Hilo to at least Kalapana.

Puna in the 20th Century and Beyond

Also at the turn of the century, coffee was becoming an important agricultural industry in Puna. The Shipman family, a major landowner in the district, ran the Shipman Ranch in Keaʻau. The pineapple industry had also been started, for export to California. And in 1908, the Hawaiian Mahogany Company erected a lumber mill in Pāhoa and sent out its first shipment of 20,000 ʻōhiʻa log ties to the Santa Fe Railroad. In 1910, the company became the Pāhoa Lumber Mill and obtained cutting rights to 12,000 ac. of Territorial Forest in Puna. Economic development in the district during the territorial years centered at ʻŌlaʻa, with a ranch and a sugar plantation, and around Pāhoa with the ʻōhiʻa and koa lumber operations. Lower Puna was described as remaining predominantly a traditional Hawaiian subsistence area.

During the first half of the 20th century, Puna was dominated by the sugar industry. Thousands of acres of land were turned into sugar plantations, stretching from the south Hilo border to Cape Kumukahi, then west to the inland areas of south Puna, and these were connected by an extensive railway system. The Olaa Sugar Company acquired large plots of land and established a sugar mill in Keaʻau, north of the project area. The Olaa Sugar Company also took over the Puna Sugar Company, which had its base of operations in Pāhoa. A diverse population of laborers were brought in to attend the fields, and at first they lived in ethnically-segregated camps in the vicinity of Old Plantation Road. Eventually the descendants of these workers intermarried and moved beyond segregated camps. The imprint of large-scale sugarcane cultivation would transform the landscape of Puna and the fabric of its community, and its effects continue into the 21st century long after the decline of sugar in Hawaiʻi.

Several historic maps from this period depict the project area ahupuaʻa. The first is dated 1900, and it is noted as a "Map showing the Center Line of the Right of Way, of the Hilo Railroad Puna Section" (Figure 4). According to this map, the Hilo Railroad entered the Puna district between Olaa Plantation and Keaʻau near the Olaa Mill. The railroad eventually crossed into the project area at Keonepoko Nui, and continued through Keonepoko Iki before extending into Waiakahiula. From there it left the project area and continued into the neighboring ahupuaʻa of Nānāwale.

Another historic map is titled "Puna Govt. Tracts, Puna, Hawaii" (Figure 5). This map shows the various Land Commission Awards which have been recognized in Puna, and it also points out several homestead developments throughout the district that are mentioned in archival documentation. The mauka area labeled "Kaohe" and its adjacent ahupuaʻa of Keonepoko Nui and Keonepoko Iki are all noted to be a huge area of land leased to W.H. Shipman. Besides displaying

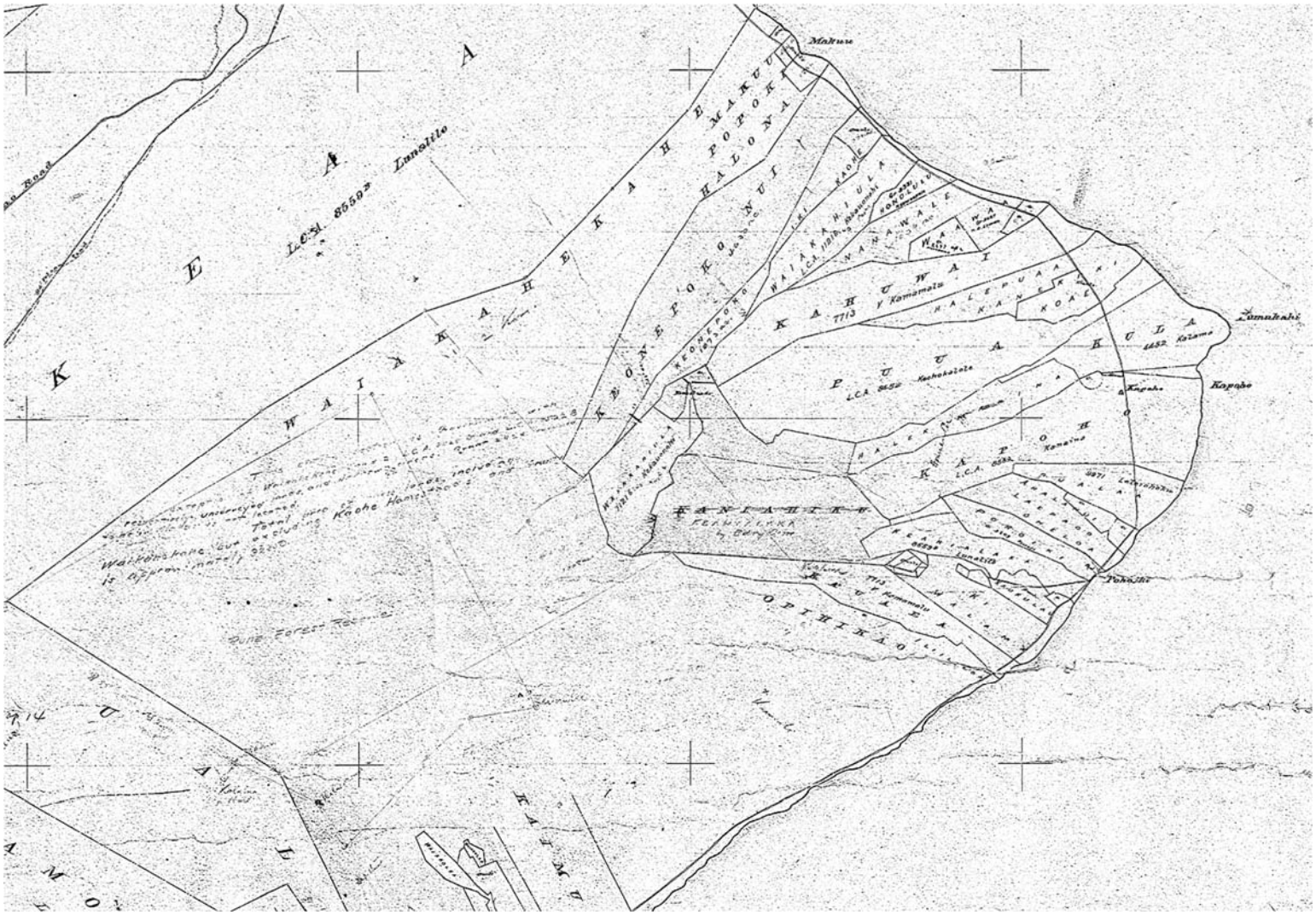


Figure 3. Portion of a Puna district map (Dodge 1893).

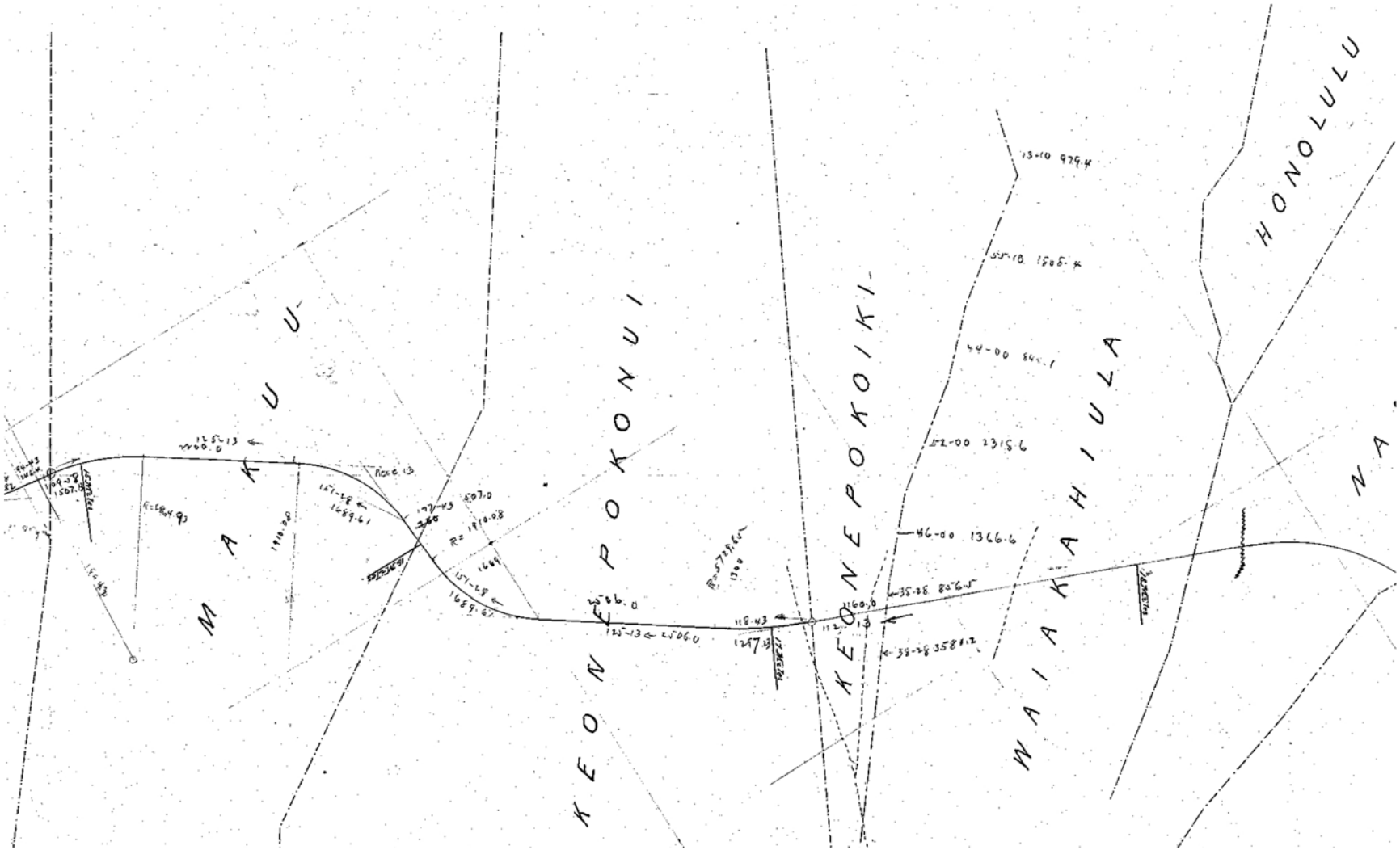
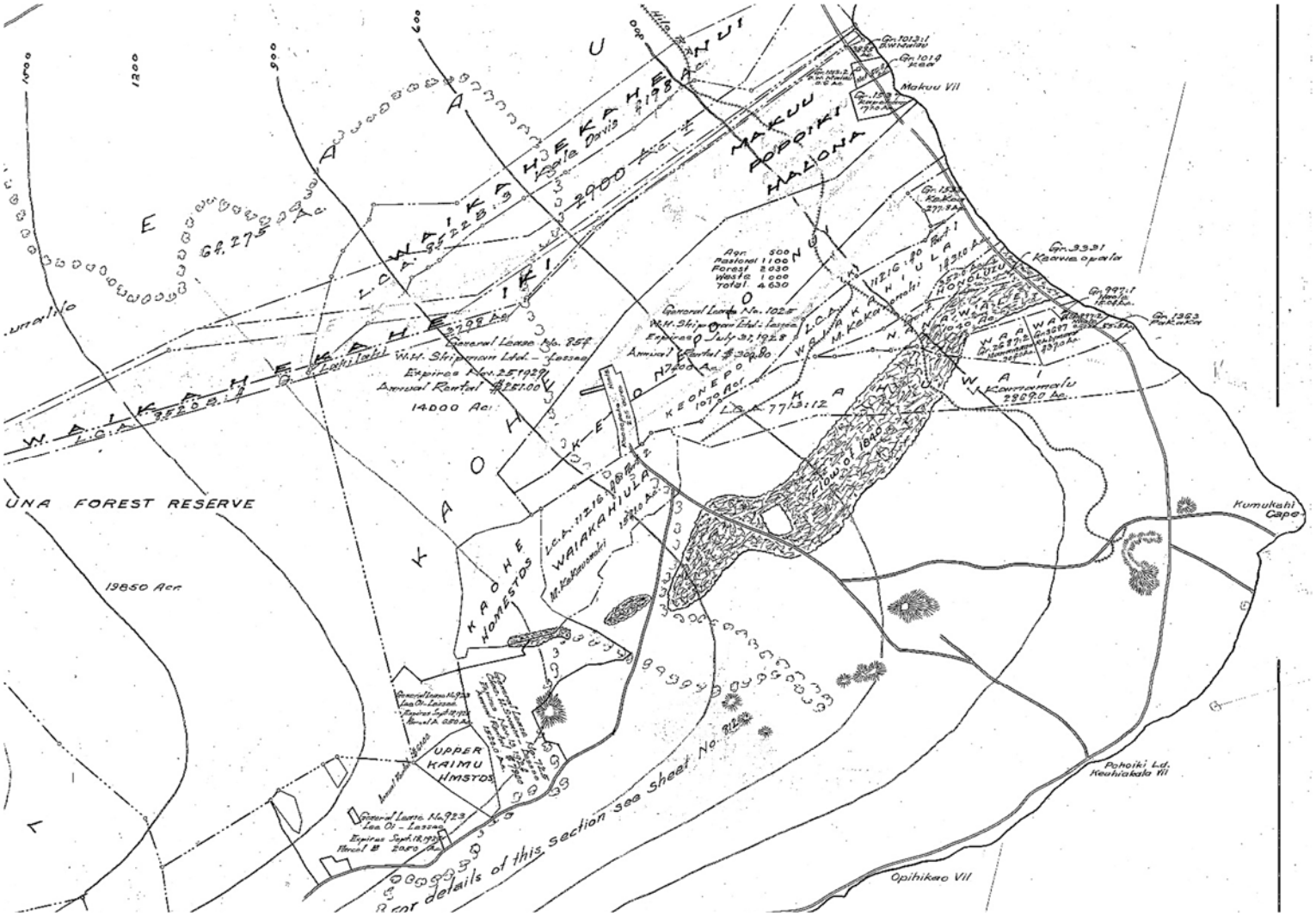


Figure 4. Portion of a map showing the Hilo Railroad (Anonymous 1900).


UNA FOREST RESERVE
19850 Acr
UPPER
KAIMU
HMSTDS
Makuu Vil
Kumukahi
Cape
Pohoiki Ld.
Keahiakala Vil
Opihikao Vil
Kaonia opala
Kaonamalu
29609.0 Ac.
Gr. 275
Agn 500
Pastoral 1100
Forest 2030
Waste 1000
Total 4630
14000 Ac
17000 Ac
1072 Acr
Gr. 3331
Gr. 1363
Gr. 1014
Gr. 1013.1
Gr. 1363
Gr. 1363
Gr. 1363

the land awards and leased lands in and around the project area, two homesteads of interest are also noted. The familiar rectangular shape of the Keonepoko Homestead is shown extending across both Keonepoko Iki and Keonepoko Nui. And east of that, in the uplands above the mauka portion of Waiakahiula, there is a bigger parcel of homestead development labeled as the Kaohe Homesteads.

A map showing the Puna Forest Reserve dates to 1927 (Figure 6). Regarding the current project area, from north to south, the first ahupuaʻa is Keonepoko Nui, and it is labeled as belonging to the government. Next is Keonepoko Iki, and it, too, is labeled as belonging to the government, but along its coast there is one land grant still in existence and belonging to Kekoa. And lastly, the disjointed ahupuaʻa of Waiakahiula is still shown under the name of the chiefess Kekauʻōnohi. The mauka portion of Waiakahiula also appears to have many little land grants within in it or adjacent to it, but the map does not make the boundary clear. This 1927 map clearly shows that the Hilo Railroad is still traversing the district.

Finally, a 1928 Hawaii Territory Survey map was annotated to show the network of railroads in East Hawaiʻi (Figure 7). The rail line extends all the way from Paʻauilo to Kamaili, crossing through all of the project ahupuaʻa. At Pahoa there is a junction that leads a short ways inland.

Contemporary Puna

According to a census taken in 2000, the population of Hawaiʻi County was at 148,677. Of that figure, the population of Puna was 31,335, and it had been marked as the fastest growing district on the island. Today, there is a good mix of residential and commercial land use in Puna, and the primary economic activity of the district continues to be centered on agriculture, although no longer sugarcane, pineapple, and timber, but rather, papaya, anthurium, orchid, and other types of farming (Nishimura 2005:13).

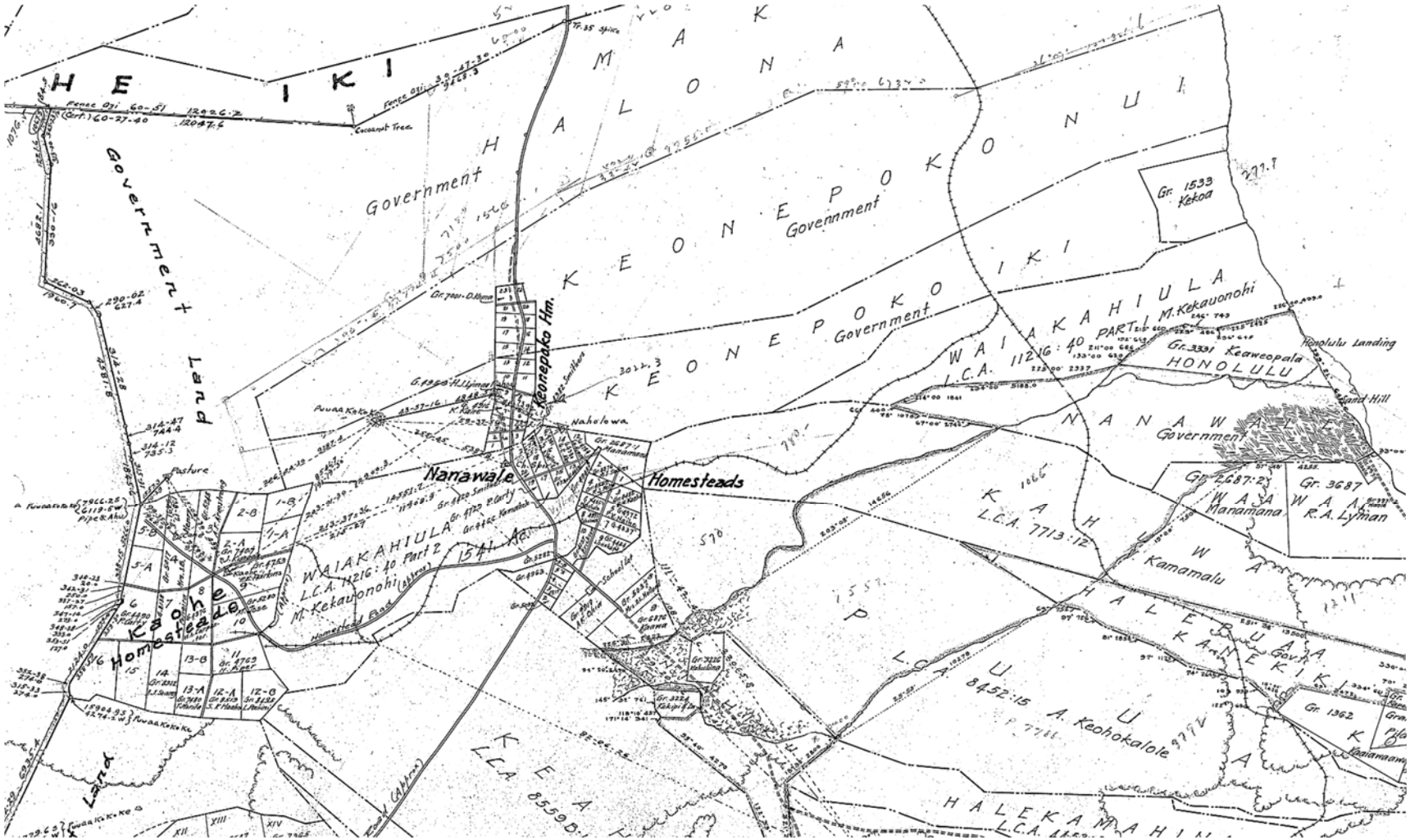
Previous Archaeology

There have been many archaeological studies conducted in the Puna region (Figure 8 and Table 1). The following is a review of the archaeological work in the vicinity of the project area, organized chronologically.

Early archaeological work in the Puna region includes large scale surveys by Thrum (1909) and Hudson (1932). Thrum's research focused on recording heiau throughout the islands, although none were identified near the project area. Working throughout east Hawaiʻi Island, Hudson recorded a wide range of archaeological features including heiau, burials, caves, habitations, trails, and agricultural features from Waipiʻo Valley to the Kaʻū District. Stokes and Dye (1991) later used these early works to compile information on heiau of the island. The first evidence of traditional lava tube use in the Puna district was documented by Emory (1945), who identified habitation and burial functions for the tubes.

In 1977, an archaeological reconnaissance survey was conducted for the Federal Aviation Administration for a proposed radar site and access road in Makuʻu, north of the current project area (Bordner 1977). One site was identified: State Inventory of Historic Places (SIHP) 50-10-46-21217, a small ahu built with stacked pāhoehoe. The ahu was located in the proposed access road, approximately 76 m from State Route 130. The age of the ahu is uncertain.

In 1982, an investigation was conducted concerning a report of human burials within a lava tube system at Pāhoa Cave (Kam 1982). A memo to the State Parks Administrator mentioned the presence of at least 20 human burials. The remains were likely post-Contact in age. Yent (1983) surveyed and


Government Land
Government
Nanawale
Homesteads
Kaohe Homesteads
Keonepoko Hm.
Nahelowa
Pasture
WAIAKAHIULA
L.C.A. 11216:40 Part 2
M. Kekauonohi
154 Ac.
Gr. 1533 Kekoa
Gr. 3331 Keaweopala
HONOLULU
Honolulu Landing
Land Hill
NANAWALE
Government
Gr. 2687:2
Manamana
Gr. 3687
R. A. Lyman
KAHUWA
L.C.A. 7713:12
Kamamalu
HALEKAMAHINA
Gov't
Gr. 1362
Kanamanu
PLAU
8452:15
A. Keohokalole
KEAA
L.C.A. 8559B
HALEKAMAHINA
L.C.A.
Coconut Tree
Fence 031 60-51
(Corr.) 60-27-40
Fence 031 39-27-30
Gr. 7001 - D. Hiona
Gr. 8282 Smithers
Gr. 8282 Smithers
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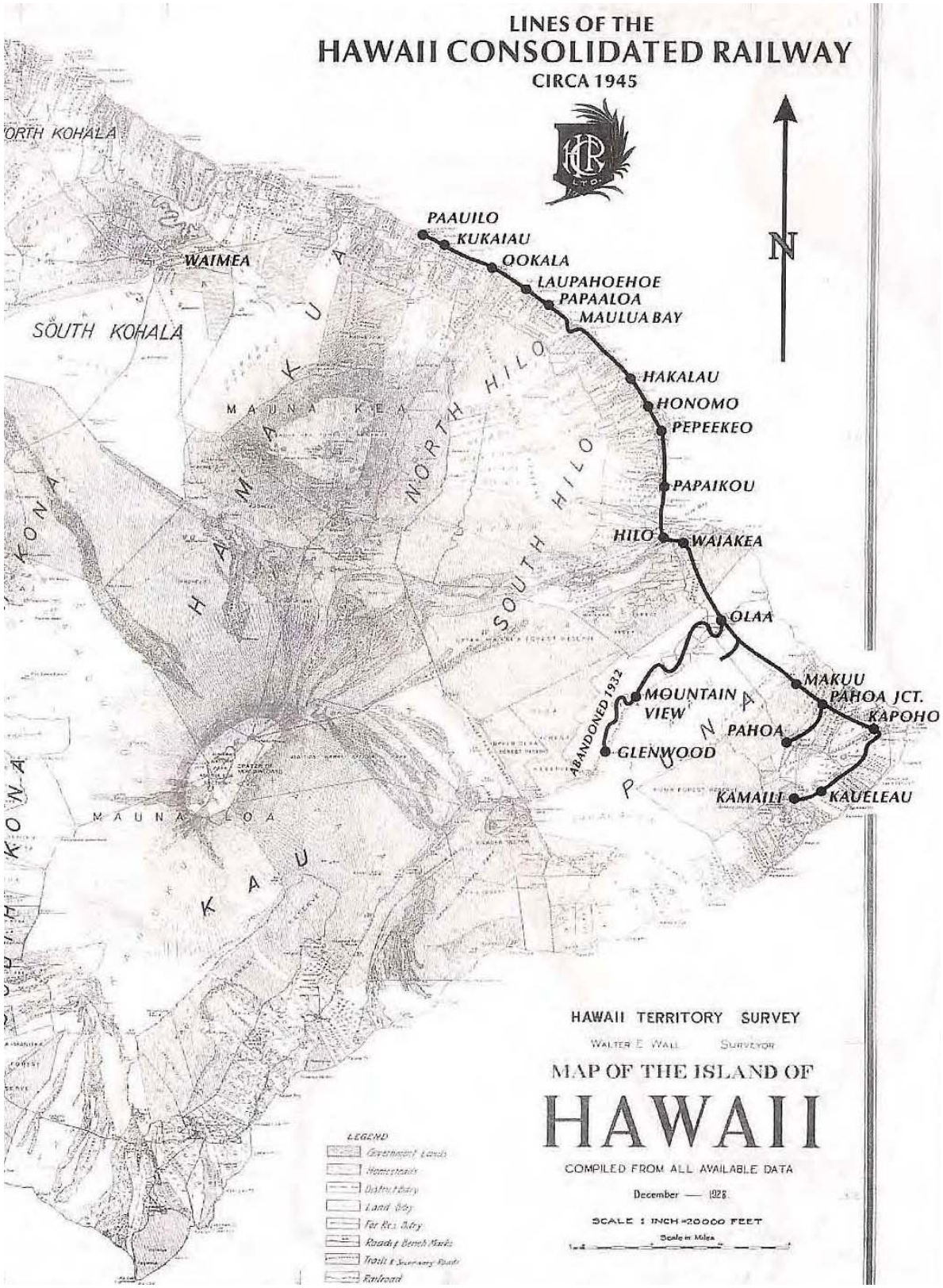
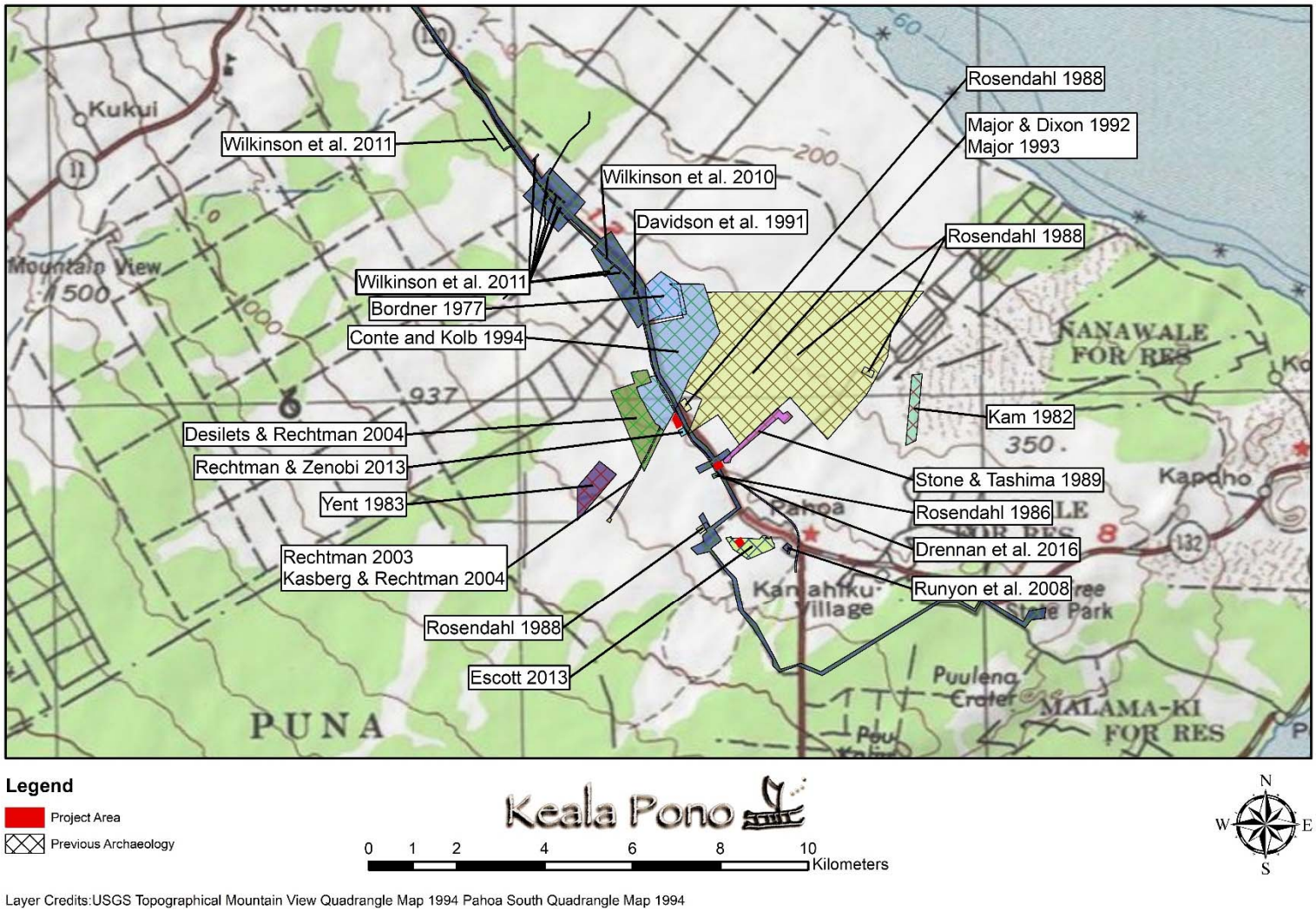


Figure 7. Portion of a 1928 Hawaii Territory Survey map, annotated to show railroads in East Hawai'i (adopted from Treiber 2005:59).



Legend

Project Area

Previous Archaeology

Keala Pono

0 1 2 4 6 8 10 Kilometers

N W E S

Layer Credits:USGS Topographical Mountain View Quadrangle Map 1994 Pahoa South Quadrangle Map 1994

Figure 8. Previous archaeological studies in the vicinity of the project area.

Table 1. Previous Archaeology in the Vicinity of the Project Area

Author	Location	Work Completed	Findings
Bordner 1977	FAA Air Traffic Control Beacon System Facility in Pāhoa	Reconnaissance Survey	Documented SIHP 50-10-46-21217, a small marker (ahu), constructed of pāhoehoe. Not dated.
Kam 1982	Pāhoa Cave at TMK: (3) 1-5-009:005	Description of a Cave	Located and described sections of the Pāhoa Cave system. Identified two large lava tubes containing at least 20 burials.
Yent 1983	Pāhoa Caves	Archaeological Survey	Documented SIHP 50-10-45-14900, the Pāhoa Cave (lava tube system).
Rosendahl 1986	Pahoa Main Post Office	Reconnaissance Survey	None.
Rosendahl 1988	Pahoa Elementary School	Reconnaissance Survey	None.
Stone and Tashima 1989	Pahoa Phase II Agricultural Lots	Archaeological Survey	Eight historic properties identified within Pāhoa Cave.
Davidson et al. 1991	69KV Pohoiki Geothermal Transmission Line #1	Inventory Survey	Identified previously recorded lava tubes; newly identified lava tubes not given SIHP numbers.
Major and Dixon 1992	Pohoiki #2 Transmission Line Corridor	Inventory Survey	Recorded a lava tube containing burials (SIHP 17962); lava tube containing at least one burial (SIHP 17963); and a core-filled wall probably from the post-contact era (SIHP 17967).
Major 1993	Pohoiki #2 Transmission Line Corridor	Archaeological Monitoring	Further documented previously identified lava tubes.
Conte and Kolb 1994	Makuʻu DHHL Farm Lots	Inventory Survey	None.
Rechtman 2003	Makuʻu DHHL well and water system	Inventory Survey	None.
Desilets and Rechtman 2004	Makuʻu DHHL subdivision	Inventory Survey	Documented a small terrace (SIHP 24232) and an enclosure complex (SIHP 24231).
Kasberg and Rechtman 2004	Makuʻu DHHL well and water system	Archaeological Monitoring	None.
Runyon et al. 2008	Pāhoa Elementary School	Archaeological Monitoring	None.

Table 1. (Continued)

Author	Location	Work Completed	Findings
Wilkinson et al. 2010	Kea‘au-Pāhoa Road	Inventory Survey	Noted possible adverse effects to the Kazumura Cave (SIHP 10001).
Wilkinson et al. 2011	Kea‘au-Pāhoa Road	Addendum Inventory Survey	None.
Escott 2013	Pāhoa Park	Inventory Survey	Recorded historic mounds and modified outcrops (SIHP 29900–29938).
Rechtman and Zenobi 2013	Puna Community Medical Center	Archaeological Assessment	None.
Drennan et al. 2016	Kea'au-Pāhoa Road & Old Government Road Intersection	Archaeological Monitoring	None.

mapped portions of the lava tube/cave system. The lava tube exhibited several entrances, and modifications observed within the tubes include platforms, terraces, walls, and a ramp. Several human burials were also noted in various parts of the lava tubes. The Pāhoa Cave system was given the site number 50-10-45-14900. Several years later, the cave was reexamined (Stone and Tashima 1989) to determine the cave’s extent beneath the Pāhoa Phase II Agricultural. This took place near the current project area, to the northeast. A total of eight sites were recorded, including habitation areas and human burials. It appears that no SIHP numbers were given to the eight sites.

In 1986, a reconnaissance survey was conducted at the site of the Pahoa Main Post Office (Rosendahl 1986). No significant archaeological resources were identified.

In 1988, a reconnaissance survey was conducted as part of an environmental impact statement pertaining to sites for the Pahoa Elementary School (Rosendahl 1988). No significant archaeological resources were identified.

In another project the same year for the construction of the 69KV Pohoiki Geothermal Transmission Line #1 across Puna, an archaeological survey sought to determine if augering activities would adversely impact subsurface lava tubes (Davidson et al. 1991). Two previously documented lava tubes were re-identified, and two more lava tubes were recorded but were not formally documented with archaeological site numbers. Complete avoidance of augering into the lava tubes was recommended if possible, and also, smaller diameter augers were to be used along with archaeological monitoring during the future work.

In 1992, an archaeological inventory survey covered the Pohoiki #2 transmission line corridor between the substations of Pohoiki and Puna (Major and Dixon 1992). Three sites were identified during the survey: SIHP 17962, a lava tube containing burials; 17963, a lava tube containing at least one burial; and 17967, a core-filled wall probably from the post-contact era. Archaeological monitoring was recommended for future stages of work for the project. The following year, an archaeological monitoring report was submitted for the same project (Major 1993). No additional sites were recorded during the monitoring, but the lava tube sites identified in the previous survey were further documented and mapped.

The following year, an archaeological inventory survey was carried out for the Department of Hawaiian Home Lands on their Makuʻu farm and agricultural lots (Conte and Kolb 1994). No archaeological features were identified. Also in Makuʻu, an archaeological assessment and a limited cultural assessment were conducted for a proposed water system (Rechtman 2003). No significant archaeological resources were identified. Archaeological monitoring for the project produced no findings (Kasberg and Rechtman 2004).

In 2004, an archaeological survey for a proposed residential subdivision on Department of Hawaiian Home Lands (DHHL) land in Makuʻu/Pōpōkī/Hālona identified two archaeological sites (Desilets and Rechtman 2004). One was SIHP 24232, a small terrace which was later not considered a historic property and not eligible for the National Register of Historic Places (NRHP). And the other site was SIHP 24231, a complex consisting of an enclosure, a mound, a wall, and a platform. This site was evaluated to be eligible for listing in the NRHP. Archaeological monitoring was recommended for any future construction activities in the area.

Also in 2007, archaeological monitoring for construction activities at a cesspool project at Pāhoa Elementary School did not identify any archaeological features (Runyon et al. 2008). Although some historic bottles and glass marbles were recovered, nothing was deemed significant. Further monitoring was recommended for any future subsurface work.

In 2011, additional work was undertaken to complement an earlier archaeological survey for the Keaʻau-Pāhoa Road Widening Project (Wilkinson et al. 2010). This subsequent additional survey was done to identify sites within the project area to be recommended for the National Register of Historic Places and the Hawaiʻi Register of Historic Places. No new historic properties were identified during the additional survey, but it was noted that the project might adversely affect subsurface cultural resources, especially the many lava tubes. One in particular is the Kazumura Cave (SIHP 10001) which indicated heavy pre-contact utilization. Archaeological monitoring was recommended for future construction activities (Wilkinson et al. 2011).

Also in 2012, an archaeological inventory survey was conducted on former sugarcane lands for the Pāhoa Park Expansion Project (Escott 2013). A total of 39 archaeological sites, consisting of 80 rock mounds and/or modified outcrops, and two garden beds were documented during the survey. All of the features were determined to be from the post-contact era, and the mounds and modified outcrops were interpreted to be associated with land-clearing activities for sugarcane cultivation. In addition, 13 trenches were excavated, but no cultural materials were identified. Based on the research, it was concluded that, "It is possible that there were no pre-Contact era sites on the property given its remote upland location. In addition, field clearing activities during the Historic-era would have eliminated any pre-Contact remains, if they existed" (Escott 2013:251). No further archaeological work was recommended.

In 2013, an archaeological assessment was conducted for the proposed Puna Community Medical Center (Rechtman and Zenobi 2013). No archaeological properties were identified during the assessment, but due to thick vegetation on the parcel, further inspection was recommended after the site was cleared and grubbed for initial construction activities.

In 2016, archaeological monitoring was completed for the construction of a roundabout at the intersection of Keaʻau-Pāhoa Road and the Old Government Road in Puna (Drennan et al. 2016). No significant archaeological or cultural resources were identified during the construction activities.

Settlement Patterns

Archival research suggests that the settlement of Puna was fairly dense, emerging along its coast. The district was known for its fisheries which provided ulua, ʻōpelu, ʻulaʻula, and ʻōpakapaka. Its anchialine pools provided ʻōpae ʻula, and its salt pans were a source of paʻakai. There is also mention of a population in ʻŌlaʻa from which came a fine craftsmanship of mamaki kapa and mamaki mats.

The pre-contact settlement of the Puna coastline has yielded habitation and agricultural complexes, as well as ceremonial and burial features. Among the plant food sources of significance in the area were taro, breadfruit, sugarcane, and sweet potato. As the population grew, the interaction of Puna's population with that of other parts of Hawaiʻi Island increased, and thus developed the network of intra-district and inter-district trails and roads.

The project area pertains to only four of approximately more than two dozen ahupuaʻa which make up the Puna district. Of these four ahupuaʻa, a great majority of their total land area remained in the hands of the high-ranking or of the government after the Māhele The lack of individual land claims in the project area corresponds to the dearth of evidence of human occupation and human activity in this interior region of Puna.

Summary of Background Information

Most of the archaeological features in the Puna ahupuaʻa of Keonepoko Iki, Keonepoko Nui, and Waiakahiula/Kaʻohe, are situated in the vicinity of the Puna coastline. These include habitation complexes, agricultural complexes, walls, alignments, and burials. In contrast, the uplands of these ahupuaʻa are relatively archaeologically barren. The exception to this is found in the lava tubes in the interior of the district which have yielded cultural resources to include traditional and historic artifacts, midden, and burials. This suggests that the majority of initial human occupation and activity within these ahupuaʻa of Puna had taken place along the sea where the near shore and deep sea waters would have provided food to sustain the population. The extent to which the coastal Puna population ventured into the uplands in the vicinity of the project site is not known, but the evidence, or lack thereof, suggests that it was minimal.

The historic period is marked with increased activity in the interior of Puna. Not long after the changes in land tenure in the latter half of the 19th century, large-scale capitalist ventures began operating in Puna's uplands. Ranching, coffee farming and ʻawa farming spurred work on the Old Puna Government Road. By the turn of the century, the railroad extended across Puna. Coffee farming continued into the 20th century, and the new industries of pineapple and lumber export made their mark in the Puna uplands. Finally, the large scale operations of sugarcane agriculture gained a foothold in the district, and this would have one of the biggest impacts on the landscape and fabric of life in Puna.

Many archaeological projects have taken place in the aforementioned ahupuaʻa of Puna. These, along with historic maps, documented a variety of features and artifacts that date to the pre- and post-contact periods. Archaeological remains in the particular project area are limited to the few lava tubes which contain cultural resources. More subsurface caves may or may not be discovered during future ground-disturbance construction activities. The surface, however, is either in its natural untouched state with no likely evidence of human occupation, or it is a surface previously disturbed due to human activity in recent history with no significant archaeological remains.

ETHNOGRAPHIC SURVEY

There are some things that cannot be found in the archives, in textbooks, or at the library. It is here, through the stories, knowledge and experiences of our kamaʻāina and kūpuna, that we are able to better understand the past and plan for our future. With the goal to identify and understand the importance of, and potential impacts to, traditional Hawaiian and/or historic cultural resources and traditional cultural practices of Sand Island, ethnographic interviews were conducted with community members who are knowledgeable about the project area.

Methods

This Cultural Impact Assessment was conducted through a multi-phase process between January and March, 2018. Guiding documents for this work include The Hawaiʻi Environmental Council's Guidelines for Assessing Cultural Impacts, A Bill for Environmental Impact Statements, and Act 50 (State of Hawaiʻi). Personnel involved with this study include Windy McElroy, PhD, Principal Investigator of Keala Pono Archaeological Consulting, and Dietrix Duhaylonsod, BA, Ethnographer and Archival Researcher.

Interviewees were selected because they met one or more of the following criteria: 1) was referred by Keala Pono Archaeological Consulting or G70; 2) had/has ties to the project area or vicinity; 3) is a known Hawaiian cultural resource person; 4) is a known Hawaiian traditional practitioner; or 5) was referred by other cultural resource professionals. Three individuals participated in the current study. Manaʻo and ʻike shared during these interviews are included in this report.

In-person interviews were taped using a digital MP3 recorder. During the interviews, each person was provided with a map or aerial photograph of the subject property, the Agreement to Participate (Appendix A), and Consent Form (Appendix B), and briefed on the purpose of the Cultural Impact Assessment. Research categories were addressed in the form of open questions which allowed the interviewee to answer in the manner that he/she was most comfortable. Follow-up questions were asked based on the interviewee's responses or to clarify what was said.

Transcription was completed by listening to recordings and typing what was said. A copy of the edited transcript was sent to each interviewee for review, along with the Transcript Release Form. The Transcript Release Form provided space for clarifications, corrections, additions, or deletions to the transcript, as well as an opportunity to address any objections to the release of the document (Appendix C). When the forms were returned, transcripts were corrected to reflect any changes made by the interviewee.

Several potential interviewees were contacted, resulting in three interviews (Table 2). Two of the interviews were conducted in person, while one interviewee sent in a written response to the interview questions after completing a site visit with the Keala Pono ethnographer. The ethnographic analysis process consisted of examining the two transcripts and the one written response, and then organizing the information as it pertained to each of the three proposed library sites. Research topics include connections to the project lands, archaeological sites and cultural practices, history of the project area, change through time, and concerns and recommendations for the project. Edited transcripts are presented in Appendices D–F.

Interviewee Background

The following section includes background information for each interviewee, in their own words. This includes information on their ʻohana and where the interviewee was born and raised. The

Table 2. List of Individuals Contacted

Name	Affiliation	Result of Contact
Leimana Auwae	Men of PAʻA (Puna organization)	No Reply
Maʻave Enos	Nānāwale Community Association Board Member	Could Not Schedule an Interview
Mark Hauanio	Leilani Community Association Board Member	Could Not Schedule an Interview
Piʻilani Kaʻawaloa	Cultural Practitioner, Grew up in Pāhoa, Kamehameha Schools Teacher	Interviewed
Kaumakaiwa Kanakaʻole	Cultural Practitioner, Musician	Could Not Schedule an Interview
Mahealani Kuamoʻo-Henry	Cultural Practitioner	Could Not Schedule an Interview
Roy Kala Leabig	Pāhoa Kumu Hula	No Reply
Francis Malani	Nānāwale Community Association Board Member, Men of PAʻA	Interviewed
Iopa Maunakea	Kanaka o Puna (Puna organization)	Could Not Schedule an Interview
Michael Quihano	Grew up in Pāhoa	Could Not Schedule an Interview
René Siracusa	Malama O Puna President	Interviewed

interviewees are Piʻilani Kaʻawaloa, Francis Malani, and René Siracusa. Of this group, one is a descendant of the piko families of Puna. The other two interviewees have lived in Puna for decades but are originally from elsewhere; one from the Hāmākua Coast of Hawaiʻi Island, and the other from New York. All three are active in the community, giving back through the school system and/or through various community organizations.

Piʻilani Kaʻawaloa

I was born October 19, 1964 at Hilo Hospital. I was raise in Pāhoa, Hawaiʻi in Puna and Kupahuʻa, Kalapana, Hawaiʻi in Puna. I attended Pāhoa Elementary and Pāhoa High School and graduated in 1982.

I was lawe hānai by my grandparents on my mother's side of the family. I was born to MaryJane Kaawaloa then lawe hānai by William Kaawaloa and Minnie Halekulani Elderts. William Kaawaloa was born in Kupahuʻa Puna and Minnie Elderts was born in Koaʻe, Puna. Upon marrying my parents owned several homes in Pāhoa, Nānāwale, and Kupahuʻa in Puna. My father did many things and had a variety of jobs, heavy equipment operator, bus driver, fisherman, farmer, hunter, jack of all trades. My mom Minnie was a teacher, Reverend, Cultural demonstrator, Cultural Interpreter at Wahaʻula visitor center at the Hawaiʻi Volcano National Park and lower Puna, a practitioner of lāʻau lapaʻau/lāʻau kāhea, and a resource person for the Puna area.

Francis Malani

I was born on the Big Island in a little town called Laupāhoehoe, and I moved to Oʻahu. I graduated from Kaimukī High School. And I was born October 7, 1945. And I was present at the tidal wave

on April Fool's Day down Laupāhoehoe which took all the children. My parents lived at the peninsula.

Anyway, I had the opportunity to graduate from Kaimukī High School in 1964, and I came back working for the Department of Public Safety. And I was part of the drug treatment program called Kashbox, which was started on Kaua'i and O'ahu at Wai'awa Correctional Facility, and then finally I retired at Kūlani Correctional Facility when I came home.

I've been an integral part of the community, created the Men of PA'A [Positive Action Alliance], and also now I have an organization called Moku 'Āina, which I'm involved in a lot of community activities, parades, and I support a lot of politicians, I do security and also parking. I'm so heavily involved in the cultural aspect of our 'āina, and my leader in Ikaika Dombrigues, who is the po'o.

René Siracusa

I was born in New York City, and I got my Bachelor's in Linguistic Anthropology at CCNY, and then came to Hawai'i, got my Master's in Linguistic Anthropology again at UH Mānoa. And then I started to do my Doctorate, passed my orals, and then changed my mind and went off in a different direction, and so came to the Big Island and settled down just outside of Pāhoa. And that was in 1975. And I have lived here ever since.

One of the first things I did when I came to Hawai'i, before I even started grad school, because I had a Spring semester and a Summer to wait before classes started, so I audited Beatrice Krauss' *Ethnobotany of Hawaii,* and that gave me a really nice entrée into Hawaiian culture and botany. And then later on I took other courses that were related to my archaeology, kinship systems with Douglas Oliver; and so even though historical reconstruction of Pacific languages was my specific area, I overlapped a lot with some of the other sub-disciplines within the field.

Topical Breakouts

The following sections are extended quotations from the interviewees, primarily grouped according to the specific sites they refer to; then by overall regional history and changes; and finally by the remarks focusing on personal concerns and recommendations. This section begins with quotations highlighting the interviewees' connections to the project lands.

Connections to the Project Lands

> I finally bought my home in Nanawale, which I became [a member] on the board, of the association, and I continue to support a lot of the politicians, whether the House of Representatives or the Council. And also, I do a lot of cultural events. I've done a few of the hi'uwai with brotha Joe De Santos and also Ikaika Dombrigues down at 'A'alanui. I also believe that we need to go back to mālama the 'āina because the 'āina is the one that is gonna take care us. And I'm agreeing about the aspect of building a library in the Pāhoa area. And I agree we should have one so that we can all have better information. We can make better decisions. [Malani]

> Since I moved here, and then becoming a foster parent, me and my wife, we had 35 children go through our home. And then we adopted 2 children that went to Pāhoa Elementary and Pāhoa High School. And they both graduated, my son and my daughter, who I hanai'd. They graduated from Kea'au High School. They both 18 now. And I believe that it's very important that they be given information about our culture, and also be brought up with education. And the library could provide all that information that people are looking for, especially if they're moving on to the college level, I mean, Associate's Degrees,

Bachelor's, or even Doctor's. That would be a source, a good area for resources where they're doing their thesis or paperwork when they plan to go to college, or even for job opportunities, whether they're into agricultural or medical. That availability of information for everybody is necessary. [Malani]

I am familiar with the land area in which the project will be built. I know the history and stories of this area that was passed down to me by my parents and other kupuna who lived and are still living in this area. [Ka'awaloa]

I moved here and got involved in a couple of different things, and eventually, I am now the President of Mālama O Puna which used to be Puna Outdoor Circle, until it went independent. So I have been involved in non-profit administration since '78. In doing so, because the non-profits have been mostly community associations, and mostly environmental non-profits, so I got to see a lot of properties. And I got to meet a lot of archaeologists. And I got to tromp around and see a lot of sites. Also, I was on the Hawai'i County Planning Commission, and we did some site surveys. We also, of course, were always given archaeological reports as part of the packets for development plans, and fortunately I already knew how to read them [both laugh] which helped a lot. But that's the kind of information that I've been, little by little through my life I've been learning more bits and pieces and becoming more informed… When the county was getting ready to build the Pāhoa Pool and Aquatic Center, I was called in by the project manager, Norman Oleson, to go over certain things with him especially when we were talking about the botany and whether to maintain the ferns, the edible ferns on the slope where the parking lot was gonna be. But there was also the question of where the old railroad line went through. And I was able to show him where I had, in planting a tree, found one of the little horseshoes for the donkeys, which was directly on the route from where they used to stable them to where they used to take 'em out to pasture. [Siracusa]

There was also a time when, coming from my home in Ka'ohe Homestead, I used to take the shortcut through the, what used to be Camp 6, behind the Pāhoa Pool. And so I knew that stretch of property behind the pool before it was developed into the park. [Siracusa]

The other parcel that we're looking at, Site #3, I know very well because I did the environmental assessment for Puna Community Medical Center, which is just two parcels away from that, on the Pāhoa side. Site #3, there's a Department of Water Supply, and then another parcel, 5-acre parcel, which is TMK 3-1-5-8:5, Keonepoko Nui ahupua'a. [Siracusa]

Site 1 – History, Sites, and Place-Based Practices

[There may be caves at] the site near the Police station/Fire station. [Ka'awaloa]

The Pāhoa Site #1, nothing happened there. They did not develop it at all because of the lava tubes, so what it is now is what it's been. [Siracusa]

The big cave [lava tube] at Pāhoa Site #1 was investigated, and it was reported that there were no cultural artifacts or burials or anything, no cultural remains at all. [Siracusa]

Site 2 – History, Sites, and Place-Based Practices

The land [around near Site #2], that whole 56 acres, was owned by the Roman Catholic Diocese. And when the county wanted to buy only, I think it was about 15 acres of it, and the Diocese said, "Well you know what, we would have to go through the whole subdivision in order to divide out 15 acres from the 56. Why not just take the whole 56?"

And the county said, "Well we only have enough money for 15." And they said, "Well we'll take it."… there wasn't any church, but it was owned by the Diocese of Honolulu, because all land that goes to the church, a lot of people do leave their land to the church in their wills, goes to the whole diocese, not to an individual church. Even now, if you wanna know about a piece of land, and you go to the church right up the street here, they'll refer you to Bishop Silva's [the current bishop of Honolulu] office. [Siracusa]

Site #2 is a different story because first of all, there was an old Filipino camp. They called 'em camps, right, for these guy's families, the ones who worked the sugar cane fields. And so there was one next to the Catholic Church. And that was another one where the pool is right now. And so there was a lot of gandule bean bushes, a lot of plants that were being grown there by the residents for food, besides the native plants. [Siracusa]

The [Site #2] District Park area did have some of that old railroad line, but that's gone. That's been taken out. [Siracusa]

The closest thing where anything would be happening would be Pāhoa Site #2. Within the park itself, nothing any more, the only thing that you might have is the warabi fern. When you first drive into the aquatic center park, there's a slope on your left. And that slope is all warabi fern. And that was kept at my recommendation, by the way, when Norman Oleson and I were going through that, to help hold the soil. I said, "Why do you need to put something else in there to help hold the soil? That's doing a fine job already." Periodically, people do come in and pick the fern from that to make the salad, you know, with the tomatoes and the onions, right? Good stuff. It's not all the time. It's usually the Filipinos that gather that. And on the outside of that area, there's a lot of strawberry guava, how much of that can you eat, you know? [Siracusa]

There are no heiau near any of the sites. The site near the new gym is maybe a quarter of a mile from the Japanese cemetery and a heiau behind the rubbish dump area. All sites are in the path of the recent lava flow that threatened Pahoa town. [Ka'awaloa]

Families used to gather hō'io at the site near the new gym but when they developed the skate park, gym, and baseball/football fields, much of the hō'io patches were destroyed. [Ka'awaloa]

Site 3 – History, Sites, Placed-Based Practices

There may be caves at the sites but [by] the water tank. [Ka'awaloa]

Well Pāhoa Site #3, for example, that's been just sort of overgrown. Nothing has been on there as far as I know. Now according to [19th century author] Isabel Bird, was it "Travels in the Hawaiian Islands" or something like that? Isabella Bird? So she talks about traveling the Kea'au-Pāhoa Road. In those days it was lined with mangoes. They're not there anymore, thanks to HELCO [Hawaii Electric Light Company]. But she does talk about that it was one of those beautiful stretches of road on the island. So that parcel now looks just like the Puna Community Medical parcel, basically, and I have the botanical survey. That's here in this EA [looking through the EA for the Puna Community Medical Center]. Here we go, [reading] "vascular plants", okay, so mostly the major invasives are strawberry guava, the melastoma family, clidemia, and tibouchina, and there is a lot of young 'ōhi'a… It's so strange about this. I mean, you look at a stand of 'ōhi'a, and some of them are dead, and others look perfectly healthy. And you say, "What is it? How come some of 'em are resistant, or seem to be? Or maybe it's just a matter of time?" Who knows, you know. Or is there some quality that makes them resistant and some not, because after all, 'ōhi'a's Latin name is *Metrosideros polymorpha*, so "polymorpha" is "many forms." And we know

there are because there's different flower color, there's shaggy bark and smooth bark, there's all of those differences, so maybe there's some non-visible differences also which account for susceptibility [to Rapid ʻŌhiʻa Death], who knows? But anyway, as you can see from the cover [referring to the EA], well it's not a clear photo, but it's the tall grasses and the young ʻōhiʻa, and that's pretty much what you're gonna find over there too on that parcel. And you could probably refer, as a starting point for a botanical survey for Pāhoa Site #3, look at the "Vascular" [report], this was done by Palmer and Associates, Consulting. And pretty much, it would be, I would say, pretty much the same thing. There might be a few cross-offs here and there and a few add-ons here and there, but basically it's the same. [Siracusa]

[Near Site #3] There used to be mango trees growing along both sides of the Keaʻau-Pāhoa Road, but they're gone now. So nobody has picked mangoes there for a long, long, time. [Siracusa]

Regional Background History

There are too many [mele and moʻolelo] to name, however surrounding Pāhoa you have Keonepoko Nui, Keonepoko Iki, Keonepoko, Waikaheʻula, Pahoehoe, Nānawale, Kaʻohe, Waikahe Iki, Makuʻu, Kauweleao just to name a few… Moʻolelo: The battle of Waikaheʻula, The great Warrior Chief Ahia of Puna who was killed at the battle of Mokuʻōhai, He Wahi Moʻolelo No Ke Koʻi Pāhoa A Me Kona Hana Ana, Ka Pāhoa Kupaianaha a Nā Aliʻi ʻO Puna…. Mele: Kalapana, Pāhoehoe, Lei Ana ʻO Puna, E Nihi Ka Hele, many mele for Puna. [Kaʻawaloa]

I grew up during the sugar plantation so we had various camps. The Filipino camp in front of Pahoa Elementary school and the Japanese camp within the town. Many businesses in Pahoa were run by Japanese families, like the Hara family (Pahoa Cash & Carry, Toma family (Toma Bakery), Sadamu, Shige and Miura family (stores). Everybody knew everybody and the town was so clean. We used to be able to and from school without fear. There was a lot of respect for each other. The community worked together. [Kaʻawaloa]

First they went for the sandalwood. That was during [the reign of] Kamehameha I when he was looking to get some money, get the economy going, so that he could afford all the pageantry of European royalty. After they got the sandalwood, then they went back for the ʻōhiʻa. And then later they went for the koa. They went for the koa, it was the end of the 1800s. And that's when they set up the lumber mill in Pāhoa behind where the Akebono theater used to be. Koa was called Hawaiian mahogany. And that was called the Great Hawaiian Mahogany Company. [Siracusa]

So that's where the rail line was happening. And the rail line went from, if you go down here to the end of the buildings before Pāhoa service station, and the end of the long building that didn't get burned down, right through there was where the old rail line site was. And so that rail went all the way to Hilo, like along all here. So there are bits and pieces of it. When they were putting the park together, we found pieces of track and stuff lying from that old narrow gauge line. [Siracusa]

When the old rail line was coming through Pāhoa, it was a narrow gauge rail line, and it was taking the ʻōhiʻa forest to the Mainland to use for the Santa Fe Railroad. That didn't work. It turned out the climate was too dry. It didn't hold up over there. There's a wonderful book in the library called Railroads of Hawaiʻi. The story is in there, including pictures of the old train. First they went up in Kaʻohe Homesteads really, which was back up in here [referring to the map]. My finger was pointing on the map above Pāhoa Street. [Siracusa]

Regional Changes Through Time

A lot of the community in Pāhoa has dwindled as far as the people giving back to the community. And that's why I got involved in doing things like that, you know, cleaning the highways, or helping the churches, or even people that having a difficult time in their environment or their yard. Help is always there, always available. So I try to make myself and many of the men and even the women available for help, whatever help we can give. [Malani]

The most dramatic thing, of course, is that when I first came here, I could walk down the middle of the street in Pāhoa from one end of town to the other, in the middle of the day, and not see a single vehicle… As a matter of fact, there were a couple of horses that were tied up at the railings where the boardwalk is. Now, you stand there [on the shoulder of the street], and you have to wait and look left, right, left, right, left, right, until finally there's a break. Thank goodness recently they put in some more crosswalks. It was getting really difficult to even cross the street. It's still hard sometimes to pull out of the parking lot here. [Siracusa]

So the population increase, that's a biggie biggie biggie, then of course, the effect of the lava flow. Not only that [most recent] one, but the previous ones also, you know, the Kapoho flow, and then the Royal Gardens, which moved people around and moved a lot of people away, people who couldn't handle living on the edge. And then there were some people from the other flow who were so far away from being threatened that one wondered why they even evacuated - people all the way at the bottom of Nanawale. It's not even heading in that direction. So I've lived through three lava flows. I remember being at a friend's house during the Royal Gardens thing. They lived in Royal Gardens, and we're sitting there watching, that was an explosive eruptive event. Yeah, things were spewing up in the air, like molten boulders the size of Volkswagen buses… Eventually they had to evacuate. So I been through a bunch of that kind of thing also in this community. And I remember roads that are now no longer and parcels that are no longer. I remember swimming in Queen's Bath, and taking my daughter to teach her how to swim in Queen's Bath. Queen's Bath doesn't exist anymore. You know, there are things like that that we've lost, Harry K. Brown Park. When I first moved over here, and I didn't have any facilities, I was still living in a tent, and I used to go down to Harry K. Brown to take showers, that's what everybody did. Everybody went down to Harry K. Brown to take a shower. And then there was the Yamaguchi Store. [Siracusa]

Today, I barely know anyone and all the old timers are gone. The camps are gone, the next generation of the families who owned the businesses do not want to carry on the mom and pops stores so now big name stores are moving into the community. More outsiders are moving into the community so a lot more development of subdivisions (Hawaiian Paradise Park and Ainaloa in Waikahekahe and Waikahekahe Nui and Waikahekahe Iki and Hawaiian Beaches in Keonepoko and Keonepoko Iki. With increased development, congestion on the roads are bad in and out of Puna. [Ka'awaloa]

We are also experiencing a lot more crime and drugs within our community. The values from outsiders are reshaping the values of the community I knew. [Ka'awaloa]

Our families are satisfied with water catchment and generator, however new comers are not accustomed to this life style and demand the modern infrastructure. [Ka'awaloa]

There was no homelessness during my growing up in Pāhoa, today we see so many homeless families in our community. [Ka'awaloa]

We used to share what we had (fruits, vegetables, fish, etc.) today very few share. [Ka‘awaloa]

Concerns and Recommendations

Prior to developing the area always ask the kupuna or families who were born and raised in the area for mana‘o. [Ka‘awaloa]

Be aware of the contours of the land because of the recent lava flow. The lava is still active within the community, therefore be mindful and respectful to the cultural practices regarding Pele. [Ka‘awaloa]

Plant lā‘ī, kalo and other native plants of various varieties relating to Pele (Konanui family are familiar with kalo and ‘awa relating to Pele. [Ka‘awaloa]

Use dirt and cinder combination around the grounds and facility of the library. [Ka‘awaloa]

Appropriate name for library (Hale Waihona Hū ka ‘Ike – Treasury a dwelling where knowledge over flows. A repository where one obtains infinite knowledge). [Ka‘awaloa]

Try to stay away from people names, unless you know the characteristic of the person. The structure will take on the characteristic of the person (good/bad). [Ka‘awaloa]

One of the recent things that I've been involved is the whole aspect about the moku, the divisions of every island. And each community should really take care of their moku or district. Just like the old days, they would have a po‘o, a head, that they could consult with, that would have a lot of history. And Pāhoa has a lot of individuals that have this information, but they really do not share it. But really it would be perfect if they could get together that information and put it into the library, whether through video tapes or even tape recorders. So anyway, my belief is this, what you plant is what you gonna grow. No preach me a sermon. Show me. You know, no talk about doing things. The key is action. Go do it. And that's my feeling and my mana‘o. And I believe I gotta be part of the community. I cannot talk about helping somebody when I not willing to do anything. So that's my opinion, my mana‘o. [Malani]

But the one place I would recommend is the one close to the police station and the fire station, [due to] the accessibility for emergency vehicles, especially in emergencies of fire, and in case of security, the department is right there. So that would be the prime location. [Malani]

The other sites [Site 2 and Site 3], especially the one around the gymnasium, the swimming pool area, that corner [of the District Park], that would be probably determined later if they can have a road, especially to the back of the transfer station, which might go out that way. It would be easy for traffic to get out, especially during heavy use, like maybe they got an event, like a parade or maybe a fair, ‘cause Pāhoa is really into having a lot of things like that. They got activities always going, especially in the ball park area. So it would be really congested if the library was built in that area because the use, physical activity, baseball, roller skates, basketball, swimming, so a lot of the things would be congested if they built the library in that area. So I feel, by the police station would be the best area out of all three. [Malani]

Well as far as my knowledge is concerned, there's a lot of pilikia with the area above the transfer station. When Pele was moving down, that whole area would have been inundated with the lava, and it came down to the transfer station. So it really would block off

everybody in case of an emergency. You know, how we going get out of Pāhoa if we get the lava flow and Sista keeps coming down on her way to the ocean? So the police station, like again I say, would be the best position because still, you can get out and get to go to Hilo or go that direction, because you cannot go Kapoho. Kapoho is where she's at right now. [Malani]

Well the last thing that I'd like to suggest is bus transportation because Pāhoa is really kind of secluded. And it's a long way from children, especially from Paradise Park or even the Hawaiian Homestead at Makuʻu. It would be more convenient at the police station. But to come into Pāhoa town, it's kind of centralized for restaurants and stores and gas station, you know, now that the Puna Kai [shopping center] is being built. So the traffic would be horrendous if the library was centralized in Pāhoa town. Closer to the police station would be real great. [Malani]

Pāhoa town has been known for the marijuana and drugs that are solicited right in the town area. But because the library would be close to the police station, a lot of the, I wouldn't say "riff-raff", but a lot of the undesirables, they wouldn't be hanging out at the library. Maybe [if the library was] further away in Pāhoa town, but because the police station would be right next to the library, plus the security for children, and adults also, when they go, that's a real prime factor. I know that the drugs have been minimized or reduced in Pāhoa town itself, now that marijuana has become, shall I say, not illegal, because it is still illegal under the federal aspect, but the drug situation has kind of slowed down in Pāhoa town. [Malani]

I've also had information about Pāhoa Site #1, because at one point, Parks and Rec was considering putting a playing field there, and they backed out because of the issue of the caves and the lava tube system. And later on, Puna Community Medical Center was considering that for an emergency room site before they looked at the one that the EA we were just talking about is for. And for the same reason we decided that it was too problematic, [with] issues of access off the highway, with State Department of Transportation, and the problem with the lava tube system. And so we decided against that. But I'm very much aware of that site and had done some hiking, watching where I put my feet constantly. It's very iffy because it's very overgrown. [Siracusa]

They have not mapped the entire lava tube system. And so they don't even know where the underpinnings are. They do know where the cave is. Many years ago, Civil Defense was considering using that cave because they said it was large enough to evacuate all of Pāhoa town into in case of an emergency. That's a big cave. And so that sets up a whole bunch of problems. What do you do with a cave system like that if you want to build something on top? Do you fill it all in? That's a lot of in-fill. And of course there's the problem of allowing bulldozers to access the property when their weight might just plunge them right down into a hollow underneath. And of course, the expense with all of that involved, and probably a lot of extra insurance coverage too. [Siracusa]

I personally would recommend that site for a library. And I think it's actually in the EIS that one of the features of that District Park would be a combined library and maybe amphitheater or performance center, something like that… It avoids a lot of the problems that the other two sites have. It's county-owned, so the county and the state would have to come to an agreement. I think they can manage that. And it [the library] was considered as one of the features that would go in that park. And so the park is already developed, the EIS is already done. It's known that there are no archaeological sites, no burials, none of that stuff they have to worry about, it's close to the highway. So all of the issues that you would find that's problematic with the other two sites do not exist in Site #2. And it's centrally located. And the fact is that it's not right near the highway, so if you have little kids, even though the school library will continue to be a school library, that's not saying

you're not going to have kids coming in to this library. Parents take their kids with them when they have to. And so you don't have to worry about them running into the street because if they run out, they're gonna be running out to a 56 acre park. It's a lot safer. [Siracusa]

Alright let's talk about Pāhoa Site #3, adverse effects, possible traffic issues although it is on the straight-a-way. But that doesn't mean there have never been accidents there. I was in one myself where I was heading toward Kea'au. I was getting ready to do a left turn into the parcel Pāhoa-side of the water tank because I wanted to look at some stuff there because I was working on the EA. And so I signaled a left turn, and of course on the other side there's a water fill-up station, and this guy coming up behind me, when he saw my signal, he sort of thought, "Oh that can't be right. There's nothing on the left. She must be meaning to turn right." And so he went to pass me on the left just as I was making the turn. He plowed into me and totaled my car. But except for strange situations like that, it's a straightaway, you can see what's oncoming. So the only thing that would have to be done there would be a turning lane that allows for turning into the site coming from both directions and maybe some signage indicating that there's a Pāhoa Library. That would be the only mitigating kind of thing. [Siracusa]

Okay, Pāhoa Site #1, that's a problem because the State Department of Transportation, they don't want to clutter up Kea'au-Pāhoa Road, they're still thinking of it as a high speed highway instead of a community boulevard which is what its actual function is. And so they don't want more than one exit from any parcel onto the highway [and this site is on the same TMK as the Police and Fire Station which already have an exit onto the main road]. The only way to get around that so that you could exit from that would be for the parcel to be subdivided with the County, ceding the Pāhoa Site #1 to the State, because the County owns the whole TMK right now. Then the State library system could ask the State Department of Transportation, if they ever talk to each other [both laughing] to allow them to put an access to the highway, because coming around from the back, alright that could be done also if you're going to figure out how to get around the whole issue of the lava tube system and the caves. But that's the big mitigation gorilla in the room there. [Siracusa]

For Site #2, I can't think of a single thing except increased access onto that whole park site, which I mentioned earlier, as a continuation of Pāhoa Village Road, crossing Pāhoa Village Road to get to that park site from that side because a facility that large that will eventually see so much use really should have more than one entry/exit. And they might even wanna consider another one at some point. [Siracusa]

A lot of people here move off grid, and so they don't have access to internet. They have to go to the library or to an internet café where you have to pay money to sit for a while, and they'll still kick you out after a while if you don't order [food/drink]. The current library really provides but not enough. I mean, you could only go on, and I've had to do this when my computer was down, and so my 2nd choice was go to the library, and you can only reserve space at the computer once a week. Unless, they have one that's reserved for emergencies where it's like an express lane at the supermarket. You're limited to 15 minutes, and then it's a first come first served. You have to wait your turn, and of course you don't have longer than 15 minutes. So I think in planning the library, they should plan for much increased need of the community for internet access, more computers and more available time slots and the whole thing and including a color copier. Right now it's only black and white. And some things, for clarity, you would want to do in color. Like some of these maps we've been looking at in the EISs, it would be very hard to see all the detail if they didn't have color. So having used those computers there, I think that is something they should think about. [Siracusa]

> There used to be a time when the library had more hours that it was open including Saturday, which helped a lot, and after 5 o' clock, which helped a lot for working people. Right now, if you would have a regular 9 to 5 job, Monday through Friday, you can't access that library. And part of the reason is because it's a school library also. So for a public library, you need to make it more available for the people in people's real life situations and what they need. A lot of people, they can't even get tv. Like where I live, all I see is snow unless I were to buy a huge dish, you know, monster antenna, I don't wanna go there. So I can never watch tv, which might be good for my brain. [Siracusa]
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> So a library should be more accessible in that way too and have more things to do. They used to have programs. They used to have presentations in the evening, different kinds of programs, and it was a place where people could come and meet each other and borrow a couple of books while they're there already. But there were different programs, some were for children. There were some wonderful puppet shows for kids, you know that, "Oh I'm a happy little whale. I'm eating the krill." And then there were shows where presentations were made about EAs for development projects in the community. Or I went to one once where we learned to carve our own bamboo sticks to do bamboo printing. And there were all sorts of different programs that used to happen at that library, and they happened for years and years. They used to have, those were one night a week or one night a month or whatever it was, there was, for little kids, they would come in their jammies [pajamas] with their blankies, and people from the community would come and read to them. And we would read them bedtime stories. And they were at the library, and we would show off the book, and so they could see and say, "Oh I'll take that out next time I'm here." I used to do that. I was one of the people, I used to love to read these stories to the kids. You could really emote. [Siracusa]
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> You know, those kind of programs really encourage children to love reading and to love the library. They always have a memory growing up of a library as a wonderful place that was soft and cuddly 'cause they were with their blankie, and they were in their [pajamas] with their footsies. And we want to encourage that sort of thing. What the hell does it mean if you're gonna build a library, and you're not gonna do things and have programs that are gonna make it a really more accessible and educational venue for the whole community?... So that's the big issue with it. A library is more than a structure. A library is all the different kinds of programs. And if they're not gonna fund those programs then why the hell are they even bothering? And so that's my manaʻo. [Siracusa]

Site Visits

Two of the interviewees requested to visit the three proposed library sites. A summary of these visits is provided below.

On Sunday, February 25, 2018, Keala Pono Archaeologist Dietrix J. U. Duhaylonsod met with Kumu Piʻilani Kaʻawaloa in Keaʻau to kūkākūkā about the Pāhoa Library Project. Before they sat down to talk, they visited the three proposed sites for this library.

The first site visited was Site 3 [TMK: (3) 1-5-008:001] near the water tank between Keaʻau and Pāhoa along the Keaʻau-Pāhoa Road. Piʻilani was especially concerned about this proposed location because of the dangers of accessing the site off of the main road. The Keaʻau-Pāhoa Road is a major thoroughfare with many vehicles speeding along that stretch of roadway. And there has been a noticeable increase in the number of accidents on that road.

After that, they visited Site 1 [TMK: (3) 1-5-007:017] located near the new Pāhoa police station. Like Site 3, this location is just off of the Keaʻau-Pāhoa Road, and again Piʻilani expressed concern

about the potential for accidents from vehicles entering/exiting the main road there. She highlighted the growing congestion on the streets due to the rising population and development of the region.

And lastly, they visited Site 2 [TMK: (3) 1-5-002:020], initially accessing the site by driving to the baseball fields at the end of the District Park. Then, they drove back onto the Keaʻau-Pāhoa Road toward Pāhoa High School, and took a right turn onto Apaʻa Street. This street does a wide loop around the District Park, well beyond its boundaries, and ends up back on the Keaʻau-Pāhoa Road. As they drove along Apaʻa Street, Piʻilani explained where the sugarcane plantation's Filipino camp was once located; where the Japanese camp used to be; where the cemetery currently is; and also where the heiau is located nearby. She also talked about the common belief that the military turned some of the lava tubes and caves into emergency war shelters, but to the best of her knowledge, no one in the community had ever located these underground shelters. Before leaving Apaʻa Street, Piʻilani pointed out the path of a recent lava flow in the area, explaining an admonition that her kupuna shared with her that the volcano will flow that way again.

In the end, Piʻilani stated that Site 2 at the District Park would be the best choice for a future Pāhoa Library. Additionally, she stressed the need for a new access road to get to this future library besides the only access road currently going into the District Park. She suggested that perhaps a new access road to the proposed library at this location could come from Apaʻa Street.

Kumu Piʻilani emphasized her support for a new Pāhoa library. As a lifetime resident of Puna and an invested educator of the community, she explained the need especially for nā keiki and nā ʻōpio to have a safe space where they can concentrate and do their school work. She mentioned that the new library would not only be a safe space, but it would offer much needed online access for the entire community, something that is not as available as needed in Pāhoa Town and the neighboring communities.

On Saturday, March 10, 2018, Keala Pono Archaeologist Dietrix J. U. Duhaylonsod met with Pāhoa community member, Uncle Francis Malani, to kūkākūkā about the Pāhoa Library Project. They met in Hilo and then drove to Pāhoa to visit the three proposed sites for this library. They visited Site 3 first, then Site 1, and lastly Site 2.

Of the three proposed sites, Uncle Francis Malani highly recommended Site 1. There were several reasons that he preferred Site 1. He pointed out that this is a good location for emergency purposes. In the case of an emergency, it would be close for the police and fire station next door to respond. He also recommended this site for security reasons, pointing out that although the drug problem in Pāhoa town has been reduced, it is still an issue, and having the police station next door to the public library would prevent drug users and other unsafe individuals from hanging out and taking over the location.

Uncle Francis also pointed out that if Site 2 was chosen, the area would get highly congested due to activities and events that take place at the park. He said that only an additional access road connecting to the back side of the park to a proposed library there would alleviate the congestion. Additionally, he stated an important reminder that many of the Hawaiʻi Island communities, and even Pāhoa town itself, are a long way off from each other. Because of this, he highlighted the necessity for good public transportation to make this library accessible to all.

In all, Uncle Francis Malani emphasized the need for a new library, supporting it as a resource for both children and adults. He pointed out that currently, only the library at school is available to the community, but it is a limited option. He welcomed this project, adding that everyone needs to work together for a project like this, something that benefits the common good of all.

Summary of Ethnographic Survey

As a whole, the interviewees have extensive knowledge of the Pāhoa area. According to one interviewee, the region's traditional history continues to live on in its mele and moʻolelo, which are too many to name. The area's significance in the sandalwood, ʻōhiʻa, and koa trades during the early post-contact era was also pointed out. The initial demand for native trees eventually gave way to large-scale agriculture focused on sugarcane, and until recently Pāhoa still had its plantation-spurred ethnic camps and mom & pop businesses. As with other plantation towns throughout Hawaiʻi, the local community of Pāhoa grew as a close-knit multi-ethnic one, and it was a safe, clean, and friendly place to raise a family.

However, the interviewees also expressed disappointment and sadness due to the changes that they have witnessed in Pāhoa. One of the biggest recurring themes is associated with Puna's influx of outsiders which has made the communal values of the old-timer families obsolete. The old-timer families would once share their food, such as fruits, vegetables, and fish, with each other, and it was important for people to give back to the community. Currently, with the newcomer residents, it is not the norm to share like the old days, nor is it the norm for people to do things for the community. People have moved into the Puna area and demanded infrastructural changes which have affected the kamaʻāina lifestyle where the old-timers were content living off the grid with generators and water catchment systems. The interviewees explained that the increased development has replaced the familiar plantation camps and mom & pop businesses, and with the development has come increased traffic congestion to the point that it is dangerous to cross the road. In the old days, there was no homelessness in Pāhoa, but now, there are many homeless families. In addition, it is not as safe as it once was, due to the increase in crime and drug-related activities.

The interviewees shared specific information regarding the three proposed sites for the library. Regarding Site 1, it was pointed out that there were underground lava tubes and caves in the area, but investigations of the underground tubes yielded no cultural artifacts or burials. Due to the complications of building anything above subsurface lava tubes and caves, nothing major has been constructed or developed at Site 1. Still, one interviewee recommended this site for the library for security and emergency reasons, being that it would be next door to the police and fire stations. Another interviewee said that this site would not be a good choice due to issues of safe ingress/egress on and off of the property to/from the busy Keaʻau-Pāhoa Road.

Regarding Site 2, it was explained that this area was part of 56 acres once owned by the Roman Catholic Diocese. In addition, a Filipino plantation community was once located near the Catholic church and another was located near the current pool. Besides the native plants in the area, other plants such as gandule beans were cultivated by residents for food. One interviewee pointed out that this was also a known place to gather warabi fern for salads, while another interviewee noted that the site was once a place to gather hōʻio ferns, but the ferns were destroyed with development of the District Park. It was also during the park's development that remnants of the old railroad line were excavated and removed. In the areas surrounding this site, strawberry guava trees could also be found. And beyond the strawberry guava, about ¼ mile from the site, a heiau and a Japanese cemetery are located, towards the vicinity of the trash dump. Two of the interviewees recommended that Site 2 is chosen for the library, but they highlighted the need for an additional access road, most ideally coming from the back area off of Apaʻa Street.

Regarding Site 3, it was pointed out that like Site 1 there may be underground lava tubes and caves there. One interviewee explained that this site was once known for the many fruitful mango trees that lined both sides of the Keaʻau-Pāhoa Road corridor there. Today, however, the area is overgrown with invasive flora, including tall grasses along with some native ʻōhiʻa. None of the interviewees

recommended this site, and in fact, two of the interviewees said that this site would be a bad choice due to the traffic congestion and the potential for vehicular accidents.

The interviewees also voiced their concerns and recommendations for the project. Concerns and issues associated with the project include:

- The lack of internet access for the homes in the area and how the new library will address that
- The small number of computers in the current library
- The limited internet time allowed at the current library
- The poor copier services provided at the current library
- The limited hours of operation at the current library
- The drug problem in Pāhoa and the need for it to be kept away from the new library
- For Site 1, the danger of constructing there due to the underground lava tube system
- For Site 1, the co-location on the same TMK as the police and fire station because only one ingress/egress to/from the main road is allowed per TMK
- For Site 2, the unavoidable congestion at the District Park during other functions and activities, unless another access road is constructed to the library there
- For Site 2 and Site 3, the possibility of being cut off from emergency services should lava come down from the volcano again
- For Site 3, the danger of constructing there due to the underground lava tube system
- For Site 3, the danger of accidents due to entering/exiting this property from the busy road, unless a turning lane is installed

All interviewees strongly support the construction of a new Pāhoa Library. But they differ in which site they believe is the best for the new library. Two interviewees recommended Site 2, and one interviewee recommended Site 1. None of the interviewees recommended Site 3. Specific recommendations are summarized as follows:

- Make sure the new library has a color copier
- Make sure the new library has expanded hours of operation to serve all segments of the public
- Make sure the new library offers many different types of programs and presentations
- Make sure the new library has ample funding to provide educational resources for the entire community
- Make sure the new library is a dependable safe space for both children and adults to learn at
- Prior to development, ask kamaʻāina families and their kūpuna for their manaʻo
- Prior to development, be aware of the contours of land regarding future lava flows
- During planning and construction phases, be mindful and respectful of cultural practices regarding Pele
- Landscape the new library with kī, kalo, and various plants relating to Pele
- Landscape the new library with dirt and cinder combinations

- Consider naming the library "Hale Waihona Hū Ka 'Ike" which means "A dwelling where knowledge overflows;" stay away from using people's names
- Record information about Pāhoa from those who know, and make it available in the new library
- Make sure there is good public transportation to/from the new library
- Construct the new library outside of the main Pāhoa town which is sometimes congested
- Site 1 was recommended in case of emergency situations, as it is next to police and fire stations
- Site 1 was recommended for security since being next to the police station will deter drug users from hanging out there
- Site 2 was recommended because it is already in the original plans for the District Park
- Site 2 was recommended because an EIS was already done and no archaeological/cultural features were found on the parcel
- Site 2 was recommended because it is close to the highway, yet not on the highway
- Site 2 was recommended because it is a safe and central location
- Site 3 was not recommended because of the potential for traffic congestion and accidents

SUMMARY AND RECOMMENDATIONS

Pāhoa and the greater Puna district have been important areas since traditional times, and this is evident in the numerous mele and moʻolelo that live on until today. During the early post-contact years, the uplands of Puna played a role in the trade of sandalwood, ʻōhiʻa, and koa. In the late 1800s, after the Māhele, the area was transformed into a thriving sugar plantation town. The sugarcane economy fostered the growth of a local community which was beloved by its residents as a safe, sharing, and caring place to raise families. However, interviewees have expressed that in recent history the influx of many newcomers has transformed Pāhoa and the surrounding towns into a congested area where the communal spirit has been stifled while homelessness, crime, and drug use have increased.

This study highlights the unique history of the Pāhoa region with a focus on the three separate parcels being proposed as possible sites for the new library. Three community members were interviewed to share their manaʻo and ʻike and to help identify any potential cultural resources or practices that might be affected by the library's construction. The interviewees identified no known archaeological/cultural properties within the three proposed sites, but they did caution that underground lava tubes and caves existed at two of the sites, and that these lava tubes have not been fully investigated.

Cultural Resources, Practices, and Beliefs Identified

Archival research and ethnographic interviews compiled for the current study revealed that the Pāhoa area once provided a healthy native forest with important native plants and trees such as sandalwood, ʻōhiʻa lehua, and koa. Although there is a relatively small number of ʻōhiʻa lehua trees on one of the proposed sites, all three sites are mostly overgrown with invasive species. The consultants confirmed that there are no traditional gathering practices currently being carried out at any of the three proposed sites, but in times past, at least two of the sites offered fruits and vegetables such as mangoes, gandule beans, and edible ferns, which were regularly harvested by community members for food.

Ethnographic interviews did identify a known heiau and a Japanese cemetery in the vicinity of one of the sites, but both of these were located at least a quarter of a mile away. The interviewees emphasized the presence of the volcano and the possibility of future lava flows in the area. Because of that, one interviewee pointed out the need to be sensitive to respect the traditions and beliefs regarding Pele as the project moves forward.

Potential Effects of the Proposed Project

The heiau and the Japanese cemetery noted above are located near, but outside of the area of proposed activities. The three proposed sites are clear of known resources, but underground lava tubes and caves may yield findings. One consultant explained that one of the caves in the area was said to be used by the military during the war years, but to the best of her knowledge, this cave has never been identified.

Confidential Information Withheld

During the course of researching the present report and conducting the ethnographic survey program, no information was shared confidentially.

Conflicting Information

The information shared by the community consultants complemented each other without conflict. There were however differing opinions as to which of the three sites would be the best choice for the Pāhoa library. Two interviewees preferred Site 2, and one interviewee preferred Site 1. This difference in opinion is subjective and does not represent conflicting factual information.

Recommendations/Mitigations

The interviewees all support the construction of a new library. The did share many concerns and recommendations for the project. Concerns focus on the need for services that the new library could provide, ease of access to the new library site, safety at the new library, and dangers due to the underground lava tube system. Recommendations include providing programs and resources that the community needs, offering expanded hours of operation, considering community mana‘o and cultural practices in planning the library, and planning for possible future lava flows. Other recommendations were related to landscaping, naming of the library, transportation, and safety. A full list of concerns and recommendations is presented in the Summary of Ethnographic Survey section of this report.

Two interviewees recommended Site 2 for the new library, while one recommended Site 1. The interviewees provided specific information on why they preferred one site over another. Careful consideration should be given to the reasonings brought forth by the interviewees regarding their site selection. Those reasons included safe access; less congestion; the absence of lava tubes/caves; and providing a safe space for library users. Additionally, the interviewees offered many recommendations concerning what the new library should offer the community. These should also be seriously considered, as they reflect what is lacking in the status quo with the current library in the area.

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GLOSSARY

a And, of.

‘a‘ā Rough, stony lava. Surface appearance is sharp and broken.

‘a‘ali‘i *Dodonaea viscosa*, the fruit of which were used for red dye, the leaves and fruits fashioned into lei, and the hard, heavy wood made into bait sticks and house posts.

‘ae Yes; to say yes, consent.

‘ahu Garment or covering for the upper part of the body and shoulders, as a cape.

ahupua‘a Traditional Hawaiian land division usually extending from the uplands to the sea.

‘ahu ‘ula Feather cape or cloak worn by ali‘i. Small forest birds such as the ‘ō‘ō, ‘i‘iwi were used to harvest feathers to make them.

‘ai Food or food plant, especially vegetable food as distinguished from i‘a, meat or fleshy food. Or to rule or reign.

‘āina Land.

‘ākala The endemic raspberries (*Rubus hawaiensis* and *R. macraei*); and the thimbleberry (*R. rosaefolius*); lit. pink.

‘ākohekohe The crested honey creeper (*Palmeria dolei*).

akua God, goddess, spirit, ghost, image.

ali‘i Chief, chiefess, monarch.

ali‘i ‘ai ahupua‘a Chief of an ahupua‘a.

ali‘i ‘ai moku Chief of a district.

ali‘i nui High chief.

aloha Love, affection, compassion, sympathy, kindness, greeting.

aloha kakahiaka Good morning.

‘ana Nominalizing particle.

‘anakala Uncle.

anchialine Near the sea.

anchialine pool A landlocked water body with an underground connection to the ocean.

anthurium Flowering plant native to the Americas; largest genus of the arum family, *Araceae.*

‘aumakua Family or personal gods. The plural form of the word is ‘aumākua.

‘awa The shrub *Piper methysticum*, or kava, the root of which was used as a ceremonial drink throughout the Pacific.

bamboo The shrub or tree *Dendrocalamus*, *Phyllostachys*, *Schizostachyum*, or *Bambusa*. The species native to Hawai‘i are *Bambusa vulgaris* and *B. aureovariegata*. These were traditionally used for many items, including knives, hula implements, nose flutes, water containers, and tapa-decorating equipment.

basalt Volcanic rock.

breadfruit See ‘ulu.

California grass The invasive *Brachiaria mutica* that forms dense stands up to 2 m tall.

carpet grass Perennial creeping grass with coarse leaves; *Axonopus compressus.*

clidemia *Clidemia hirta*, also known as Koster's curse, an introduced, invasive shrub.

coconut The palm tree *Cocos nucifera*.

coffee *Coffea arabica*, introduced to Hawai‘i in 1813, which grows within the 1,000 to 2,000 ft. elevation zone.

‘elele Messenger, ambassador, delegate.

gandule Perennial legume *(Cajunus Cajun)*, also known as the tropical green pea or the pigeon pea, introduced to Local cuisine by Puerto Rican plantation workers.

guava The invasive tree or shrub *Psidium guajava*, which forms dense thickets in disturbed areas.

haku Master, owner; to compose, invent, or braid.

haku‘āina Landowner, landlord.

hala The indigenous pandanus tree, or *Pandanus odoratissimus*, which had many uses in traditional Hawai‘i. Leaves were used in mats, house thatch, and basketry; flowers were used for their perfume; keys were utilized in lei and as brushes; roots and leaf buds were used medicinally; and wood was fashioned into bowls and other items.

hala kahiki The pineapple, *Ananas comosus,* probably originating in Brazil; foreign hala.

hale House.

hana Work, employment, behavior, incident, service, manufacture.

hānai Foster child, adopted child; to raise, feed, or sustain; a provider or caretaker.

he A, an.

hē Grave.

heiau Place of worship and ritual in traditional Hawai‘i.

Hi‘iaka Sister of Pele; first part of the names of the twelve younger sisters of Pele.

hi‘uwai Water purification ceremony.

hoa Companion, friend, associate.

hoa‘āina Native tenants that worked the land.

hō‘io *Diplazium* (*Athyrium*) *arnottii*, a large native fern that grows at high altitudes. The young fronds are often eaten raw with shrimp or salmon.

hōlua Traditional Hawaiian sled used on grassy slopes.

honohono grass An annual or perennial herb native to Asia and the West Indies, also climbing dayflower or spreading dayflower; *Commelina diffusa.*

hū To rise or swell, overflow.

hula The hula, a hula dancer; to dance the hula.

hummock A small hill or mound.

‘ike To see, know, feel; knowledge, awareness, understanding.

ka The.

ka‘ao Legend, tale; to tell a fanciful tale.

kaha To cut open or slice lengthwise; to scratch, mark, or draw. Or a place (often followed by a qualifier, as kahakai, kahaone, kahawai, and used without ke, as hele i kahakai, go to the beach).

kahakai Beach, seashore, coast.

kahawai Stream, creek, river; valley, ravine, gulch, whether wet or dry.

kāhea To call, cry out, or invoke.

kakahiaka Morning.

Kahiki A far away land, sometimes refers to Tahiti.

kai Sea, sea water; area near the sea, seaside, lowlands; tide, current in the sea; insipid, brackish, tasteless.

kalo The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.

kanaka Human, person, man, Hawaiian.

Kāne The leading of the traditional Hawaiian deities.

kama‘āina Native-born.

kapa Tapa cloth.

kapu Taboo, prohibited, forbidden.

ke The.

keiki Child.

kilu A small container used for storing precious objects or for feeding a favorite child; a quoit in the kilu game in which a player would attempt to hit an object with the kilu to win a kiss from a member of the opposite sex.

kō The Polynesian introduced *Saccharum officinarum*, or sugarcane, a large grass traditionally used as a sweetener and for black dye.

koa *Acacia koa*, the largest of the native forest trees, prized for its wood, traditionally fashioned into canoes, surfboards, and calabashes.

koa‘e The tropic or boatswain bird.

ko‘i Adze.

kōlea The Pacific golden plover *Pluvalis dominica*, a bird that migrates to Hawai‘i in the summer; the native trees and shrubs *Myrsine*, the sap and charcoal of which were used as a dye, the wood used for houses and for beating kapa.

kona His or her.

konohiki The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.

Ko‘olauwahine Breeze blowing from the north of Ni‘ihau.

kou The flowering tree, *Cordia subcordata*, either native to Hawai‘i or introduced by Polynesians.

kuhina nui Prime minister or premier. Ka‘ahumanu was the first kuhina nui. The position was abolished in 1864.

kūkākūkā To negotiate or discuss.

kuleana Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

kumu Teacher.

kupaianaha Surprising, strange, wonderful, amazing.

kupuna Grandparent, ancestor; kūpuna is the plural form.

lā‘au Medicine, medical, trees, plants.

lā‘au kāhea A type of faith healing of broken or crushed bones or sprains. *Lit.*, calling medicine.

lā‘au lapa‘au Medicine.

lā‘ī Leaf of the tī plant (*Cordyline* spp., whose leaves were traditionally used in house thatching, raincoats, sandals, whistles, and as a wrapping for food).

lapa‘au Medical practice; to treat with medicine.

lawe To take, carry, bring, accept.

lawe hānai To adopt, as a child.

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lehua The native tree *Metrosideros polymorpha*, the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in musical instruments.

lei Garland, wreath; necklace of flowers.

liko Leaf, bud; newly opened leaf.

limu Refers to all sea plants, such as algae and edible seaweed.

loa Very much; excessive.

lo‘i, lo‘i kalo An irrigated terrace or set of terraces for the cultivation of taro.

mahalo Thank you.

mahalo nui loa Thank you very much.

Māhele The 1848 division of land.

mahiole Feather helmet.

mahogany Prized tropical hardwood of the genus, *Swietenia,* indigenous to the Americas.

maka‘āinana Common people, or populace; translates to “people that attend the land.”

makai Toward the sea.

mālama To care for, preserve, or protect.

mālama pono To take care.

māmaki *Piptarus* spp., a small native tree. Fiber from its bark was used to make a kind of coarse tapa. Sometimes spelled mamake in old texts.

mana‘o Thoughts, opinions, ideas.

mango Trees of the genus *Mangifera*, introduced to Hawai‘i in the 19th Century and well known for their edible fruit.

Maui parrotbill *Pseudonestor xanthophrys;* species of Hawaiian honeycreeper endemic to Maui; also kiwikiu.

mauka Inland, upland, toward the mountain.

me With.

melastoma An annual or perennial shrub, herb, or small tree found mostly in the tropics, from the family *Melastomataceae.*

midden A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum.

mele Song, chant, or poem.

mō‘ī King.

moku District, island.

mo‘olelo A story, myth, history, tradition, legend, or record.

muliwai River mouth, estuary, or pool near the mouth of a stream, enlarged by ocean water left there at high tide.

nā Plural definite marker.

nahele Forest, grove, wilderness.

nihi Edge, rim; steep; creeping silently and softly.

niu The Polynesian-introduced tree *Cocos nucifera*, or coconut.

no For, because of.

nui Big, large, great.

‘o Particle marking the subject.

‘ohana Family.

‘ōhelo *Vaccinium reticulatum*, a native shrub with small edible berries. Found in higher altitudes.

‘ōhi‘a Two kinds of forest trees. See also ‘ōhi‘a‘ai and ‘ōhi‘a lehua.

‘ōhi‘a ‘ai The mountain apple tree, *Eugenia malaccensis*, a forest tree that grows to 50 ft high.

‘ōhi‘a lehua The native tree *Metrosideros polymorpha*, the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in

‘ōlapa The native tree *Cheirodendron trigynum*, the leaves of which were used in *lei*, and fruit, leaves, and bark made into dye.

‘ōlelo Speech, language, word; to speak, to tell.

‘ōlelo no‘eau Proverb, wise saying, traditional saying.

‘ōlena The turmeric plant, *Curcuma domestica*, traditionally used as medicine and for spices and dyes.

oli Chant.

olonā The native plant *Touchardia latifolia*, traditionally used for making cordage.

‘ō‘ō *Moho nobilis,* the extinct black honey eater. Its black and yellow feathers were used in featherwork.

‘ōpae Shrimp.

‘ōpae‘ula Red shrimp.

‘ōpakapaka The blue snapper fish, *Pristipomoides sieboldii, P. microlepis, Aphareus furcatus, A. rutilans*.

‘ōpelu Mackerel scad (*Decapterus pinnulatus* and *D. maruadsi*).

‘ōpio Youth, youngster, juvenile.

orchid Colorfully diverse flowering plant widespread around the globe; from the family, *Orchidaceae.*

‘ō‘ū *Psittirostra psittacea*, Hawaiian honey creeper endemic to Hawai‘i. Its green feathers were used in various types of featherwork.

pa‘akai Salt.

pāhoehoe Smooth lava; surface unbroken.

pandanus See hala.

papaya The introduced plant *Carica papaya*, known for its edible fruit.

Pele Volcano goddess.

pilikia Trouble.

pineapple See hala kahiki.

pō Night, darkness, the realm of gods.

pololei Straight, direct, correct, right.

pono Correct, proper, good.

po‘o Head; summit; director of an organization.

post-contact After AD 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.

pre-contact Prior to AD 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.

puhi Eel, considered by some to be an ‘aumakua.

pūkohukohu Kapa, as dyed with noni juice.

pulu Fern fibers obtained from the hāpu‘u pulu (*Cibotium glaucum*), tree fern.

puna Spring.

rapid ‘ōhi‘a death A fungal disease which is noted for attacking the native ‘ōhi‘a.

rice grass A perennial bunchgrass native to North America; also Indian rice grass or sand rice grass; *Oryzopsis hymenoides.*

sandalwood ‘Iliahi (*Santalum*), several varieties endemic to Hawai‘i. Known for their aromatic wood and medicinal qualities. Heavily exported in the 1800s.

strawberry guava The invasive tree *Psidium cattleianum*, originating in Brazil and brought to Hawai‘i in 1825. Fruit are edible and are used in juice, and the tree is used as an ornamental and for firewood.

sugarcane The Polynesian-introduced *Saccharum officinarum*, or kō, a large grass traditionally used as a sweetener and for black dye.

sweet potato See ‘uala.

taro See kalo.

‘uala The sweet potato, or *Ipomoea batatas*, a Polynesian introduction.

‘ula Red, scarlet; brown, as skin of Hawaiians.

‘ula‘ula The red snapper fish of the family *Lutjanidae*.

‘ula‘ūla koa‘e The red snapper fish of the family *Lutjanidae* thought to been named after the tropic bird for the long streamer on its tail.

‘ulu The Polynesian-introduced tree *Artocarpus altilis*, or breadfruit.

ulua An adult of various Carangid fishes.

uluhe Ferns of the genera *Dicranopteris*, *Hicriopteris*, and *Sticherus*. Also known as the false staghorn fern, they form dense thickets.

‘Unuloa Name of a wind in Puna, Hawai‘i.

warabi fern Japanese name for an edible fern.

wahine Woman, wife; femininity. Wāhine is the plural.

wai Water or liquid other than salt water.

waiawī *Psidium cattleianum f. lucidum*, the yellow strawberry guava.

waihona Depository, cabinet, file.

wao A general term for inland areas, usually forested and uninhabited.

wao kanaka An inland region where people may live or occasionally frequent, usually below the wao akua.

wao nahele Inland forest region.

warabi fern Japanese name for an edible fern.

APPENDIX A: AGREEMENT TO PARTICIPATE

Agreement to Participate in the Cultural Impact Assessment for the Pāhoa Public Library Site Selection Project
Dietrix J. U. Duhaylonsod, Ethnographer, Keala Pono Archaeological Consulting

You are invited to participate in a Cultural Impact Assessment (CIA) for the Pāhoa Public Library Site Selection Project in Puna, on the island of Hawaiʻi (herein referred to as "the Project"). The Project is being conducted by Keala Pono Archaeological Consulting (Keala Pono), a cultural resource management firm, on behalf of G70. The ethnographer will explain the purpose of the Project, the procedures that will be followed, and the potential benefits and risks of participating. A brief description of the Project is written below. Feel free to ask the ethnographer questions if the Project or procedures need further clarification. If you decide to participate in the Project, please sign the attached Consent Form. A copy of this form will be provided for you to keep.

Description of the Project

This CIA is being conducted to collect information about the Project property in the Pāhoa area in Puna on Hawaiʻi Island through interviews with individuals who are knowledgeable about this area, and/or about information including (but not limited to) cultural practices and beliefs, moʻolelo, mele, or oli associated with this area. The goal of this Project is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, or traditional cultural practices in properties on the current subject properties. This Assessment will also attempt to identify any affects that the proposed development may have on cultural resources present, or once present within the Project area.

Procedures

After agreeing to participate in the Project and signing the Consent Form, the ethnographer will digitally record your interview and it may be transcribed in part or in full. The transcript may be sent to you for editing and final approval. Data from the interview will be used as part of the ethno-historical report for this project and transcripts may be included in part or in full as an appendix to the report. The ethnographer may take notes and photographs and ask you to spell out names or unfamiliar words.

Discomforts and Risks

Possible risks and/or discomforts resulting from participation in this Project may include, but are not limited to the following: being interviewed and recorded; having to speak loudly for the recorder; providing information for reports which may be used in the future as a public reference; your uncompensated dedication of time; possible misunderstanding in the transcribing of information; loss of privacy; and worry that your comments may not be understood in the same way you understand them. It is not possible to identify all potential risks, although reasonable safeguards have been taken to minimize them.

Benefits

This Project will give you the opportunity to express your thoughts and opinions and share your knowledge, which will be considered, shared, and documented for future generations. Your sharing of knowledge may be instrumental in the preservation of cultural resources, practices, and information.

Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected upon request. You may request, for example, that your name and/or sex not be mentioned in Project material, such as in written notes, on tape, and in reports; or you may request that some of the information you provide remain off-the-record and not be recorded in any way. To ensure protection of your privacy, confidentiality and/or anonymity, you should immediately inform the ethnographer of your requests. The ethnographer will ask you to specify the method of protection, and note it on the attached Consent Form.

Refusal/Withdrawal

At any time during the interview process, you may choose to not participate any further and ask the ethnographer for the tape and/or notes. If the transcription of your interview is to be included in the report, you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

APPENDIX B: CONSENT FORM

Consent Form

I, _____, am a participant in the Pāhoa Public Library Site Selection Project Cultural Impact Assessment (herein referred to as "Project"). I understand that the purpose of the Project is to conduct oral history interviews with individuals knowledgeable about the subject property and surrounding area in Puna on Hawai'i Island. I understand that Keala Pono Archaeological Consulting and/or G70 will retain the product of my participation (digital recording, transcripts of interviews, etc.) as part of their permanent collection and that the materials may be used for scholarly, educational, land management, and other purposes.

_____ I hereby grant to Keala Pono and G70 ownership of the physical property delivered to the institution and the right to use the property that is the product of my participation (e.g., my interview, photographs, and written materials) as stated above. By giving permission, I understand that I do not give up any copyright or performance rights that I may hold.

_____ I also grant to Keala Pono and G70 my consent for any photographs provided by me or taken of me in the course of my participation in the Project to be used, published, and copied by Keala Pono and G70 and its assignees in any medium for purposes of the Project.

_____ I agree that Keala Pono and G70 may use my name, photographic image, biographical information, statements, and voice reproduction for this Project without further approval on my part.

_____ If transcriptions are to be included in the report, I understand that I will have the opportunity to review my transcripts to ensure that they accurately depict what I meant to convey. I also understand that if I do not return the revised transcripts after two weeks from the date of receipt, my signature below will indicate my release of information for the draft report, although I will still have the opportunity to make revisions during the draft review process.

By signing this permission form, I am acknowledging that I have been informed about the purpose of this Project, the procedure, how the data will be gathered, and how the data will be analyzed. I understand that my participation is strictly voluntary, and that I may withdraw from participation at any time without consequence.

_____

Consultant Signature **Date**

_____

Print Name **Phone**

_____

Address

Thank you for participating in this valuable study.

APPENDIX C: TRANSCRIPT RELEASE

Transcript Release

I, _____, am a participant in the Pāhoa Public Library Site Selection Project (herein referred to as "Project") and was interviewed for the Project. I have reviewed the transcripts of the interview and agree that the transcript is complete and accurate except for those matters delineated below under the heading "CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS."

I agree that Keala Pono Archaeological Consulting and/or G70 may use and release my identity, biographical information, and other interview information, for the purpose of including such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading "OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS."

CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS:

OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

_____

Consultant Signature **Date**

_____

Print Name **Phone**

_____

Address

APPENDIX D: INTERVIEW WITH PI‘ILANI KA‘AWALOA

Pāhoa Library Cultural Impact Assessment – Feb. 28, 2018
- Piʻilani Kaʻawaloa (written responses submitted)

Have you read the Agreement to Participate? Yes
Do you have any questions before we begin? No

1) To start please tell us about yourself…Name? Where/When you were born? Where you grew up? Where you went to school?

Piilani Kaawaloa, I was born October 19, 1964 at Hilo Hospital. I was raise in Pāhoa, Hawaiʻi in Puna and Kupahuʻa, Kalapana, Hawaiʻi in Puna. I attended Pāhoa Elementary and Pāhoa High School and graduated in 1982.

2) Could you tell us about your ʻohana/family background?

I was lawe hānai by my grandparents on my mother's side of the family. I was born to MaryJane Kaawaloa then lawe hānai by William Kaawaloa and Minnie Halekulani Elderts. William Kaawaloa was born in Kupahuʻa Puna and Minnie Elderts was born in Koaʻe, Puna. Upon marrying my parents owned several homes in Pāhoa, Nānawale, and Kupahuʻa in Puna. My father did many things and had a variety of jobs, heavy equipment operator, bus driver, fisherman, farmer, hunter, jack of all trades. My mom Minnie was a teacher, Reverend, Cultural demonstrator, Cultural Interpreter at Wahaʻula visitor center at the Hawaiʻi Volcano National Park and lower Puna, a practitioner of lāʻau lapaʻau/laʻau kāhea, and a resource person for the Puna area.

3) What is your association to the subject property (family land, work place, etc.)?

I am familiar with the land area in which the project will be built. I know the history and stories of this area that was passed down to me by my parents and other kupuna who lived and are still living in this area.

4) What are the ways you have acquired special knowledge of this area (from your ʻohana, personal research, specific sources)?

See #3

5) Could you share your manaʻo relevant to the Pāhoa area and the surrounding region (personal anecdotes, moʻolelo, mele, oli, place names, etc.)?

There are too many to name, however surrounding Pāhoa you have Keonepoko Nui, Keonepoko Iki, Keonepoko, Waikaheʻula, Pahoehoe, Nānawale, Kaʻohe, Waikahe Iki, Makuʻu, Kauweleao just to name a few.

Moʻolelo: The battle of Waikaheʻula, The great Warrior Chief Ahia of Puna who was killed at the battle of Mokuʻōhai, He Wahi Moʻolelo No Ke Koʻi Pāhoa A Me Kona Hana Ana, Ka Pāhoa Kupaianaha a Nā Aliʻi ʻO Puna.

Mele: Kalapana, Pāhoehoe, Lei Ana ‘O Puna, E Nihi Ka Hele, many mele for Puna.

6) As far as you remember and your experiences, how has the area changed? Could you share how it was when you were young and how it’s different now?
Pahoa has changed drastically over the years, so I can imagine the changes from my grandparent’s time. For me, I grew up during the sugar plantation so we had various camps. The Filipino camp in front of Pahoa Elementary school and the Japanese camp within the town. Many businesses in Pahoa were run by Japanese families, like the Hara family (Pahoa Cash & Carry, Toma family (Toma Bakery), Sadamu, Shige and Miura family (stores). Everybody knew everybody and the town was so clean. We used to be able to and from school without fear. There was a lot of respect for each other. The community worked together.

Today, I barely know anyone and all the old timers are gone. The camps are gone, the next generation of the families who owned the businesses do not want to carry on the mom and pops stores so now big name stores are moving into the community. More outsiders are moving into the community so a lot more development of subdivisions (Hawaiian Paradise Park and Ainaloa in Waikahekahe and Waikahekahe Nui and Waihakekahe Iki and Hawaiian Beaches in Keonepoko and Keonepoko Iki. With increased development, congestion on the roads are bad in and out of Puna.

We are also experiencing a lot more crime and drugs within our community. The values from outsiders are reshaping the values of the community I knew.

Our families are satisfied with water catchment and generator, however new comers are not accustomed to this life style and demand the modern infrastructure.

There was no homelessness during my growing up in Pāhoa, today we see so many homeless families in our community.

We used to share what we had (fruits, vegetables, fish, etc.) today very few share.

7) Do you know of any traditional sites or historically significant buildings which are or were located on the Project site--for example: cultural sites, archaeological sites, historic structures and/or burials? Please elaborate.
Not within the sites. There may be caves at the sites but the water tank and the site near the Police station/Fire station.

8) Do you think the proposed development would affect any place of cultural significance or access to a place of cultural significance? Please elaborate.
No, there are no heiau near any of the sites. The site near the new gym is maybe a quarter of a mile from the Japanese cemetery and a heiau behind the rubbish dump area. All sites are in the path of the recent lava flow that threatened Pahoa town.

9) Are you aware of any traditional gathering practices at the Project area and/or within the surrounding areas both past and ongoing?
Families used to gather hōʻio at the site near the new gym but when they developed the skate park, gym, and baseball/football fields, much of the hōʻio patches were destroyed.

10) While development of the area continues, what could be done to lessen the adverse effects on any current cultural practices in the area?
Prior to developing the area always ask the kupuna or families who were born and raised in the area for manaʻo.

11) Are you aware of any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the Project site and its surrounding areas?
Be aware of the contours of the land because of the recent lava flow. The lava is still active within the community, therefore be mindful and respectful to the cultural practices regarding Pele.

Recommendations:

- Plant lāʻī, kalo and other native plants of various varieties relating to Pele (Konanui family are familiar with kalo and ʻawa relating to Pele
- Use dirt and cinder combination around the grounds and facility of the library.
- Appropriate name for library (Hale Waihona Hū ka ʻIke – Treasury a dwelling where knowledge over flows. A repository where one obtains infinite knowledge).
- Try to stay away from people names, unless you know the characteristic of the person. The structure will take on the characteristic of the person (good/bad).

12) Do you know of any other kūpuna, kamaʻāina, cultural/lineal descendants, or other knowledgeable people who might be willing to share their manaʻo of the Pāhoa area?
Aunty Elaine Hauaniʻo
Aunty Felicia Hanohano
Many of the Kupuna have passed that are very familiar to this area.

APPENDIX E: INTERVIEW WITH FRANCIS MALANI

TALKING STORY WITH

FRANCIS MALANI (FM)

Oral History for the Pāhoa Library project by Dietrix J.U. Duhaylonsod (DD)
For Keala Pono 3/10/2018

DD: Today is Saturday, March 10, 2018. We're sitting in Pāhoa town at the Black Rock café. We're gonna be talking story about the Pāhoa Library and the three possible sites for this library. We're gonna be talking story with Uncle Francis Malani, and before we go any further we'd like to say, "Mahalo nui loa," to Anakala, who was at his workshop today in Hilo, but he agreed to come out here and see the sites and talk story with us, so mahalo and aloha.

If we could start, maybe you could say your name, where/when you were born, where you grew up, where you went to school, some background things like that?

FM: Aloha kakahiaka, good morning, my name is Francis Malani, Jr. I was born on the Big Island in a little town called Laupāhoehoe, and I moved to Oʻahu. I graduated from Kaimukī High School. And I was born October 7, 1945. And I was present at the tidal wave on April Fool's Day down Laupāhoehoe which took all the children. My parents lived at the peninsula.

Anyway, I had the opportunity to graduate from Kaimukī High School in 1964, and I came back working for the Department of Public Safety. And I was part of the drug treatment program called Kashbox, which was started on Kauaʻi and Oʻahu at Waiʻawa Correctional Facility, and then finally I retired at Kūlani Correctional Facility when I came home.

I've been an integral part of the community, created the Men of PAʻA [Positive Action Alliance], and also now I have an organization called Moku ʻĀina, which I'm involved in a lot of community activities, parades, and I support a lot of politicians, I do security and also parking. I'm so heavily involved in the cultural aspect of our ʻāina, and my leader is Ikaika Dombrigues, who is the poʻo.

DD: Mahalo, Uncle, for sharing. Is there anything else you'd like to share about your family? And maybe you could share about your association to this project area?

FM: Yes, I finally bought my home in Nanawale, which I became [a member] on the board, of the association, and I continue to support a lot of the politicians, whether the House of Representatives or the Council. And also, I do a lot of cultural events. I've done a few of the hiʻuwai with brotha Joe De Santos and also Ikaika Dombrigues down at ʻAʻalanui. I also believe that we need to go back to mālama the ʻāina because the ʻāina is the one that is gonna take care us.

And I'm agreeing about the aspect of building a library in the Pāhoa area. And I agree we should have one so that we can all have better information. We can make better decisions. Okay?

DD: Okay, mahalo, Uncle. Yes, mālama the ʻāina is important. Thank you for sharing that and for sharing about your support for a library. If we could take a step back and look at Pāhoa in general, could you share some of the ways that you have learned about the Pāhoa area?

FM: Yes. Since I moved here, and then becoming a foster parent, me and my wife, we had 35 children go through our home. And then we adopted two children that went to Pāhoa Elementary and Pāhoa High School. And they both graduated, my son and my daughter, who I hanai'd. They graduated from Kea'au High School. They both 18 now. And I believe that it's very important that they be given information about our culture, and also be brought up with education. And the library could provide all that information that people are looking for, especially if they're moving on to the college level, I mean, Associates Degrees, Bachelors, or even Doctors. That would be a source, a good area for resources where they're doing their thesis or paperwork when they plan to go to college, or even for job opportunities, whether they're into agricultural or medical. That availability of information for everybody is necessary. Thank you.

DD: Yes, the library would be an excellent place of resources for higher education, I agree.

Would you have any mo'olelo, oli, or mele, about Pāhoa that you could share? Are there any stories or themes about this place that maybe you could share?

FM: One of the recent things that I've been involved is the whole aspect about the moku, the divisions of every island. And each community should really take care of their moku or district. Just like the old days, they would have a po'o, a head, that they could consult with, that would have a lot of history. And Pāhoa has a lot of individuals that have this information, but they really do not share it. But really it would be perfect if they could get together that information and put it into the library, whether through video tapes or even tape recorders.

So anyway, my belief is this, what you plant is what you gonna grow. No preach me a sermon. Show me. You know, no talk about doing things. The key is action. Go do it. And that's my feeling and my mana'o. And I believe I gotta be part of the community. I cannot talk about helping somebody when I not willing to do anything. So that's my opinion, my mana'o. Thank you.

DD: That's good mana'o. And we know you've been taking action, showing a good example for people to get back on the right track. Mahalo for that.

Could we maybe talk about the changes of the community? As far as you've been in the Pāhoa area, how has this place changed? Could we talk a little bit about that?

FM: Yes. A lot of the community in Pāhoa has dwindled as far as the people giving back to the community. And that's why I got involved in doing things like that, you know, cleaning the highways, or helping the churches, or even people that having a difficult time in their environment or their yard. Help is always there, always available. So I try to make myself and many of the men and even the women available for help, whatever help we can give. Okay.

DD: Mahalo for that.

So today we looked at the three different sites. We looked at the site by the water tank, we looked at the site by the police station, and we looked at the one by the District Park. Are you aware if there are any archaeological sites or cultural sites or even burials at any of those three areas? Is there anything that we should be aware of over there?

FM: Not necessarily, I haven't done much research in those areas. But the one place I would recommend is the one close to the police station and the fire station, [due to] the accessibility for emergency vehicles, especially in emergencies of fire, and in case of security, the department is right there. So that would be the prime location.

The other sites, especially the one around the gymnasium, the swimming pool area, that corner [of the District Park], that would be probably determined later if they can have a road, especially to the back of the transfer station, which might go out that way. It would be easy for traffic to get out, especially during heavy use, like maybe they got an event, like a parade or maybe a fair, 'cause Pāhoa is really into having a lot of things like that. They got activities always going, especially in the ball park area. So it would be really congested if the library was built in that area because the use, physical activity, baseball, roller skates, basketball, swimming, so a lot of the things would be congested if they built the library in that area. So I feel, by the police station would be the best area out of all three.

DD: Okay, so Uncle, you're saying that of the three sites, the first choice would be by the police station/fire station in case there is an emergency, but also, because of the security with the police station being there. And also, you were mentioning about the site at the District Park, and you were explaining that the park gets utilized a lot at times by the community, and you were pointing out the possibility of a back road on the other end, am I saying all that correctly?

FM: Yes.

DD: So if it was at that site [at the District Park], you would recommend a back street to alleviate the congestion, but the first choice would be near the police station. Is that correct?

FM: Yes, that's correct.

DD: Okay, mahalo.

And what about gathering practices? At any of these three sites, do you know if people are going out there to do their cultural practices? Or would any of these three sites hinder any access to cultural practices or cultural sites?

FM: Well as far as my knowledge is concerned, there's a lot of pilikia with the area above the transfer station. When Pele was moving down, that whole area would have been inundated with the lava, and it came down to the transfer station. So it really would block off everybody in case of an emergency. You know, how we going get out of Pāhoa if we get the lava flow and Sista keeps coming down on her way to the ocean? So the police station, like again I say, would be the best position because still, you can get out and get to go to Hilo or go that direction, because you cannot go Kapoho. Kapoho is where she's at right now. Anyway, that's all I have to share. Mahalo.

DD: That's a good point, pointing out where Pele was coming down, and how close it is, especially to that one at the District Park, and being closed off in case Pele comes down.

What about adverse effects? Are there any adverse effects that come to mind regarding the construction of the library at any of these sites?

FM: Well the last thing that I'd like to suggest is bus transportation because Pāhoa is really kind of secluded. And it's a long way from children, especially from Paradise Park or even the Hawaiian Homestead at Makuʻu. It would be more convenient at the police station. But to come into Pāhoa town, it's kind of centralized for restaurants and stores and gas station, you know, now that the Puna Kai [shopping center] is being built. So the traffic would be horrendous if the library was centralized in Pāhoa town. Closer to the police station would be real great. Okay.

DD: Thank you for sharing that. You're mentioning the congestion of traffic if the library is within Pāhoa town. And also, you're mentioning the bus bringing in people from far away, and again, your preference for the police station site. Mahalo for those.

Are there any other concerns that the community might have regarding this project, anything else that we haven't mentioned that you think we should talk about?

FM: Well to get back to the security issue, Pāhoa town has been known for the marijuana and drugs that are solicited right in the town area. But because the library would be close to the police station, a lot of the, I wouldn't say "riff-raff," but a lot of the undesirables, they wouldn't be hanging out at the library. Maybe [if the library was] further away in Pāhoa town, but because the police station would be right next to the library, plus the security for children, and adults also, when they go, that's a real prime factor.

I know that the drugs have been minimized or reduced in Pāhoa town itself, now that marijuana has become, shall I say, not illegal, because it is still illegal under the federal aspect, but the drug situation has kind of slowed down in Pāhoa town. So anyway, that's about it. Thank you.

DD: That's a good point to bring up because the library needs to be a safe space for the children and adults to use, and being close to the police station, like you said, the undesirables cannot take over the location. So it'll help keep it a safe space, mahalo.

Are there any other kūpuna, kamaʻāina, any other community people that you think we should speak with regarding this project and the project sites?

FM: Yes, I would recommend this gentleman called Iopa Maunakea. He is in charge of the Men of PAʻA, and "PAʻA" is the "positive action alliance" that helps out the community. And they do other things in the community and on the Big Island. They're also involved with the Liliʻuōkalani Trust Program, and they also do their clean up down at Waipiʻo Valley. And a lot of 'em are clean and sober gentlemen that clean up the highways along the Keaʻau transfer station towards Shower Drive. He's one of the individuals I would recommend. Talk to Aunty Faye Hanohano, [she] would be another because Aunty Faye has been in the community at Pāhoa for a long time. And the last person that I would recommend is Aunty Maddy, who is the President of the Nanawale Association, which I used to be part of the community, I used to be on the Board as the President, and Aunty Maddy is the President. So those are the three individuals I would highly recommend. Okay, that's it.

DD: Okay, so as a recap, you recommend we speak with Iopa Maunakea from the Men of PAʻA; Aunty Faye Hanohano, who was a former representative, and then Aunty Maddy from the Nanawale Community Association. Thank you for those recommendations.

So I guess that concludes our kūkākūkā, once again, we'd just like to thank you, Uncle, for taking the time out of your Saturday to come and talk story with us. We really appreciate it.

FM: 'Ae. Mahalo Akua. We thank Akua for making this whole thing possible, that we here to help each other. That's what He wants us to do, work with one another, because He says, "Where two or three are gathered, there he exists," for the common purpose. So thank you again, mahalo.

DD: 'Ae, pololei, mahalo Akua. So mahalo, mālama pono, and aloha.

FM: Aloha.

APPENDIX F: INTERVIEW WITH RENÉ SIRACUSA

TALKING STORY WITH

RENÉ SIRACUSA (RS)

Oral History for the Pāhoa Library project by Dietrix Duhaylonsod (DD)
For Keala Pono 1/15/2018

DD: Today is Monday, January 15, 2018. We're sitting in Pāhoa at Mālama O Puna, off of the main road here. We're gonna be talking about the proposed Pāhoa public library, and we'll be talking with Ms. René Siracusa. Before we go any further, we'd just like to say, "Mahalo nui loa, thank you very much," to Rene for taking the time out of her holiday today to talk story with us. So mahalo and aloha.

If we could start, maybe you could say your name, where/when you were born, where you grew up, where you went to school, that kind of background things?

RS: Yeah, well my name is René Siracusa. I was born in New York City, and I got my Bachelor's in Linguistic Anthropology at CCNY, and then came to Hawai'i, got my Master's in Linguistic Anthropology again at UH Mānoa. And then I started to do my Doctorate, passed my orals, and then changed my mind and went off in a different direction, and so came to the Big Island and settled down just outside of Pāhoa. And that was in 1975. And I have lived here ever since.

One of the first things I did when I came to Hawai'i, before I even started grad school, because I had a Spring semester and a Summer to wait before classes started, so I audited Beatrice Krauss' *Ethnobotany of Hawaii,* and that gave me a really nice entrée into Hawaiian culture and botany. And then later on I took other courses that were related to my archaeology, kinship systems with Douglas Oliver; and so even though historical reconstruction of Pacific languages was my specific area, I overlapped a lot with some of the other sub-disciplines within the field.

I moved here and got involved in a couple of different things, and eventually, I am now the President of Mālama O Puna which used to be Puna Outdoor Circle, until it went independent. So I have been involved in non-profit administration since '78. In doing so, because the non-profits have been mostly community associations, and mostly environmental non-profits, so I got to see a lot of properties. And I got to meet a lot of archaeologists. And I got to tromp around and see a lot of sites. Also, I was on the Hawai'i County Planning Commission, and we did some site surveys. We also, of course, were always given archaeological reports as part of the packets for development plans, and fortunately I already knew how to read them [both laugh] which helped a lot. But that's the kind of information that I've been, little by little through my life I've been learning more bits and pieces and becoming more informed.

When the county was getting ready to build the Pāhoa Pool and Aquatic Center, I was called in by the project manager, Norman Oleson, to go over certain things with him especially when we were talking about the botany and whether to maintain the ferns, the edible ferns on the slope where the parking lot was gonna be. But there was also the question of where the old railroad line went through. And I was able to show him where I had, in planting a tree, found one of the little horseshoes for the donkeys, which was directly on the route from where they used to stable them to where they used to take 'em out to pasture.

There was also a time when, coming from my home in Ka'ohe Homestead, I used to take the shortcut through the, what used to be Camp 6, behind the Pāhoa Pool. And so I knew that stretch of property behind the pool before it was developed into the park.

DD: Oh okay. So where is the Pāhoa Pool in relation to these three properties that we're looking at?

RS: Well if we're looking at this one here [referring to map], Pāhoa Site #2 [is near where Camp 6 used to be]. And that's the general area.

DD: Oh, where the community park is.

RS: Yeah, Kauhale Street. You turn in Kauhale Street, which is off of Pāhoa Village Road. It's not on this map here. So there it is, and it takes you right to the community center and the pool and the new District Park.

DD: Got it. So for the record, we're looking at the map, and René is pointing at project site number two.

RS: Two. TMK 1-5-2:20.

DD: That's where the new District Park is at right now.

RS: Yeah.

DD: That's where she's talking about, Camp 6.

RS: Yeah, I know that one really well. The other parcel that we're looking at, Site #3, I know very well because I did the environmental assessment for Puna Community Medical Center, which is just two parcels away from that, on the Pāhoa side. Site #3, there's a Department of Water Supply, and then another parcel, 5-acre parcel, which is TMK 3-1-5-8:5, Keonepoko Nui ahupuaʻa.

DD: Right, for the record, René was showing me the report for that project [Puna Community Medical Center] also. That was done by Rechtman, right?

RS: Yes, Robert Rechtman

DD: Robert Rechtman. And we were looking at that for the Puna Community Medical Center, and that's like a couple parcels over, after the water tank, going towards Pahoa.

RS: Mmhmm.

DD: So regarding your association here, you've done a lot of work here with the Puna Outdoor Circle which is now Mālama O Puna, a lot of research here also, and then you've been in the community and talked with a lot of community members and archaeologists, right?

RS: Yeah, and a lot of kūpuna who aren't around anymore.

DD: Oh wow.

RS: So also, I've also had information about Pāhoa Site #1, because at one point, Parks and Rec was considering putting a playing field there, and they backed out because of the issue of the caves and the lava tube system. And later on, Puna Community Medical Center was considering that for an emergency room site before they looked at the one that the EA we were just talking about is for. And for the same reason we decided that it was too problematic, [with] issues of access off the highway, with State Department of Transportation, and the problem with the lava tube system. And so we decided against

that. But I'm very much aware of that site and had done some hiking, watching where I put my feet constantly. It's very iffy because it's very overgrown.

So I'm quite familiar with all three sites.

DD: Okay, so could we talk a little bit more about project site #1, Pāhoa Site #1? So for the record, this is the one next to the police and fire station.

RS: The same TMK.

DD: It's the same TMK, and as you were saying earlier, only one access is allowed onto the main road by HDOT. And so you were explaining that the only other option would be to use the road around the back of the property, however, due to the lava tubes, and they're so huge, it might be dangerous, not a stable foundation for construction, is that correct?

RS: Yes, and they have not mapped the entire lava tube system. And so they don't even know where the underpinnings are. They do know where the cave is. Many years ago, Civil Defense was considering using that cave because they said it was large enough to evacuate all of Pāhoa town into in case of an emergency. That's a big cave. And so that sets up a whole bunch of problems. What do you do with a cave system like that if you want to build something on top? Do you fill it all in? That's a lot of in-fill. And of course there's the problem of allowing bulldozers to access the property when their weight might just plunge them right down into a hollow underneath. And of course, the expense with all of that involved, and probably a lot of extra insurance coverage too.

DD: Huge cave, we were talking earlier about needing evacuation centers…[laughs]

RS: [laughs] Well with North Korea developing their nuclear capability.

DD: Okay so if we could think of some of the moʻolelo, the mele, the stories and chants about this area, are there any themes, are there any place names that give some insight about this area, Pāhoa?

RS: Which site are you talking about? Or just the whole general area?

DD: Any of the sites or the whole general area.

RS: I'm not the person to talk to about mele. You know who is? Piʻilani Kaʻawaloa.

DD: Piʻilani Kaʻawaloa.

RS: Her family has passed the traditions on in this community, and she's a cultural practitioner. She would know about those kind of things. I know something about the substrate and the geology and the archaeology and some of the history, post-contact history and more recent history also. But I don't know about the mele. I'm sure there are, but I don't know though, but that's who you should contact.

DD: Okay, Piʻilani Kaʻawaloa. What about the changes of the area, could we talk about the changes and what stands out, things that are different from before?

RS: The most dramatic thing, of course, is that when I first came here, I could walk down the middle of the street in Pāhoa from one end of town to the other, in the middle of the day, and not see a single vehicle. [both laugh]

DD: That's a big difference.

RS: As a matter of fact, there were a couple of horses that were tied up at the railings where the boardwalk is. Now, you stand there [on the shoulder of the street], and you have to wait and look left, right, left, right, left, right, until finally there's a break. Thank goodness recently they put in some more crosswalks. It was getting really difficult to even cross the street. It's still hard sometimes to pull out of the parking lot here.

So the population increase, that's a biggie biggie biggie, then of course, the effect of the lava flow. Not only that [most recent] one, but the previous ones also, you know, the Kapoho flow, and then the Royal Gardens, which moved people around and moved a lot of people away, people who couldn't handle living on the edge. And then there were some people from the other flow who were so far away from being threatened that one wondered why they even evacuated - people all the way at the bottom of Nanawale. It's not even heading in that direction. So I've lived through three lava flows. I remember being at a friend's house during the Royal Gardens thing. They lived in Royal Gardens, and we're sitting there watching, that was an explosive eruptive event. Yeah, things were spewing up in the air, like molten boulders the size of Volkswagen buses.

DD: Wow!

RS: Eventually they had to evacuate. So I been through a bunch of that kind of thing also in this community. And I remember roads that are now no longer and parcels that are no longer. I remember swimming in Queen's Bath, and taking my daughter to teach her how to swim in Queen's Bath. Queen's Bath doesn't exist anymore. You know, there are things like that that we've lost, Harry K. Brown Park. When I first moved over here, and I didn't have any facilities, I was still living in a tent, and I used to go down to Harry K. Brown to take showers, that's what everybody did. Everybody went down to Harry K. Brown to take a shower. And then there was the Yamaguchi Store, and so yeah [laughs].

DD: [laughs] Sounds like great memories. So for these three project parcels, do you remember what was on there?

RS: Yeah, well Pāhoa Site #3, for example, that's been just sort of overgrown. Nothing has been on there as far as I know. Now according to [19th century author] Isabel Bird, was it "Travels in the Hawaiian Islands" or something like that? Isabella Bird? So she talks about traveling the Kea'au-Pāhoa Road. In those days it was lined with mangoes. They're not there anymore, thanks to HELCO [Hawaii Electric Light Company]. But she does talk about that it was one of those beautiful stretches of road on the island. So that parcel now looks just like the Puna Community Medical parcel, basically, and I have the botanical survey. That's here in this EA [looking through the EA for the Puna Community Medical Center]. Here we go, [reading] "vascular plants", okay, so mostly the major invasives are strawberry guava, the melastoma family, clidemia, and tibouchina, and there is a lot of young 'ōhi'a.

DD: Oh, they're surviving right now?

RS: Some of them. It's so strange about this. I mean, you look at a stand of 'ōhi'a, and some of them are dead, and others look perfectly healthy. And you say, "What is it? How come some of 'em are resistant, or seem to be? Or maybe it's just a matter of time?" Who knows, you know. Or is there some quality that makes them resistant and some not, because after all, 'ōhi'a's Latin name is *Metrosideros polymorpha*, so "polymorpha" is "many forms." And we know there are because there's different flower color, there's shaggy bark and smooth bark, there's all of those differences, so maybe there's some non-visible

differences also which account for susceptibility [to Rapid ‘Ōhi‘a Death], who knows? But anyway, as you can see from the cover [referring to the EA], well it’s not a clear photo, but it’s the tall grasses and the young ‘ōhi‘a, and that’s pretty much what you’re gonna find over there too on that parcel. And you could probably refer, as a starting point for a botanical survey for Pāhoa Site #3, look at the “Vascular” [report], this was done by Palmer and Associates, Consulting. And pretty much, it would be, I would say, pretty much the same thing. There might be a few cross-offs here and there and a few add-ons here and there, but basically it’s the same.

DD: Yeah, same area. Do you remember what was on Site #1 or Site #2?

RS: Well, the Pāhoa Site #1, nothing happened there. They did not develop it at all because of the lava tubes, so what it is now is what it’s been. And then Site #2 is a different story because first of all, there was an old Filipino camp. They called ’em camps, right, for these guy’s families, the ones who worked the sugar cane fields. And so there was one next to the Catholic Church. And that was another one where the pool is right now. And so there was a lot of gandule bean bushes, a lot of plants that were being grown there by the residents for food, besides the native plants. And that stuff is all in the EIS that was done for the [district] park. Although they did make a few errors, and one of them was so striking I couldn’t believe they did it. They said that Mauna Kea was 40 miles to the east of Pāhoa District Park. That’s out in the middle of the ocean. I said, “What are you guys thinking?” [both laughing]

DD: How could they not catch that?

RS: Well they fixed that real fast. That was an embarrassment, wasn’t it? But that’s where all of that information is. The land, that whole 56 acres, was owned by the Roman Catholic Diocese. And when the county wanted to buy only, I think it was about 15 acres of it, and the Diocese said, “Well you know what, we would have to go through the whole subdivision in order to divide out 15 acres from the 56. Why not just take the whole 56?” And the county said, “Well we only have enough money for 15.” And they said, “Well we’ll take it.”

DD: So the people had to relocate?

RS: Yeah, they did.

DD: And did they have a church there?

RS: No, there wasn’t any church, but it was owned by the Diocese of Honolulu, because all land that goes to the church, a lot of people do leave their land to the church in their wills, goes to the whole diocese, not to an individual church. Even now, if you wanna know about a piece of land, and you go to the church right up the street here, they’ll refer you to Bishop Silva’s [the current bishop of Honolulu] office.

So what had been there before, at one point, there was the donkeys. When the old rail line was coming through Pāhoa, it was a narrow gauge rail line, and it was taking the ‘ōhi‘a forest to the Mainland to use for the Santa Fe Railroad. That didn’t work. It turned out the climate was too dry. It didn’t hold up over there. There’s a wonderful book in the library called *Railroads of Hawai‘i.* The story is in there, including pictures of the old train. First they went up in Ka‘ohe Homesteads really, which was back up in here [referring to the map].

My finger was pointing on the map above Pāhoa Street.

DD: [laughs] Yes.

RS: Let me see, first they went for the sandalwood. That was during [the reign of] Kamehameha I when he was looking to get some money, get the economy going, so that he could afford all the pageantry of European royalty.

After they got the sandalwood, then they went back for the ʻōhiʻa. And then later they went for the koa. They went for the koa, it was the end of the 1800s. And that's when they set up the lumber mill in Pāhoa behind where the Akebono theater used to be. Koa was called Hawaiian mahogany. And that was called the Great Hawaiian Mahogany Company.

So that's where the rail line was happening. And the rail line went from, if you go down here to the end of the buildings before Pāhoa service station, and the end of the long building that didn't get burned down, right through there was where the old rail line site was. And so that rail went all the way to Hilo, like along all here. So there are bits and pieces of it. When they were putting the park together, we found pieces of track and stuff lying from that old narrow gauge line.

DD: I see. But when you mention sandalwood, you mention ʻōhiʻa, you mention koa, those were being harvested all over, not necessarily right there in Pahoa, right?

RS: Yeah, the general area. Because the narrow gauge line went up in to Kaʻohe Homestead, which is where they were harvesting.

Oh, that's where there might be some mele. Hold on. [looking for a book on the shelf]

[Back with a report] I have here the OHA final comprehensive management plan for the Wao Kele O Puna. And there are mele in here. [looking in book] I'm looking at the Table of Contents.

DD: Okay, I'll look through there. You know, earlier you were mentioning Camp 6. Is that the name of that Filipino camp you were mentioning near the current District Park?

RS: Yeah. The camps had numbers.

DD: Okay, so that was the same camp.

RS: Yeah.

DD: Okay, got it.

RS: [thumbing through the pages and reading] This is an ethnohistorical study that was done for the management plan. There were some mele.

DD: There's one right there.

RS: Ah, here we go. Yes, there are some mele.

DD: This Wao Kele report covers a part of this area too.

RS: Covers the general area as well as the specific, everything's connected. Somewhere in here, there are the mele. And you can get this from OHA.

DD: So René is showing me the Wao Kele O Puna final comprehensive management plan, and the reports that go with that, and we can look into that for other sources of information. Okay, mahalo. So if could go back to these project sites, Site #3, you were mentioning is full of invasives and some young ʻōhiʻa, but you don't remember anything being built on there, right? Same with project Site #1, you don't remember anything being built on there, and then there are the lava tubes underneath.

RS: Right.

DD: And then the third one, Site #2, which is where the camp was at.

RS: Which is now the District Park. I personally would recommend that site for a library. And I think it's actually in the EIS that one of the features of that District Park would be a combined library and maybe amphitheater or performance center, something like that.

DD: Okay, so René is saying that in the EIS where there was some community input for that District Park, she's saying that land was set aside for the library, and of these three site options, that site [Site #2] would be her preference. Is that correct?

RS: It avoids a lot of the problems that the other two sites have. It's county-owned, so the county and the state would have to come to an agreement. I think they can manage that. And it [the library] was considered as one of the features that would go in that park. And so the park is already developed, the EIS is already done. It's known that there are no archaeological sites, no burials, none of that stuff they have to worry about, it's close to the highway. So all of the issues that you would find that's problematic with the other two sites do not exist in Site #2. And it's centrally located. And the fact is that it's not right near the highway, so if you have little kids, even though the school library will continue to be a school library, that's not saying you're not going to have kids coming in to this library. Parents take their kids with them when they have to. And so you don't have to worry about them running into the street because if they run out, they're gonna be running out to a 56 acre park. It's a lot safer.

DD: Those are many good points as to why Site #2 would be a better choice. Thank you for sharing that.

So regarding the three sites, to the best of your knowledge, are there any other archaeological features, cultural sites, burials, any historic structures on any of these three parcels?

RS: No. Not anymore. The District Park area did have some of that old railroad line, but that's gone. That's been taken out.

DD: So of the three, the District Park site would be the one that would've had sites, but that's gone ever since they did their construction. But as for the other two, there's nothing except for maybe the lava tube underneath Site #1, is that correct?

RS: Yeah, and the big cave [lava tube] at Pāhoa Site #1 was investigated, and it was reported that there were no cultural artifacts or burials or anything, no cultural remains at all.

DD: Okay, excellent, mahalo.

What about gathering practices? Are there any gathering practices going on at any of these sites, that you can think of?

RS: There's not much to gather, I mean, there's young ʻōhiʻa, so that's easy if you're a lei maker and you wanted to pick liko for your lei. The lehua, it's a lot easier to do from a young ʻōhiʻa tree than it is from a 30-foot tall tree, where the branches don't start until 15 feet up. And like I said, there used to be mango trees growing along both sides of the Keaʻau-Pāhoa Road, but they're gone now. So nobody has picked mangoes there for a long, long, time.

The closest thing where anything would be happening would be Pāhoa Site #2. Within the park itself, nothing any more, the only thing that you might have is the warabi fern. When you first drive into the aquatic center park, there's a slope on your left. And that slope is all warabi fern. And that was kept at my recommendation, by the way, when Norman Oleson and I were going through that, to help hold the soil. I said, "Why do you need to put something else in there to help hold the soil? That's doing a fine job already." Periodically, people do come in and pick the fern from that to make the salad, you know, with the tomatoes and the onions, right? Good stuff. It's not all the time. It's usually the Filipinos that gather that. And on the outside of that area, there's a lot of strawberry guava, how much of that can you eat, you know?

DD: Right, and do you think that the development of any of these three sites would affect any place of cultural significance or access to a place of cultural significance?

RS: No.

DD: Okay, mahalo. So could we talk about adverse effects? If any of these three sites were developed, could you think of any adverse effects and maybe some mitigation measures?

RS: [pause and thinking] Alright let's talk about Pāhoa Site #3, adverse effects, possible traffic issues although it is on the straight-a-way. But that doesn't mean there have never been accidents there. I was in one myself where I was heading toward Keaʻau. I was getting ready to do a left turn into the parcel Pāhoa-side of the water tank because I wanted to look at some stuff there because I was working on the EA. And so I signaled a left turn, and of course on the other side there's a water fill-up station, and this guy coming up behind me, when he saw my signal, he sort of thought, "Oh that can't be right. There's nothing on the left. She must be meaning to turn right." And so he went to pass me on the left just as I was making the turn. He plowed into me and totaled my car. But except for strange situations like that, it's a straightaway, you can see what's oncoming. So the only thing that would have to be done there would be a turning lane that allows for turning into the site coming from both directions and maybe some signage indicating that there's a Pāhoa Library. That would be the only mitigating kind of thing.

Okay, Pāhoa Site #1, that's a problem because the State Department of Transportation, they don't want to clutter up Keaʻau-Pāhoa Road, they're still thinking of it as a high speed highway instead of a community boulevard which is what its actual function is. And so they don't want more than one exit from any parcel onto the highway [and this site is on the same TMK as the Police and Fire Station which already have an exit onto the main road]. The only way to get around that so that you could exit from that would be for the parcel to be subdivided with the County, ceding the Pāhoa Site #1 to the State, because the County owns the whole TMK right now. Then the State library system could ask the State Department of Transportation, if they ever talk to each other [both laughing] to allow them to put an access to the highway, because coming around from the back, alright that could be done also if you're going to figure out how to get around the whole issue of the lava tube system and the caves. But that's the big mitigation gorilla in the room there.

For Site #2, I can't think of a single thing except increased access onto that whole park site, which I mentioned earlier, as a continuation of Pāhoa Village Road, crossing Pāhoa Village Road to get to that

park site from that side because a facility that large that will eventually see so much use really should have more than one entry/exit. And they might even wanna consider another one at some point.

DD: You were saying the Post Office road, right?

RS: Yeah.

DD: Okay, got it. It's crystal clear. Thank you for sharing all of that, sharing a lot of really good points why Parcel #2 is a better choice.

Are there any other concerns that the community has that we haven't talked about that you think we should be talking about?

RS: Well a lot of people here move off grid, and so they don't have access to internet. They have to go to the library or to an internet café where you have to pay money to sit for a while, and they'll still kick you out after a while if you don't order [food/drink]. The current library really provides but not enough. I mean, you could only go on, and I've had to do this when my computer was down, and so my 2nd choice was go to the library, and you can only reserve space at the computer once a week. Unless, they have one that's reserved for emergencies where it's like an express lane at the supermarket. You're limited to 15 minutes, and then it's a first come first served. You have to wait your turn, and of course you don't have longer than 15 minutes. So I think in planning the library, they should plan for much increased need of the community for internet access, more computers and more available time slots and the whole thing and including a color copier. Right now it's only black and white. And some things, for clarity, you would want to do in color. Like some of these maps we've been looking at in the EISs, it would be very hard to see all the detail if they didn't have color. So having used those computers there, I think that is something they should think about.

There used to be a time when the library had more hours that it was open including Saturday, which helped a lot, and after 5 o' clock, which helped a lot for working people. Right now, if you would have a regular 9 to 5 job, Monday through Friday, you can't access that library. And part of the reason is because it's a school library also. So for a public library, you need to make it more available for the people in people's real life situations and what they need. A lot of people, they can't even get tv. Like where I live, all I see is snow unless I were to buy a huge dish, you know, monster antenna, I don't wanna go there. So I can never watch tv, which might be good for my brain. [both laughing]

But you know, there's those kinds of situations, so a library should be more accessible in that way too and have more things to do. They used to have programs. They used to have presentations in the evening, different kinds of programs, and it was a place where people could come and meet each other and borrow a couple of books while they're there already. But there were different programs, some were for children. There were some wonderful puppet shows for kids, you know that, "Oh I'm a happy little whale. I'm eating the krill." And then there were shows where presentations were made about EAs for development projects in the community. Or I went to one once where we learned to carve our own bamboo sticks to do bamboo printing. And there were all sorts of different programs that used to happen at that library, and they happened for years and years. They used to have, those were one night a week or one night a month or whatever it was, there was, for little kids, they would come in their jammies [pajamas] with their blankies, and people from the community would come and read to them. And we would read them bedtime stories. And they were at the library, and we would show off the book, and so they could see and say, "Oh I'll take that out next time I'm here." I used to do that. I was one of the people, I used to love to read these stories to the kids. You could really emote. [laughs]

DD: Right.

RS: You can get away with that where you can't with reading like that to grown-ups, "[in a storytelling voice] And this little piggy."

DD: [laughs]

RS: You know, those kind of programs really encourage children to love reading and to love the library. They always have a memory growing up of a library as a wonderful place that was soft and cuddly 'cause they were with their blankie, and they were in their [pajamas] with their footsies. And we want to encourage that sort of thing. What the hell does it mean if you're gonna build a library, and you're not gonna do things and have programs that are gonna make it a really more accessible and educational venue for the whole community?

DD: I agree.

RS: So that's the big issue with it. A library is more than a structure. A library is all the different kinds of programs. And if they're not gonna fund those programs then why the hell are they even bothering? And so that's my mana'o.

DD: Those are some really, really good points there, accessibility, hours of operation

RS: Programs for all ages.

DD: Programs for all ages.

RS: And all interests.

DD: And all interests, and practically speaking, to have a lot of computers because we need to have computers with internet access.

RS: Years ago, I was on the Friends of the Library Board. And I had gone to look for something because of a request for my daughter. And I was looking for an art book on the works of Rousseau, who did all these wonderful jungle-looking things with lions peeking out from behind gigantic foliage and stuff like that. And my daughter had remembered a picture we had in the house when she was a little kid growing up and wanted to know how to find it because she wanted to put it in her house now in California. And so I was gonna look for the book. And I discovered that there was one small shelf of art books in the whole library. That's all? And so then I went online, and there wasn't that much. And my thought was, "Wait a second. Here we're supposed to be expanding people's views of the world, and of all of the different arts, and of all the cultural things, and we have such a limited assortment of reference materials?" Yeah.

DD: Yeah, makes no sense. Good point.

So earlier you mentioned Pi'ilani Ka'awaloa, are there any other community people you think we should talk to?

[spent some time talking about the unfortunate recent passing of Kumu Lopez and then of Roy Leabig who is still in Utah, and then René went to look through her computer and address book for contact info for Pi'ilani Ka'awaloa or her family members].

RS: Another person you might want to contact is Mahealani Kuamoʻo. [René is showing me phone numbers/emails on papers, and I'm taking pictures of these papers showing the contact info of several community people]

DD: Okay, well I guess that concludes our kūkākūkā today.

RS: My library does come in handy.

DD: Yes it does. [both laughing] It was a pleasure meeting you and talking story today. So I just wanna say, "Mahaaaalo," again to René for talking story.

RS: Have a tangerine.

DD: I will have a tangerine. Thank you so much. Enjoy the rest of your day and aloha.

Appendix D

Pāhoa Library Lava and
Wildfire Hazard Assessment

Hawaii Wildfire Management Organization
65-1279 Kawaihae Rd. Ste 211, Kamuela, HI 96743
HawaiiWildfire.org
(808) 885-0900

Mar 21, 2018

To: Vi Verawudh, Group 70

Re: Puna Public Library –Project Development Report, Site Selection Study (SSS), And Environmental Assessment With Anticipated Finding Of No Significant Impact (EA/FONSI): Lava and Wildfire Hazard Assessment, HWMO Deliverable 2 of 2, ***Revised***

Dear Ms. Verawudh,

Please find here Hawaii Wildfire Management Organization's Lava and Wildfire Hazard Assessment for Site 1, Pāhoa Fire Station/DMV.

Please contact me with questions,

Elizabeth Pickett
Executive Director

Wildfire and Lava Hazard Assessment

Introduction

The content and assessment information within this memo applies to Site 1, Pāhoa Fire Station/DMV, TMK: 1-5-007:017. HWMO has supported this wildfire and lava hazard assessment by field reconnaissance, Geographic Information Systems (GIS) data analysis, and by consulting with additional pertinent lava and wildfire experts who have professional familiarity with the Puna area and these specific hazards. The memo addresses wildfire and lava hazards independently, noting under the wildfire section that the two hazards may intersect in the case of lava-ignited wildfires.

WILDFIRE

Wildfire Hazards for Site 1, Pāhoa Fire Station/DMV, TMK: 1-5-007:017

Fire Environment:
Typically, wildfire risk in the Puna/Pāhoa area is fairly low (HWMO 2013). Rainfall, and consequently fuel moisture, is generally high and not likely to burn sizeable areas before a suppression response can be activated and executed. However, rainfall and weather patterns have been changing in recent decades, leading to an increase in drought episodes. In some years, the amount of rainfall meets the average precipitation level for the year, but the pattern of rainfall alternates between short and heavy pulse rain events and longer periods of drying in between. In both drought episodes and other dry periods, dense unmanaged vegetation in the Puna area can readily carry fire.

Vegetation Hazard:
With the municipal buildings, their surrounding maintained vegetation, and the site's location bordering the highway, vegetative fire fuel hazard for Site 1, Pāhoa Fire Station/DMV, is low. The wildland area adjacent to the site has a fuel load and type rating of low to moderate hazard. This hazard will be further reduced when parking infrastructure and/or managed landscaping on the wildland borders increase the defensible space around the building. Due to these features, the vegetation hazard for Site 1, Pāhoa Fire Station/DMV, is the same or less than alternative sites.

Ignition Hazard:
99% of wildfires in Hawaii are started by people, both accidentally and intentionally (Trauernicht 2015). Site 1, Pāhoa Fire Station/DMV, and its nearby lands do not have a history of such wildfire ignitions and are currently of low to moderate ignition risk as classified by the Hawaii Wildfire Management Organization's 2013 Statewide Wildfire Hazard Assessment (HWMO 2013). The "moderate" ignition risk accompanies all roadside areas. However, there is no history of wildfire ignitions in this area. With both police and fire personnel frequenting the Pāhoa Fire Station/DMV's adjacent parking lots, the ignition risk by people is further reduced.

1% of wildfires in Hawaii are naturally started by either lava or lightning (Trauernicht 2015). While lightning in the area is rare, lava flows that ignite vegetative fuels can yield a potential ignition hazard to the surrounding environs during active flows. In this case, exposure at Site 1 to lava-generated wildfire would largely depend on the vegetative continuity between the area burning and the site, as well as the structure's susceptibility to embers and radiant heat. Vegetation hazard is the same or less than the alternative sites, and structural ignition hazard can be greatly reduced through the use of non-combustible building materials and Firewise building techniques, leaving Site 1 at the same or decreased risk relative to alternative sites. Overall, Site 1, Pāhoa Fire Station/DMV, has the same or less ignition hazard than the alternative sites.

Suppression Capacity:
Suppression capacity at Site 1 is excellent due to the proximity of Hawaii Fire Department Station 10, adjacent highway for quick and immediate firefighting access, and pressurized water available to the location (Rosario 2018). The suppression capacity at Site 1, Pāhoa Fire Station/DMV, is the same or better than the alternative sites.

<u>Wildfire Mitigation Measures for Site 1, Pāhoa Fire Station/DMV, TMK: 1-5-007:017:</u>

The wildfire hazard for Site 1 is the same or lower than the alternative sites. Its proximity to Hawaii Fire Department Station 10 provides maximum fire suppression capacity. Its position next to the highway (a hardened surface) and well-maintained surrounding vegetation at the police sub-station and fire station parking lot provides reduced vegetative fire fuel hazard compared to the alternative sites.

General wildfire mitigation measures:
HWMO provides wildfire-minded recommendations for all new developments and structures. These would be the same for all alternative sites. In addition to the above mitigation factors, additional actions can further protect against wildfire risk. These include implementing Firewise techniques such as incorporating native and drought-resistant plants in all landscaping features and design, ensuring there is adequate fire suppression access and water resources around the perimeter of the building and in the adjacent undeveloped areas, using only non-combustible building materials, and minimizing public access to any adjacent areas that may contain unmanaged vegetation (and thereby being at risk of ignition by people). HWMO recommends incorporating such features and landscaping choices into the design of the facility to minimize long-term maintenance costs and to maximize wildfire protection for the periods of time when wildfire risk is increased in the surrounding environs due to drought.

LAVA

<u>Lava Hazard for Site 1, Pāhoa Fire Station/DMV, TMK: 1-5-007:017:</u>

Long-term assessment:
The long-term lava hazard assessment for the Puna region has not changed following the 2014-15 activity (Neal 2018). As such, the volcanic hazard assessment for the selected site remains the

same as it was in 2005 in the Environmental Assessment for the adjacent fire station and police substation, within which it is noted that although the site is located in Zone 2, it is positioned near the boundary of Zone 3, with hazards decreasing gradually with distance from the vents.

Short-term assessment:
While the long-term hazard assessments for the area have not changed, the current active status of Puʻu Oʻo may slightly increase the shorter-term hazard than when there is no east rift zone eruption in progress. Lava flows could return to the northeast lines of descent with a change in vent location as it did in 2014 when lava flows came to the outskirts of Pāhoa, but calculating probability for such an occurrence is complicated (Neal 2018). Such an occurrence would impact all alternative sites, leaving Site 1, Pāhoa Fire Station/DMV, with the same or less level of hazard as alternative sites given its location further from the vents.

General hazards:
The following (adapted) excerpts from our original assessment continues to apply to Site 1, Pāhoa Fire Station/DMV:

> The Island of Hawaii is one of the most volcanically active areas of the world. Site 1, Pāhoa Fire Station/DMV, is located in an area of relatively high lava flow risk, lying within Zone 2 (on an ascending scale from 9 to 1, 1 being the highest risk). These zones are based on the location and frequency of historic and prehistoric eruptions. The zones are also determined in consideration of how lava flows may be affected by topographic features. While zone delineations are distinct on the map, the boundaries are more approximate. Hazard variations within one zone may be too fine to map, but some general principals also apply, such as that lava flow hazards generally decrease as the distance from vents increases (Heliker 1990).
>
> In addition to lava flows, other lava-related hazards include airborne lava fragments, also known as tephra, and volcanic gas, and wildfire ignition (detailed above). While these hazards are not incorporated into the lava hazard zone maps, the areas in which they pose the greatest hazards typically coincide with areas of highest lava flow hazard.
>
> Tephra includes ash, cinder, and Pele's hair, and pose the greatest hazard in the immediate vicinity of an erupting vent. However, tephra can be carried downwind of an eruption site by strong winds. This can be problematic and hazardous for those with respiratory sensitivities. Windborne tephra can also pollute and disrupt water-catchment equipment and necessitate the disconnection and cleaning of water catchment systems (Heliker 1990).
>
> Volcanic gases from the vent on Kilauea are comprised of water vapor with sulfur dioxide, carbon dioxide, and hydrogen. Additional gases present in much smaller quantities include carbon monoxide, hydrogen sulfide, and hydrogen fluoride. Extremely small traces of metals have also been detected, but none in sufficient quantity to be deemed a direct health hazard (Heliker 1990). One common gas that is produced by Kilauea eruptions that is harmful to human health and infrastructure is sulfur dioxide.

When this gas mixes with water, it becomes sulfuric acid. Even in small doses, sulfuric acid can be harmful to human health and tissues, as well as deteriorate materials like cloth and metal. Sulfuric acid forms in the atmosphere when gas plumes mix with atmospheric moisture. The resulting acid rain can corrode infrastructure and harm vegetation, particularly in the case of a long-lasting episode. Proximity to eruption site and weather patterns contribute to the level of hazard volcanic gases and their byproducts present.

Mitigation measures for Site 1, Pāhoa Fire Station/DMV, TMK: 1-5-007:017:

Site 1, Pāhoa Fire Station/DMV, is situated farther from the east rift zone than the former library location in Pāhoa. As such, its location has the same or lower risk than the alternative locations in both the long-term and short-term. Additionally, this increased distance also provides a relative decrease in the general exposure to the general impacts noted above when compared with alternative sites.

References and Sources

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Heliker, C.C. 1990. Volcanic and seismic hazards on the Island of Hawaii. U.S. Geological Survey General Information Product.

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Trauernicht, Clay; Pickett, Elizabeth; Giardina, Christian P.; Litton, Creighton M.; Cordell, Susan; Beavers, Andrew. 2015. The contemporary scale and context of wildfire in Hawai'i. Pacific Science. 69(4): 427-444.

Appendix E

Civil Infrastructure Analysis for
Pāhoa Library Site Selection

FINAL

Civil Infrastructure Analysis For Pāhoa Library Site Selection

Puna, Hawai'i, Hawai'i
TMK's: 1-5-002: 020, 1-5-007: 017,
1-5-008: 001, 1-5-008: 003 & 1-5-010: 003

Prepared by:

Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawai'i 96813

October 2017
Project #215069-01

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APPENDIX

Attachment A – Opinion of Probable Onsite Cost

I. Project Description

The Hawaii State Public Library System (HSPLS) is planning for a new public library due to the increasing population growth in the Puna area on the island of Hawai'i. The nearest community libraries in the Puna district include Kea'au Public & School Library, Pāhoa Public & School Library, and the Mountain View Public & School Library. The proposed 9,000-square foot library will provide resources and services that will include meeting room spaces for after-hour use for community groups. Figure 1 highlights the six (6) potential library locations in the Pāhoa area.

II. Site Analysis Criteria

The evaluation elements for site selection for the proposed Pāhoa Library are grouped into three (3) major categories, as follows:

1. Building Site Criteria

   The building site criteria will focus on the following civil engineering aspects of the proposed Pāhoa Library: Site Characteristics and Utilities. Site access and mobility evaluations for the candidate sites can be found in Fehr and Peers' traffic assessment report and will not be addressed within this study.

2. Community Criteria

   Community criteria will not be discussed in this report.

3. Cost Considerations

   It should be noted that onsite improvement costs are dependent upon a definitive site-specific layout for each parcel, which is beyond the scope of this study. Offsite improvement costs for each site, primarily due to ingress and egress traffic improvements mentioned in Fehr and Peers' traffic assessment, will not be discussed.

Point ranking scales were attached to each criterion to yield a quantitative basis for outcome comparisons. The point scales translate to relative quality characteristics as described in each of the scaling tables created for the respective criteria. The sections which follow summarize the evaluative criteria and point scales attached to each.

Aside from Site 2 (Pāhoa District Park) and Site 3, there is only one location proposed for the proposed library at each site. Due to the different points of entry, Site 3 was divided into Sites 3a & 3b, which will be evaluated separately.

Based on discussions with HSPLS, Site 2 has a preferred and alternative location. The preferred and alternative locations, revolves around the future Pāhoa District Park, Phase II improvements. The Pāhoa District Park, Phase I improvements were completed at the end of 2016, and the Phase II improvements are currently on hold.

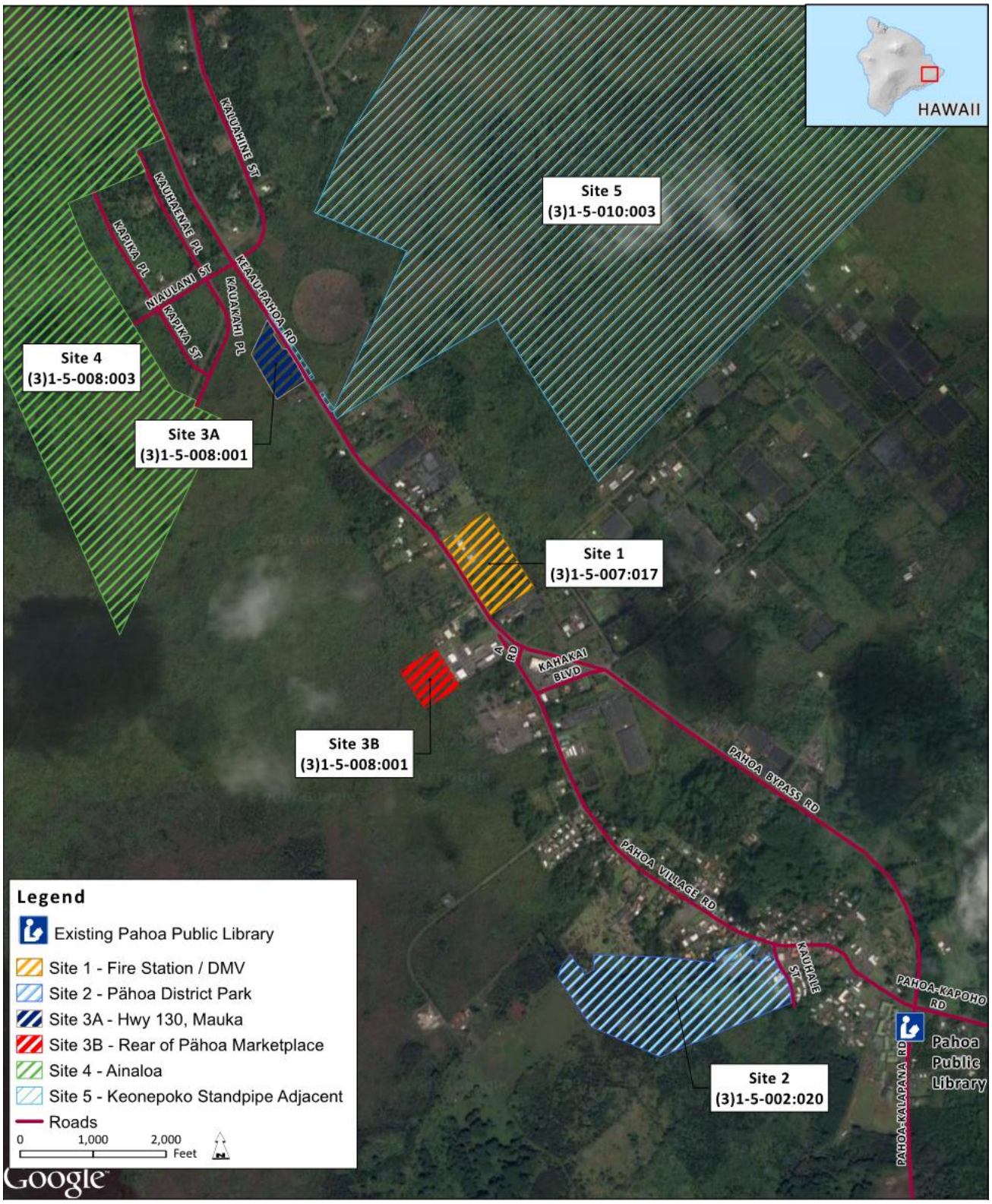


Figure 1 – Pāhoa Library, Potential Site Locations

If the Pāhoa District Park, Phase II improvements proceed, both the preferred and alternate locations will have similar building site criteria and yield similar onsite construction costs. If not, the grading and infrastructure cost difference for the preferred location will be approximately $1,200,000. See Section V for probable cost considerations.

III. Building Site Criteria

A. Site Characteristics

1. Topography

The site should have a slope no greater than five percent (5%). There is additional preference for a site with relatively low slope conditions, for earthwork requirements for construction, reduction of storm water runoff, and ease of pedestrian and vehicular access throughout the site.

Specific Criteria Rating	Rating
Favorable – The average slope of the site is between zero and two percent (0-2%)	Good
Acceptable – The average slope of the site is between two and five percent (2-5%)	Fair
Unfavorable – The average slope of the site is greater than five percent (>5%)	Poor

2. Adequacy of Drainage

The site should have proper drainage to avoid creating onsite and/or offsite flooding conditions.

Specific Criteria Rating	Rating
Favorable – The site is served by existing onsite drainage facilities that are adequate to meet the new facility's needs. Runoff from adjacent lands entering the site is not expected to require drainage improvements on or offsite.	Good
Acceptable – The site will have adequate onsite drainage facilities to serve the needs of the new facility. Modest drainage system improvements are required to handle runoff from the new facility. Drainage system improvements are anticipated by others within five (5) years.	Fair
Unfavorable – The site has inadequate drainage facilities and will require the development of a major drainage system on and/or offsite to serve the new facility. There are no known drainage system plans at this time.	Poor

B. Utilities

1. Adequacy of Water

The site should have a potable water supply with adequate capacity to support the needs of the new facility.

Specific Criteria Rating	Rating
Favorable – The site has adequate water source, transmission lines, and storage capacity to meet ultimate new facility needs, including fire protection. The site has available County of Hawaii, Department of Water Supply (DWS) water unit allocations.	Good
Acceptable – The existing water system requires modest improvements to provide adequate service to meet the needs of the new facility. These improvements are anticipated by others within five (5) years. DWS water unit allocations are unknown.	Fair
Unfavorable – The site has an inadequate water supply and will require the development of a new water system, or major improvements to the existing water system to meet the new facility's needs (i.e. development of a new source, transmission, and/or storage reservoir). No improvements are currently planned. The site does not have sufficient DWS water unit allocations.	Poor

2. Adequacy of Wastewater

The site should be served by a wastewater system that is adequate to meet the needs of the new facility.

Specific Criteria Rating	Rating
Favorable – The site is served by a wastewater system that meets the requirements of the new facility.	Good
Acceptable – The site will be served by adequate wastewater services through a modest extension of the existing collection system which will serve the needs of the new facility.	Fair
Unfavorable – The site has no wastewater services and will require a major extension of the existing collection system. There are no known wastewater improvement plans at this time. Development of an onsite treatment and reclamation system may be required.	Poor

3. Adequacy of Power and Communications

The site should have access to adequate services for electrical supply and communications.

Specific Criteria Rating	Rating
Favorable – The site appears to have or is near adequate electrical and communications services. These services will meet the new facility's requirements.	Good
Acceptable – The site will require modest offsite improvements which will provide adequate power and communications to serve the interim and ultimate needs of the new facility. These improvements are anticipated (by others) within five (5) years.	Fair
Unfavorable – The site has insufficient power or communications services available and will require extensive offsite improvement of these services to meet the new facility's ultimate needs. There are no known service improvement plans at this time.	Poor

IV. Summary of Site Conditions and Characteristics of Six (6) Candidate Sites

Table 1 summarizes the topographic and drainage conditions of the suggested sites. The table indicates proposed site elevations, slopes, soil type, and any nearby streams or rivers which aid in the suggested site evaluation score. General site information is also found in this table that includes existing site conditions, adjacent site uses, property size, and proposed library size and location.

Table 2 summarizes the water, wastewater, electrical and telecommunication utilities for the proposed sites. This table provides the necessary information to achieve an appropriate site evaluation score by presenting existing utility conditions, possible complications, and potential advantages.

TABLE 1: Site Characteristics Assessment – Topography & Drainage

Site Number	Site Name	TMK	General Hydrologic and Drainage Characteristics	Environmental Impact Considerations	General Comments	Site Evaluation Score
1	Fire Station / DMV	1-5-007:017	• Site location elevations range from 604 to 606. Slope is generally 2 percent. • Soil is Keaukaha highly decomposed plant material with fast permeability, high runoff, and bedrock depths of 4 to 14 inches. • No major streams or rivers in vicinity.	• Onsite drainage mitigation measures will be implemented. • Low Impact Development (LID) opportunities will be explored within the storm drainage site design.	• Parcel adjoins Keaʻau-Pāhoa Road (HWY 130) and includes an area of approximately 19 acres. • Proposed library will share the same site with the existing Pāhoa Fire Station and Police Station/DMV. • Proposed location is to the south of existing DMV and includes a site area of 0.9 acres.	Topography and Site Characteristics: Good Drainage: Good
2	Pāhoa District Park	1-5-002:020	• Phase 2 location elevations range from 686 to 693. Slopes range from 1-3 percent. • Phase 1 location elevations range from 700 to 704 feet. Slopes range from 2 to 4 percent. • Soil is Hakuma highly organic hydrous loam with fast permeability, high runoff, and bedrock depths of 3 to 20 inches. • No major streams or rivers in vicinity.	• Onsite drainage mitigation measures will be implemented. • Low Impact Development (LID) opportunities will be explored within the storm drainage site design.	• Parcel adjoins Kauhale Street and includes an area of approximately 71 acres. • Phase 1 of Pāhoa District Park has been recently completed (November 2016). • Phase 2 location is at the rear of the property, approximately 0.5 miles from Kauhale Street. • Two existing drainage basins are located to the north of the new Pāhoa District Park Phase 1. • Curb inlets and drywells are located throughout site.	Topography and Site Characteristics: Fair Drainage: Good
3a	Hwy 130, Mauka	1-5-008:001	• Site location elevations range from 592 to 603. Slope ranges from 1 to 2 percent. • Soil is Keaukaha highly decomposed plant material with fast permeability, high runoff, and bedrock depths of 4 to 14 inches. • No major streams or rivers in vicinity.	• Onsite drainage mitigation measures will be implemented. • Low Impact Development (LID) opportunities will be explored within the storm drainage site design.	• Proposed property is undeveloped. • A small portion of the parcel adjoins Keaʻau-Pāhoa Road (HWY 130) and extends to an area of approximately 5,130 acres westward. • Proposed location is directly adjacent to the Keonepoko Nui water tank on the mauka side of HWY 130 and includes a site area of 0.85 acres.	Topography and Site Characteristics: Good Drainage: Poor
3b	Rear of Pāhoa Marketplace	1-5-008:001	• Site location elevations range from 622 to 639. Slope is generally 3 percent. • Soil is Keaukaha highly decomposed plant material with fast permeability, high runoff, and bedrock depths of 4 to 14 inches. • An unnamed stream is in the vicinity.	• Onsite drainage mitigation measures will be implemented. • Low Impact Development (LID) opportunities will be explored within the storm drainage site design. • Drainage impacts on the possible unnamed stream will be minimized.	• Proposed property is undeveloped. • A small portion of the parcel adjoins Keaʻau-Pāhoa Road (HWY 130) and extends to an area of approximately 5,130 acres westward. • Proposed location is located to the rear of the existing Pāhoa Marketplace and includes a site area of 0.9 acres.	Topography and Site Characteristics: Fair Drainage: Poor
4	Ainaola	1-5-008:003	• Site location elevations range from 529 to 537. Slope ranges from 0.5 to 1 percent. • Soil is Keaukaha highly decomposed plant material with fast permeability, high runoff, and bedrock depths of 4 to 14 inches. • No major streams or rivers in vicinity.	• Onsite drainage mitigation measures will be implemented. • Low Impact Development (LID) opportunities will be explored within the storm drainage site design.	• Proposed property is undeveloped. • Parcel adjoins Keaʻau-Pāhoa Road (HWY 130) and includes an area of approximately 524 acres. • Proposed location is situated between Keaʻau-Pāhoa Road and Kauakahi Place and includes a site area of approximately 0.85 acres.	Topography and Site Characteristics: Good Drainage: Poor
5	Keonepoko Standpipe Adjacent	1-5-010:003	• Site location elevations range from 588 to 598. Slope is generally 2 percent. • Soil is Keaukaha highly decomposed plant material with fast permeability, high runoff, and bedrock depths of 4 to 14 inches. • No major streams or rivers in vicinity.	• Onsite drainage mitigation measures will be implemented. • Low Impact Development (LID) opportunities will be explored within the storm drainage site design.	• Proposed property is undeveloped. • Parcel adjoins Keaʻau-Pāhoa Road (HWY 130) and includes an area of approximately 524 acres. • Proposed location is located on the makai side of Keaʻau-Pāhoa Road across from the Keonepoko Nui water tank and includes a site area of no more than an acre.	Topography and Site Characteristics: Good Drainage: Poor

TABLE 2: Site Characteristics Assessment – Utilities

Site Number	Site Name	TMK	Utility Type	Availability	Limitations	Opportunities	Site Evaluation Score
1	Fire Station / DMV	1-5-007:017	Water	An existing 6-in and 12-in water main lies within HWY 130 (Keaʻau-Pāhoa Road).	Connections to DWS water system must comply with current water system standards and standard details for water system connections.	Installation of fire hydrants and sprinkler systems will be required/explored. Proximity to water mains possibly beneficial.	Fair
			Wastewater	Nearest connection point to wastewater system is located within property via privately managed onsite septic tanks.	Proposed site is not within the limits of the Hawaii County wastewater system. Existing privately-maintained wastewater system may be at its capacity. Private wastewater facility required along with necessary permit applications for construction and operation.	If designed average daily flow is less than 1,000 gpd an individual wastewater system (IWS) can be used. If designed average daily flow is greater than 1,000 gpd, a waste water treatment works (WTW) will need to be designed.	Poor
			Electrical/Telecom	Potential connections appear to be along HWY 130 (Keaʻau-Pāhoa Road) via overhead lines. Availability to be confirmed.	Electrical and telecom system shall be designed and coordinated with the applicable utility agency. Additional costs may be assessed if service is needed a distance beyond utility lines.	Electrical and telecommunication services provided by HELCO and Hawaiian Telecom respectively. Site proximity to utility lines favorable.	Good
2	Pāhoa District Park	1-5-002:020	Water	Nearest connection point to water system is within Pāhoa District Park which is served by an existing 8-in water main within Kauhale Street.	Connections to DWS water system must comply with current water system standards and standard details for water system connections.	Nearest connection point to water system is within Pāhoa District Park. An existing 8-in water main lies within Kauhale Street. Installation of additional fire hydrants and sprinkler systems will be analyzed.	Fair
			Wastewater	Nearest wastewater system is located within Pāhoa District Park via privately managed onsite septic tanks.	Proposed site is not within the limits of the Hawaii County wastewater system. Existing privately-maintained wastewater system may be at its capacity. Private wastewater facility required along with necessary permit applications for construction and operation.	If designed average daily flow is less than 1,000 gpd an individual wastewater system (IWS) can be used. If designed average daily flow is greater than 1,000 gpd, a waste water treatment works (WTW) will need to be designed.	Poor
			Electrical/Telecom	Potential connections appear to be along HWY 130 (Keaʻau-Pāhoa Road) via overhead lines. Availability to be confirmed.	Electrical and telecom system shall be designed and coordinated with the applicable utility agency. Additional costs may be assessed if service is needed a distance beyond utility lines.	Electrical and telecommunication services provided by HELCO and Hawaiian Telecom respectively.	Fair
3a	Hwy 130, Mauka	1-5-008:001	Water	An existing 6-in and 12-in water main lies within HWY 130 (Keaʻau-Pāhoa Road).	Connections to DWS water system must comply with current water system standards and standard details for water system connections.	Installation of fire hydrants and sprinkler systems will be required/explored. Proximity to water mains possibly beneficial.	Fair
			Wastewater	No wastewater records available.	Proposed site is not within the limits of the Hawaii County wastewater system. Private wastewater facility required as well as necessary permit applications for construction and operation.	If designed average daily flow is less than 1,000 gpd an individual wastewater system (IWS) can be used. If designed average daily flow is greater than 1,000 gpd, a waste water treatment works (WTW) will need to be designed.	Poor
			Electrical/Telecom	Potential connections appear to be along HWY 130 (Keaʻau-Pāhoa Road) via overhead lines. Availability to be confirmed.	Electrical and telecom system shall be designed and coordinated with the applicable utility agency. Additional costs may be assessed if service is needed a distance beyond utility lines.	Electrical and telecommunication services provided by HELCO and Hawaiian Telecom respectively. Site proximity to utility lines favorable.	Fair

Site Number	Site Name	TMK	Utility Type	Availability	Limitations	Opportunities	Site Evaluation Score
3b	Rear of Pāhoa Marketplace	1-5-008:001	Water	Pāhoa Marketplace is served by either 6-in or 12-in water mains.	Connections to County water system must comply with current water system standards and standard details for water system connections.	Installation of fire hydrants and sprinkler systems will be required/explored.	Fair
			Wastewater	No wastewater records available.	Proposed site is not within the limits of the Hawaii County wastewater system. Private wastewater facility required along with necessary permit applications for construction and operation.	If designed average daily flow is less than 1,000 gpd an individual wastewater system (IWS) can be used. If designed average daily flow is greater than 1,000 gpd, a waste water treatment works (WTW) will need to be designed.	Poor
			Electrical/Telecom	Potential connections appear to be along HWY 130 (Keaʻau-Pāhoa Road) via overhead lines. Availability to be confirmed.	Electrical and telecom system shall be designed and coordinated with the applicable utility agency. Additional costs may be assessed if service is needed a distance beyond utility lines.	Electrical and telecommunication services provided by HELCO and Hawaiian Telecom respectively.	Fair
4	Ainaola	1-5-008:003	Water	Existing 12-in water main lies within HWY 130 (Keaʻau-Pāhoa Road)	Connections to County water system must comply with current water system standards and standard details for water system connections.	Installation of fire hydrants and sprinkler systems will be required/explored. Proximity to water mains possibly beneficial.	Fair
			Wastewater	Nearest wastewater system is located within property via a privately managed cesspool.	Proposed site is not within the limits of the Hawaii County wastewater system. Private wastewater facility required along as well as necessary permit applications for construction and operation.	If designed average daily flow is less than 1,000 gpd an individual wastewater system (IWS) can be used. If designed average daily flow is greater than 1,000 gpd, a waste water treatment works (WTW) will need to be designed.	Poor
			Electrical/Telecom	Potential connections appear to be along HWY 130 (Keaʻau-Pāhoa Road) via overhead lines. Availability to be confirmed.	Electrical and telecom system shall be designed and coordinated with the applicable utility agency. Additional costs may be assessed if service is needed a distance beyond utility lines.	Electrical and telecommunication services provided by HELCO and Hawaiian Telecom respectively. Site proximity to utility lines favorable.	Fair
5	Keonepoko Standpipe Adjacent	1-5-010:003	Water	An existing 6-in and 12-in water main lies within HWY 130 (Keaʻau-Pāhoa Road)	Connections to County water system must comply with current water system standards and standard details for water system connections.	Installation of fire hydrants and sprinkler systems will be required/explored. Proximity to water mains possibly beneficial.	Fair
			Wastewater	Nearest wastewater system is located within property via a privately managed septic tank	Proposed site is not within the limits of the Hawaii County wastewater system. Privately-managed wastewater system may be at its capacity and location needs to be confirmed. Private wastewater facility required along with necessary permit applications for construction and operation.	If designed average daily flow is less than 1,000 gpd an individual wastewater system (IWS) can be used. If designed average daily flow is greater than 1,000 gpd, a waste water treatment works (WTW) will need to be designed.	Poor
			Electrical/Telecom	Potential connections appear to be along HWY 130 (Keaʻau-Pāhoa Road) via overhead lines. Availability to be confirmed.	Electrical and telecom system shall be designed and coordinated with the applicable utility agency. Additional costs may be assessed if service is needed a distance beyond utility lines.	Electrical and telecommunication services provided by HELCO and Hawaiian Telecom respectively. Site proximity to utility lines favorable.	Fair

V. Cost Considerations

A preliminary opinion of probable onsite construction costs was developed based the conceptual layouts for each site. For purposes of this report, onsite costs include installation of the required systems for water supply, wastewater management, drainage, site work, and grading/earthwork. It should be noted that there will inevitably be construction cost variations between each site due to the site-specific design requirements, which will be dependent upon the site-specific layout of the library. The onsite construction estimate provided is intended only to serve as a general rough order of magnitude cost. Table 4 summarizes the opinion of probable construction costs for the applicable onsite civil site improvements.

Offsite improvement costs were evaluated based on the extension of water system improvements, and offsite roadway system improvements. However, due to each site's proximity to water and access infrastructure systems, the offsite costs were deemed negligible in differentiating cost between all the sites.

TABLE 4 – Opinion of Probable Civil Infrastructure Construction Costs

Site Number	Site Name	Onsite Improvements	Offsite Improvements	Total Improvements
1	Fire Station / DMV	$1,760,000	$50,000	$1,810,000
2	Pāhoa District Park	$2,080,000*	$50,000	$2,130,000*
		$2,800,000**		$2,850,000**
3a	Hwy 130, Mauka	$2,020,000	$70,000	$2,090,000
3b	Rear of Pāhoa Marketplace	$2,060,000	$60,000	$2,120,000
4	Ainaola	$2,050,000	$70,000	$2,120,000
5	Keonepoko Standpipe Adjacent	$2,120,000	$70,000	$2,190,000

*Cost of improvements for preferred & alternate location with Phase II improvements
**Cost of improvements for preferred location without Phase II improvements

For a detailed breakdown on probable construction costs, refer to Attachment A – Opinion of Probable Onsite Cost.

VI. Evaluation of the Sites for Civil Infrastructure

The six (6) Pāhoa Library sites were evaluated on various technical aspects related to civil engineering (i.e. existing utility services, grading, and drainage, etc.) and each site was ranked accordingly. A summary of the rating criteria results identified in Section IV for each site is presented in Table 5.

TABLE 5: Summary of Site Conditions and Characteristics for Each Site

Site	Site Characteristics		Utilities			Total
	Topography	Drainage	Water	Wastewater	Power & Communication	
Site 1: Fire Station / DMV	Good	Good	Fair	Poor	Good	Good
Site 2: Pāhoa District Park	Fair	Good	Fair	Poor	Fair	Fair
Site 3a: Hwy 130, Mauka	Good	Poor	Fair	Poor	Fair	Fair
Site 3b: Rear of Pāhoa Marketplace	Fair	Poor	Fair	Poor	Fair	Poor
Site 4: Ainaloa	Good	Poor	Fair	Poor	Fair	Fair
Site 5: Keonepoko Standpipe Adjacent	Good	Poor	Fair	Poor	Fair	Fair

Attachment A – Probable Onsite Costs

Appendix A - Opinion of Probable Onsite Cost

Site 1: Fire Station / DMV

Item	Qty	Unit	Unit Cost	Total
Earthwork*	1	LS	$400,000	$400,000.00
Site Work	1	LS	$310,000	$310,000.00
Water System	1	LS	$70,000	$70,000.00
Wastewater System	1	LS	$490,000	$490,000.00
Drainage System	1	LS	$190,000	$190,000.00
			Subtotal	$1,460,000.00
			20% Contingency	$292,000.00
			Total Onsite Construction Cost for Site A	$1,752,000.00
			SAY	$1,760,000.00

Site 2: Pāhoa District Park (preferred & alternate locations with Phase II improvements)

Item	Qty	Unit	Unit Cost	Total
Earthwork*	1	LS	$640,000	$640,000.00
Site Work	1	LS	$350,000	$350,000.00
Water System	1	LS	$80,000	$80,000.00
Wastewater System	1	LS	$500,000	$500,000.00
Drainage System	1	LS	$160,000	$160,000.00
			Subtotal	$1,730,000.00
			20% Contingency	$346,000.00
			Total Onsite Construction Cost for Site A	$2,076,000.00
			SAY	$2,080,000.00

Site 2: Pāhoa District Park (preferred location without Phase II improvements)

Item	Qty	Unit	Unit Cost	Total
Earthwork*	1	LS	$850,000	$850,000.00
Site Work	1	LS	$550,000	$550,000.00
Water System	1	LS	$140,000	$140,000.00
Wastewater System	1	LS	$500,000	$500,000.00
Drainage System	1	LS	$290,000	$290,000.00
			Subtotal	$2,330,000.00
			20% Contingency	$466,000.00
			Total Onsite Construction Cost for Site A	$2,796,000.00
			SAY	$2,800,000.00

*Estimated earthwork quantities assume a balance of excavation and embankment. Earthwork quantities can vary significantly depending on the final site-specific layout.

Appendix A - Opinion of Probable Onsite Cost

Site 3a: Hwy 130, Mauka

Item	Qty	Unit	Unit Cost	Total
Earthwork*	1	LS	$560,000	$560,000.00
Site Work	1	LS	$340,000	$340,000.00
Water System	1	LS	$80,000	$80,000.00
Wastewater System	1	LS	$500,000	$500,000.00
Drainage System	1	LS	$200,000	$200,000.00
			Subtotal	$1,680,000.00
			20% Contingency	$336,000.00
			Total Onsite Construction Cost for Site A	$2,016,000.00
			SAY	$2,020,000.00

Site 3b: Rear of Pāhoa Marketplace

Item	Qty	Unit	Unit Cost	Total
Earthwork*	1	LS	$650,000	$650,000.00
Site Work	1	LS	$325,000	$325,000.00
Water System	1	LS	$70,000	$70,000.00
Wastewater System	1	LS	$500,000	$500,000.00
Drainage System	1	LS	$170,000	$170,000.00
			Subtotal	$1,715,000.00
			20% Contingency	$343,000.00
			Total Onsite Construction Cost for Site A	$2,058,000.00
			SAY	$2,060,000.00

Site 4: Ainaloa

Item	Qty	Unit	Unit Cost	Total
Earthwork*	1	LS	$600,000	$600,000.00
Site Work	1	LS	$350,000	$350,000.00
Water System	1	LS	$80,000	$80,000.00
Wastewater System	1	LS	$500,000	$500,000.00
Drainage System	1	LS	$180,000	$180,000.00
			Subtotal	$1,710,000.00
			20% Contingency	$342,000.00
			Total Onsite Construction Cost for Site A	$2,052,000.00
			SAY	$2,050,000.00

*Estimated earthwork quantities assume a balance of excavation and embankment. Earthwork quantities can vary significantly depending on the final site-specific layout.

Appendix A - Opinion of Probable Onsite Cost

Site 5: Keonepoko Standpipe Adjacent

Item	Qty	Unit	Unit Cost	Total
Earthwork*	1	LS	$600,000	$600,000.00
Site Work	1	LS	$380,000	$380,000.00
Water System	1	LS	$105,000	$105,000.00
Wastewater System	1	LS	$500,000	$500,000.00
Drainage System	1	LS	$185,000	$185,000.00
			Subtotal	$1,770,000.00
			20% Contingency	$354,000.00
			Total Onsite Construction Cost for Site A	$2,124,000.00
			SAY	$2,120,000.00

*Estimated earthwork quantities assume a balance of excavation and embankment. Earthwork quantities can vary significantly depending on the final site-specific layout.

Appendix F

Pāhoa Library
Preliminary Biological Assessment

Rana Biological Consulting, Inc.

June 2, 2017

Jeff Seastrom
Group 70
925 Bethel Street, 5th Floor
Honolulu Hawaii 96813

Re: Pahoa Library -Preliminary Biological Assessment of the various sites under consideration

Aloha Jeff,

I visited the sites on May 3, 2017 and conducted a preliminary assessment of potential biological issues regarding botanical and faunal resources that are protected under federal and/or State of Hawaii endangered species statutes. The sites visits consisted simply of looking at the sites from outside of them, none were entered and no formal biological surveys were conducted.

Given the sites still under consideration it is unlikely that any will contain listed botanical resources. The obvious caveat is that until a complete floristic survey is conducted of the sites selected to move forward in the selection process we cannot state that there are no botanical issues, but given the area and the habitat on the sites it is unlikely.

The following four listed avian and one mammalian species will be of concern to state and federal wildlife regulators. Hawaiian Petrel (*Pterodroma sandwichensis*), Newell's shearwater (*Puffinus newelli*), Band-rumped Storm-Petrel (*Oceanodroma castro*), Hawaiian Hawk (*Buteo solitarius*) and Hawaiian hoary bat (*Lasiurus cinereus semotus*) for all sites, though possibly in different combinations.

The minimization measures that will be required by the wildlife agencies on whatever site is selected to minimize to the maximum extent practicable potential light attraction issues associated with the three protected seabird species; Hawaiian Petrel, Newell's Shearwater and Band-rumped Storm-Petrel that overfly all of the sites will require that all exterior lighting installed in association with the facilities built, will contain 100% cutoff luminaires, that are installed parallel to the ground and are completely shielded to eliminate visible light above the lighting fixture (Dark sky complaint). We have conducted ornithological radar studies close to the Coast Guard site and can confirm that nocturnal flying seabirds do fly over the general area.

Minimization measures that will be required on all sites to reduce the potential of impacts to pupping Hawaiian hoary bats will be a restriction on cutting woody vegetation 5 meters or taller between June 1 and September 15.

P.O. Box 1371, Kailua, Kona, Hawaii 964745

Potential issues with Hawaiian Hawk nesting are not quite as cut and dried as the other issues and minimization measures outlined above. Hawaiian Hawks are present in the area. The issue from a bio-regulatory perspective is that the nesting birds not be disturbed. If a site is selected that contains suitable nesting trees, basically fairly large mature trees, then Hawaiian Hawk nesting surveys will need to be done if construction activity will occur during their prolonged nesting period, basically from February through July or so. If nesting activity is detected, then no vegetation clearing or construction can proceed until the nest fails or the chicks fledge.

Without doing complete surveys it is difficult to rank the sites from the perspective of potential bio-regulatory compliance issues. Site 5 is so large that I cant say much about it until a smaller area is selected, but it is safe to assume that Hawaiian Hawk and Hawaiian hoary bats are possible issues on the site. In Table 1, I have attempted to provide a preliminary ranking based on the number and potential severities in construction delays associated with each site based on the over-the-wall look see that I completed. As can be seen from the Table – 1, and the attached map, Site Pahoa 1 stands shoulders above the other sites in the smallest number of potential biological issues, Site Pahoa 2 is clearly the worst, due to the large mature trees and heavy woody vegetation present on that site, the other four are close to being the same.

Table 1 – Preliminary Ranking of the Pahoa Library Sites Based on Potential Biological Compliance issues

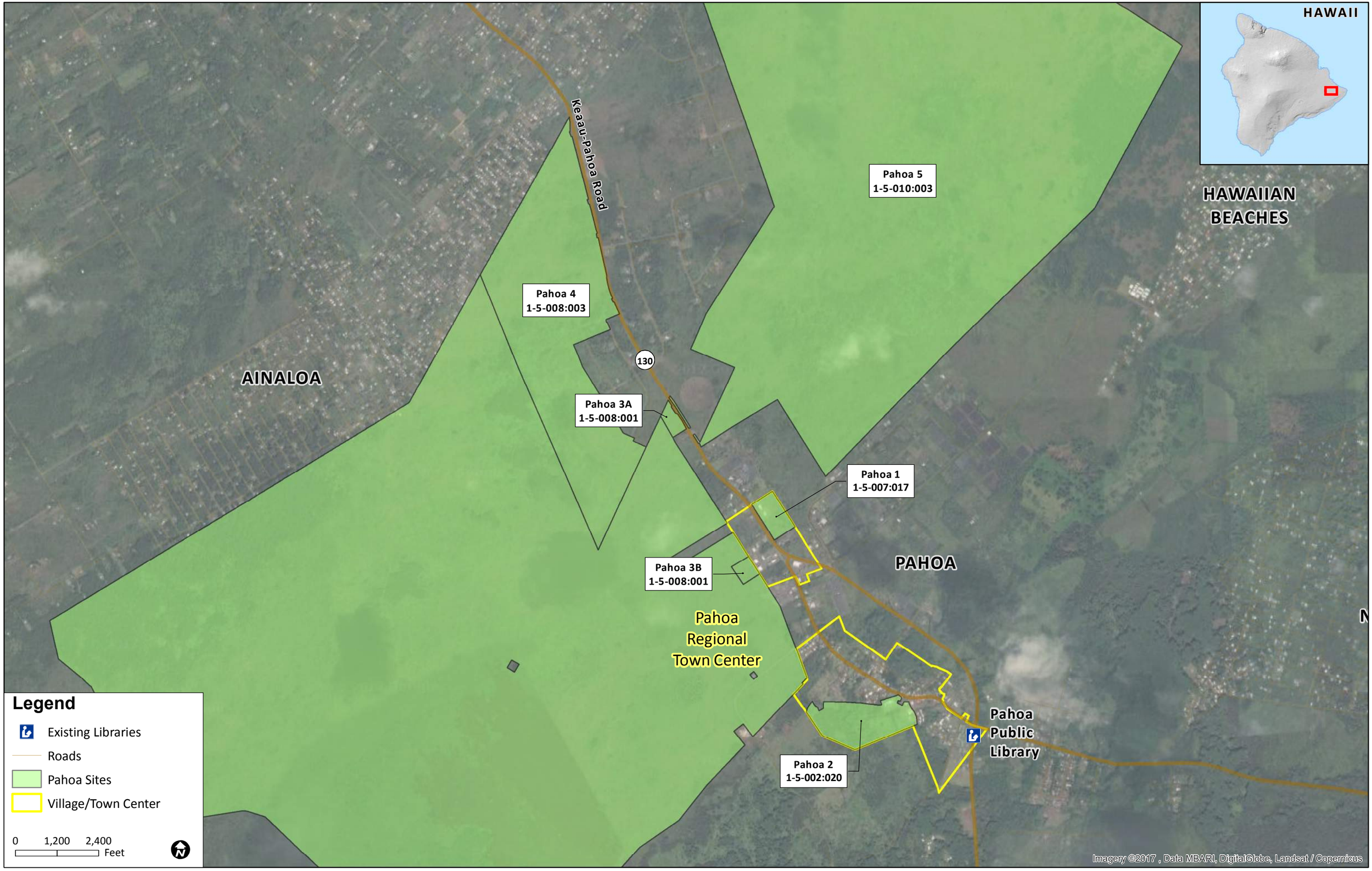
Site #	***Site Name***	***TMK***	***Acres***	***Bio issues***	***Rank***
Pahoa 1	Fire Station /DMV	1-5-007:017	19.46	Bat?	1
Pahoa 2	Pahoa District Park	1-5-002:020	71.21	Hawk, Bat	6
Pahoa 3a	HWY 130 Dep. Water Supply	1-5-008:001	5.00	Hawk, Bat	3
Pahoa 3b	Pahoa Marketplace	1-5-008:001	5.00	Hawk, Bat	2
Pahoa 4	DHHL Ainaloa	1-5-008:003	524.43	Hawk, Bat?	2
Pahoa 5	Keonepoko standpipe HWY 130	1-5-010:003	3879.57	Hawk, Bat	3

If you have any questions about this letter report please feel free to call me with any questions.

Sincerely,

Reginald E. David

Attachment: Site Map


HAWAII
HAWAIIAN BEACHES
Keaau-Pahoa Road
Pahoa 5
1-5-010:003
Pahoa 4
1-5-008:003
130
AINALOA
Pahoa 3A
1-5-008:001
Pahoa 1
1-5-007:017
PAHOA
Pahoa 3B
1-5-008:001
Pahoa
Regional
Town Center
Pahoa
Public
Library
Pahoa 2
1-5-002:020
Legend
Existing Libraries
Roads
Pahoa Sites
Village/Town Center
0 1,200 2,400
Feet
Imagery ©2017 , Data MBARI, DigitalGlobe, Landsat / Copernicus

Appendix G

Early Consultation Comments

Eileen O'Hara
Council Member
Council District 4

Chair: *Environmental Management Committee*

Phone: *(808) 965-2712*
Fax: *(808) 961-8912*
Email: eileen.ohara@hawaiicounty.gov

Vice Chair: *Planning Committee and Agriculture, Water & Energy Sustainability Committee*

County of Hawaii

Hawaii County Council

25 Aupuni Street, Suite 1402 • Hilo, Hawai'i 96720

January 31, 2018

G70
925 Bethel Street, 5th Floor
Honolulu, HI 96813

RE: Pre-Consultation for Draft EA on Pāhoa Public Library Site Selection (Puna)

To Whom It May Concern:

Thank you for providing a request for comment on the development of a Draft Environmental Assessment for the Pāhoa Public Library Site Selection. Below are my comments:

1) I agree that two sites are needed to service the rapidly growing population of the Puna District which now represents 25% of the entire island's population at nearly 50,000 individuals. I hope that progress will also be made in selecting a site for Upper Puna as the sites provided in this communication do not lend themselves to servicing that area. Further, it would make more sense to refer to this development as a Learning Center instead of Library which is somewhat antiquated terminology in our digital age.

2) Of the Candidate Sites, the Site 2 appears the best for the following reasons.
   a. First, there is over 20 acres of unused property of the new Puna District Park set aside for Phase II development. As the County does not have immediate plans or funding to move on Phase II, this would be a good use of the proposed 9,000 square foot piece of land which could be conveyed to the State through an executive order if necessary.

   b. Secondly, Site 2 also has existing overflow parking without requiring more than 30 parking stalls be developed as part of this project. The new District Park has excess parking to serve that need. That site is accessible from public transportation and is located within easy walking distance of downtown Pāhoa, Pāhoa School, and Hawai'i Academy of Arts and Sciences (HAAS). The number of students at both facilities opting for digital learning tracks could be supported at this learning center.

c. Third, the problem with Site 1 is that direct access from Highway 130 is prohibitive due to the proximity of the newly constructed roundabout and the need to allow unobstructed egress and ingress of emergency vehicles from the adjacent County Fire and Police stations. Site 1 would require additional road construction to link it with access roads, in which case 30 parking stalls wouldn't be sufficient to accommodate large functions at the future facility, especially considering there is no roadside parking in that area. That site is also not accessible by pedestrians, especially school-aged children attending either Pāhoa School or HAAS.

d. Site 3 is not preferred due to its remote location from Pāhoa Village. It would not be accessible except by automobile and public transit.

Thank you for providing me an opportunity to weigh in on this proposed development of a new library for the Puna district.

Sincerely,

Eileen O'Hara

Eileen O'Hara, Councilmember
Hawai'i County Council, District 4
(808) 965-2712

Harry Kim
Mayor

Wilfred M. Okabe
Managing Director

William A. Kucharski
Director

Diane A. Noda
Deputy Director

County of Hawai'i

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

345 Kekūanāo'a Street, Suite 41 · Hilo, Hawai'i 96720
Ph: (808) 961-8083 • Fax: (808) 961-8086
cohdem@co.hawaii.hi.us
http://www.hawaiicounty.gov/environmental-management/

January 25, 2018

Via email only: viv@g70.design

Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawai'i 96813-4307

Attn: Vi Verawudh

Subject: Pre-Consultation for Draft Environmental Assessment
Pāhoa Public Library Site Selection (Puna, Island of Hawai'i, Hawai'i)

Dear G70:

Pursuant to your January 5, 2018, letter requesting comments, the Department of Environmental Management of the County of Hawai'i submits the following:

The Solid Waste Division has reviewed the Pre-Consultation for Draft Environmental Assessment and offers the following comments and/or recommendations (contact the Solid Waste Division for details):

(X) No comments.
( ) Commercial operations, State and Federal agencies, religious entities and non-profit organization may not use transfer stations for disposal.
( ) Aggregates and any other construction/demolition waste should be responsibly reused to its fullest extent.
( ) Ample and equal room should be provided for rubbish and recycling.
( ) Green waste may be transported to the green waste sites located at the West Hawai'i Organics Facility and East Hawai'i Organics Facility, or other suitable diversion programs.
( ) Construction and demolition waste is prohibited at all County Transfer Stations.
( ) Submit Solid Waste Management Plan in accordance with attached guidelines.

( ) Existing Solid Waste Management Plan is to be followed. Provide update to the department on current status.
( ) Other: _____

The Wastewater Division has reviewed the Pre-Consultation for Draft Environmental Assessment and offers the following comments and/or recommendations (contact the Wastewater Division for details):

(X) No comments.
( ) Require connection of existing and/or proposed structures to the public sewer in accordance with Section 21-5 of the Hawai'i County Code.
( ) Require Council Resolution to approve sewer extension in accordance with Section 21-26.1 of the Hawai'i County Code. Complete Sewer Extension Application.
( ) Require extension of the sewer system to service the proposed subdivision in accordance with Section 23-85 of the Hawai'i County Code.
( ) *Check or line out as applicable*: [ ] If required by the Director of the Department of Environmental Management ("Director of DEM"), [ ] applicant shall conduct a sewer study in accordance with the then applicable wastewater system design standards prior to approval to connect to the County sewer system. Applicant shall provide such sewer line or other facility improvements as the Director of DEM may reasonably require, which the sewer study may indicate are advisable for mitigation of impacts of the proposed project. Contact Wastewater Division Chief for details.
( ) Other: _____

Thank you for allowing us to review and comment on the subject matter.

Sincerely,

William A. Kucharski
Director

WK:mef

Harry Kim
Mayor

Wil Okabe
Managing Director

Allan G. Simeon, P.E.
Acting Director

Merrick H. Nishimoto
Acting Deputy Director

County of Hawai'i
DEPARTMENT OF PUBLIC WORKS
Aupuni Center
101 Pauahi Street, Suite 7 · Hilo, Hawai'i 96720-4224
(808) 961-8321 · Fax (808) 961-8630
public_works@hawaiicounty.gov

FEBRUARY 5, 2018

ATTN: VI VERAWUDH
G70
925 BETHEL STREET, 5TH FLOOR
HONOLULU, HAWAII 96813-4307
(via email to viv@g70.design)

SUBJECT: PRE-CONSULTATION FOR DRAFT ENVIRONMENTAL ASSESSMENT
PAHOA PUBLIC LIBRARY SITE SELECTION
PUNA DISTRICT, ISLAND OF HAWAII, HAWAII
TMKS: (3) 1-5-002:020, 1-5-007:017, 1-5-008:001

We received the subject dated January 8, 2018 and have the following comments:

The subject parcels are in an area designated as Zone X on the Flood Insurance Rate Map (FIRM) by the Federal Emergency Management Agency (FEMA). Zone X is an area determined to be outside the 500-year floodplain.

All activities shall comply with the requirements of Hawaii County Code, Chapter 10, Erosion and Sedimentary Control.

All development-generated runoff shall be disposed of on site and not directed toward any adjacent properties.

Should there be any questions concerning this matter, please contact Ms. Robyn Matsumoto in our Engineering Division at (808) 961-8924.

BEN ISHII, Division Chief
Engineering Division

RM

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI'I
345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAI'I 96720
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

February 23, 2018

Ms. Vi Verawudh
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, HI 96813-4307

Dear Ms. Verawudh:

Subject: Pre-Environmental Assessment Consultation
Pāhoa Public Library Site Selection
Tax Map Key 1-5-002:020, 1-5-007:017 and 1-5-008:001

This is in response to your Pre-Environmental Assessment Consultation letter of January 5, 2018.

Upon receipt and review of the Environmental Assessment, we will request that estimated maximum daily water demand calculations be provided by a professional engineer licensed in the State of Hawai'i. Based on the calculations provided and the proposed library, we will determine if water can be made available and any necessary water system improvements required.

Water availability for each of the proposed Pāhoa Library sites, as noted in your letter, is described below:

Site 1 - Pāhoa Park – Tax Map Key 1-5-002:020
Please be informed that due to the development of the parcel, additional water is not available.

Site 2 - Pāhoa Fire Station/Pāhoa Police Station – Tax Map Key 1-5-007:017
Please be informed that due to the development of the parcel, a limited amount of additional water may be available.

Site 3 - State of Hawai'i Parcel – Tax Map Key 1-5-008:001
Please be informed there is an existing 12-inch waterline within Kea'au-Pāhoa Road fronting the subject parcel. The current water availability conditions in the area can provide a maximum of seven (7) units of water, or average daily water demand of 2,800 gallons per day (400 gallons per day, per unit of water) for each pre-existing lot of record.

Water availability for the subject parcel will also depend on the pressure limits of the existing water system. A large portion of the parcel is located at an elevation such that sufficient pressure will not be available. Under this condition, this parcel is limited to one (1) unit of water, or one 5/8-inch meter.

Should there be any questions, please contact Mr. Ryan Quitoriano of our Water Resources and Planning Branch at 961-8070, extension 256.

Sincerely yours,

Keith K. Okamoto, P.E.
Manager-Chief Engineer

RQ:dfg

Harry Kim
Mayor

Darren J. Rosario
Fire Chief

Renwick J. Victorino
Deputy Fire Chief

County of Hawai'i
HAWAI'I FIRE DEPARTMENT
25 Aupuni Street • Suite 2501 • Hilo, Hawai'i 96720
(808) 932-2900 • Fax (808) 932-2928

January 24, 2018

Christine Mendes Ruotola,AICP, LEED AP Principal
G70
925 Bethel Street, 5th Floor
Honolulu, HI 96813-4307
Attn: Vi Verawudh

Dear Ms. Ruotola

SUBJECT: Pre-Consultation for Draft Environmental Assessment
Pāhoa Public Library Site Selection (Puna, Island of Hawai'i, Hawai'i)

In regards to the above-referenced Draft Environmental Assessment and Conservation District Use application, the following shall be in accordance:

NFPA 1, UNIFORM FIRE CODE, 2006 EDITION
Note: Hawai'i State Fire Code, National Fire Protection Association 2006 version, with County of Hawaii amendments. County amendments are identified with a preceding "C~" of the reference code.

Chapter 18 Fire Department Access and Water Supply

18.1 General. Fire department access and water supplies shall comply with this chapter.

For occupancies of an especially hazardous nature, or where special hazards exist in addition to the normal hazard of the occupancy, or where access for fire apparatus is unduly difficult, or areas where there is an inadequate fire flow, or inadequate fire hydrant spacing, and the AHJ may require additional safeguards including, but not limited to, additional fire appliance units, more than one type of appliance, or special systems suitable for the protection of the hazard involved.

18.1.1 Plans.

18.1.1.1 Fire Apparatus Access. Plans for fire apparatus access roads shall be submitted to the fire department for review and approval prior to construction.

18.1.1.2 Fire Hydrant Systems. Plans and specifications for fire hydrant systems shall be submitted to the fire department for review and approval prior to construction.

C~ 18.1.1.2.1 Fire Hydrant use and Restrictions. No unauthorized person shall use or operate any Fire hydrant unless such person first secures permission or a permit from the owner or representative of the department, or company that owns or governs that water supply or system. Exception: Fire Department personnel conducting firefighting operations, hydrant testing, and/or maintenance, and the flushing and acceptance of hydrants witnessed by Fire Prevention Bureau personnel.

18.2 Fire Department Access.

18.2.1 Fire department access and fire department access roads shall be provided and maintained in accordance with Section 18.2.

18.2.2* Access to Structures or Areas.

18.2.2.1 Access Box(es). The AHJ shall have the authority to require an access box(es) to be installed in an accessible location where access to or within a structure or area is difficult because of security.

18.2.2.2 Access to Gated Subdivisions or Developments. The AHJ shall have the authority to require fire department access be provided to gated subdivisions or developments through the use of an approved device or system.

18.2.2.3 Access Maintenance. The owner or occupant of a structure or area, with required fire department access as specified in 18.2.2.1 or 18.2.2.2, shall notify the AHJ when the access is modified in a manner that could prevent fire department access.

18.2.3 Fire Department Access Roads. (*may be referred as FDAR)

18.2.3.1 Required Access.

18.2.3.1.1 Approved fire department access roads shall be provided for every facility, building, or portion of a building hereafter constructed or relocated.

18.2.3.1.2 Fire Department access roads shall consist of roadways, fire lanes, parking lots lanes, or a combination thereof.

18.2.3.1.3* When not more than two one- and two-family dwellings or private garages, carports, sheds, agricultural buildings, and detached buildings or structures 400ft^2 (37 m^2) or less are present, the requirements of 18.2.3.1 through 18.2.3.2.1 shall be permitted to be modified by the AHJ.

18.2.3.1.4 When fire department access roads cannot be installed due to location on property, topography, waterways, nonnegotiable grades, or other similar conditions, the AHJ shall be authorized to require additional fire protection features.

18.2.3.2 Access to Building.

18.2.3.2.1 A fire department access road shall extend to within in 50 ft (15 m) of at least one exterior door that can be opened from the outside that provides access to the interior of the building. Exception: 1 and 2 single-family dwellings.

18.2.3.2.1.1 When buildings are protected throughout with an approved automatic sprinkler system that is installed in accordance with NFPA 13, NFPA 13D, or NFPA 13R, the distance in 18.2.3.2.1 shall be permitted to be increased to 300 feet.

18.2.3.2.2 Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 ft (46 m) from fire department access roads as measured by an approved route around the exterior of the building or facility.

18.2.3.2.2.1 When buildings are protected throughout with an approved automatic sprinkler system that is installed in accordance with NFPA 13, NFPA 13D, or NFPA 13R, the distance in 18.2.3.2.2 shall be permitted to be increased to 450 ft (137 m).

18.2.3.3 Multiple Access Roads. More than one fire department access road shall be provided when it is determined by the AHJ that access by a single road could be impaired by vehicle congestion, condition of terrain, climatic conditions, or other factors that could limit access.

18.2.3.4 Specifications.

18.2.3.4.1 Dimensions.

C~ 18.2.3.4.1.1 FDAR shall have an unobstructed width of not less than 20ft with an approved turn around area if the FDAR exceeds 150 feet. **Exception:** FDAR for one and two family dwellings shall have an unobstructed width of not less than 15 feet, with an area of not less than 20 feet wide within 150 feet of the structure being protected. An approved turn around area shall be provided if the FDAR exceeds 250 feet.

C~ 18.2.3.4.1.2 FDAR shall have an unobstructed vertical clearance of not less then 13ft 6 in.

C~ 18.2.3.4.1.2.1 Vertical clearances may be increased or reduced by the AHJ, provided such increase or reduction does not impair access by the fire apparatus, and approved signs are installed and maintained indicating such approved changes.

18.2.3.4.1.2.2 Vertical clearances shall be increased when vertical clearances or widths are not adequate to accommodate fire apparatus.

C~ 18.2.3.4.2 Surface. Fire department access roads and bridges shall be designed and maintained to support the imposed loads (25 Tons) of the fire apparatus. Such FDAR and shall be comprised of an all-weather driving surface.

18.2.3.4.3 Turning Radius.

C~ 18.2.3.4.3.1 Fire department access roads shall have a minimum inside turning radius of 30 feet, and a minimum outside turning radius of 60 feet.

18.2.3.4.3.2 Turns in fire department access road shall maintain the minimum road width.

18.2.3.4.4 Dead Ends. Dead-end fire department access roads in excess of 150 ft (46 m) in length shall be provided with approved provisions for the fire apparatus to turn around.

18.2.3.4.5 Bridges.

18.2.3.4.5.1 When a bridge is required to be used as part of a fire department access road, it shall be constructed and maintained in accordance with county requirements.

18.2.3.4.5.2 The bridge shall be designed for a live load sufficient to carry the imposed loads of fire apparatus.

18.2.3.4.5.3 Vehicle load limits shall be posted at both entrances to bridges where required by the AHJ.

18.2.3.4.6 Grade.

C~ 18.2.3.4.6.1 The maximum gradient of a Fire department access road shall not exceed 12 percent for unpaved surfaces and 15 percent for paved surfaces. In areas of the FDAR where a Fire apparatus would connect to a Fire hydrant or Fire Department Connection, the maximum gradient of such area(s) shall not exceed 10 percent.

18.2.3.4.6.2* The angle of approach and departure for any means of fire department access road shall not exceed 1 ft drop in 20 ft (0.3 m drop in 6 m) or the design limitations of the fire apparatus of the fire department, and shall be subject to approval by the AHJ.

18.2.3.4.6.3 Fire department access roads connecting to roadways shall be provided with curb cuts extending at least 2 ft (0.61 m) beyond each edge of the fire lane.

18.2.3.4.7 Traffic Calming Devices. The design and use of traffic calming devices shall be approved the AHJ.

18.2.3.5 Marking of Fire Apparatus Access Road.

18.2.3.5.1 Where required by the AHJ, approved signs or other approved notices shall be provided and maintained to identify fire department access roads or to prohibit the obstruction thereof of both.

18.2.3.5.2 A marked fire apparatus access road shall also be known as a fire lane.

18.2.4* Obstruction and Control of Fire Department Access Road.

18.2.4.1 General.

18.2.4.1.1 The required width of a fire department access road shall not be obstructed in any manner, including by the parking of vehicles.

18.2.4.1.2 Minimum required widths and clearances established under 18.2.3.4 shall be maintained at all times.

18.2.4.1.3* Facilities and structures shall be maintained in a manner that does not impair or impede accessibility for fire department operations.

18.2.4.1.4 Entrances to fire departments access roads that have been closed with gates and barriers in accordance with 18.2.4.2.1 shall not be obstructed by parked vehicles.

18.2.4.2 Closure of Accessways.

18.2.4.2.1 The AHJ shall be authorized to require the installation and maintenance of gates or other approved barricades across roads, trails, or other accessways not including public streets, alleys, or highways.

18.2.4.2.2 Where required, gates and barricades shall be secured in an approved manner.

18.2.4.2.3 Roads, trails, and other access ways that have been closed and obstructed in the manner prescribed by 18.2.4.2.1 shall not be trespassed upon or used unless authorized by the owner and the AHJ.

18.2.4.2.4 Public officers acting within their scope of duty shall be permitted to access restricted property identified in 18.2.4.2.1.

18.2.4.2.5 Locks, gates, doors, barricades, chains, enclosures, signs, tags, or seals that have been installed by the fire department or by its order or under its control shall not be removed, unlocked, destroyed, tampered with, or otherwise vandalized in any manner.

18.3 Water Supplies and Fire Hydrants

18.3.1* A water supply approved by the county, capable of supplying the required fire flow for fire protection shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ. For on-site fire hydrant requirements see section 18.3.3.

EXCEPTIONS:

1. When facilities or buildings, or portions thereof, are completely protected with an approved automatic fire sprinkler system the provisions of section 18.3.1 may be modified by the AHJ.
2. When water supply requirements cannot be installed due to topography or other conditions, the AHJ may require additional fire protection as specified in section 18.3.2 as amended in the code.
3. When there are not more than two dwellings, or two private garage, carports, sheds and agricultural. Occupancies, the requirements of section 18.3.1 may be modified by AHJ.

18.3.2* Where no adequate or reliable water distribution system exists, approved reservoirs, pressure tanks, elevated tanks, fire department tanker shuttles, or other approved systems capable of providing the required fire flow shall be permitted.

18.3.3* The location, number and type of fire hydrants connected to a water supply capable of delivering the required fire flow shall be provided on a fire apparatus access road on the site of the premises or both, in accordance with the appropriate county water requirements.

18.3.4 Fire Hydrants and connections to other approved water supplies shall be accessible to the fire department.

18.3.5 Private water supply systems shall be tested and maintained in accordance with NFPA 25 or county requirements as determined by the AHJ.

18.3.6 Where required by the AHJ, fire hydrants subject to vehicular damage shall be protected unless located within a public right of way.

18.3.7 The AHJ shall be notified whenever any fire hydrant is placed out of service or returned to service. Owners of private property required to have hydrants shall maintain hydrant records of approval, testing, and maintenance, in accordance with the respective county water requirements. Records shall be made available for review by the AHJ upon request.

C~ 18.3.8 Minimum water supply for buildings that do not meet the minimum County water standards:

Buildings up to 2000 square feet, shall have a minimum of 3,000 gallons of water available for Firefighting.

Buildings 2001- 3000 square feet, shall have a minimum of 6,000 gallons of water available for Firefighting.

Buildings, 3001- 6000 square feet, shall have a minimum of 12,000 gallons of water available for Firefighting.

Buildings, greater than 6000 square feet, shall meet the minimum County water and fire flow requirements.

Multiple story buildings shall multiply the square feet by the amount of stories when determining the minimum water supply.

Commercial buildings requiring a minimum fire flow of 2000gpm per the Department of Water standards shall double the minimum water supply reserved for firefighting.

Fire Department Connections (FDC) to alternative water supplies shall comply with 18.3.8 (1)-(6) of *this code.*

NOTE: In that water catchment systems are being used as a means of water supply for firefighting, such systems shall meet the following requirements:

1) In that a single water tank is used for both domestic and firefighting water, the water for domestic use shall not be capable of being drawn from the water reserved for firefighting;

2) Minimum pipe diameter sizes from the water supply to the Fire Department Connection (FDC) shall be as follows:
   a) 4" for C900 PVC pipe;
   b) 4" for C906 PE pipe;
   c) 3" for ductile Iron;
   d) 3' for galvanized steel.

3) The Fire Department Connection (FDC) shall:
   a) be made of galvanized steel;
   b) have a gated valve with 2-1/2 inch, National Standard Thread male fitting and cap;
   c) be located between 8 ft and 16 ft from the Fire department access. The location shall be approved by the AHJ;
   d) not be located less than 24 inches, and no higher than 36 inches from finish grade, as measured from the center of the FDC orifice;
   e) be secure and capable of withstanding drafting operations. Engineered stamped plans may be required;
   f) not be located more than 150 feet of the most remote part, but not less than 20 feet, of the structure being protected;
   g) also comply with section 13.1.3 and 18.2.3.4.6.1 of *this code.*

4) Commercial buildings requiring a fire flow of 2000gpm shall be provided with a second FDC. Each FDC shall be independent of each other, with each FDC being capable of flowing 500gpm by engineered design standards. The second FDC shall be located in an area approved by the AHJ with the idea of multiple Fire apparatus'conducting drafting operations at once, in mind.

5) Inspection and maintenance shall be in accordance to NFPA 25.

6) The owner or lessee of the property shall be responsible for maintaining the water level, quality, and appurtenances of the system.

EXCEPTIONS TO SECTION 18.3.8:

1) Agricultural buildings, storage sheds, and shade houses with no combustible or equipment storage.

2) Buildings less than 800 square feet in size that meets the minimum Fire Department Access Road requirements.

3) For one and two family dwellings, agricultural buildings, storage sheds, and detached garages 800 to 2000 square feet in size, and meets the minimum Fire Department Access Road requirements, the distance to the Fire Department Connection may be increased to 1000 feet.

4) For one and two family dwellings, agricultural buildings, and storage sheds greater than 2000square feet, but less than 3000 square feet and meets the minimum Fire Department Access Road requirements, the distance to the Fire Department Connection may be increased to 500 feet.

5) For buildings with an approved automatic sprinkler system, the minimum water supply required may be modified.

If there are any questions regarding these requirements, please contact the Fire Prevention Bureau at (808) 932-2911.

DARREN J. ROSARIO
Fire Chief

KV:ds

Harry Kim
Mayor

Michael Yee
Director

Daryn Arai
Deputy Director

West Hawai'i Office
74-5044 Ane Keohokalole Hwy
Kailua-Kona, Hawai'i 96740
Phone (808) 323-4770
Fax (808) 327-3563

County of Hawai'i
PLANNING DEPARTMENT

East Hawai'i Office
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720
Phone (808) 961-8288
Fax (808) 961-8742

April 27, 2018

Ms. Christine Mendes Ruotola
Group 70 International, INC
925 Bethel Street, 5th Floor
Honolulu, HI 96813-4307

Aloha Ms. Ruotola:

SUBJECT: Pre-Consultation for Draft Environmental Assessment
Pāhoa Public Library Site Selection (Puna, Island of Hawai'i, Hawai'i)

Thank you for requesting comments from the Hawai'i County Planning Department regarding the preparation of a Draft Environmental Assessment (DEA) for the subject property.

The State of Hawai'i is currently considering three sites for the Pāhoa Public Library. We would like to respectfully ask that the Environmental Assessment also consider including a fourth area as another possible location. The rationale for recommending this fourth option is outlined below.

Site 1 (Pāhoa Fire Station//Department of Motor Vehicles (DMV) – TMK (3)1-5-007:017) is correctly identified in your Project Information Summary as being in the Agricultural district with A-1a zoning and an Extensive Agricultural LUPAG designation. Our concerns are as follows:

1. A 2005 Environmental Assessment and Environmental Impact Study for the Pāhoa Fire Station and Police Sub-station identified a series of interconnected lava tubes that traverse an area within the proposed 5-acre site and lava tube entrances on both the mauka and makai sides of the property.
2. Although there would presumably be separate entrances, use of Fire and Police is conflicting with the use of a public library. Further, emergency sirens and large heavy equipment is contrary to a calm and quiet library environment.

3. Access to this location would be primarily vehicular which could potentially slow traffic flow onto and off of Highway 130 and may also impact emergency response from the Fire and Police Sub-station. There is no safe pedestrian access.

Site 2 (Pāhoa District Park – TMK (3)1-5-002:020) is correctly identified in your Project Information Summary as being in the Agricultural district with A-1a zoning and an Urban Expansion and Medium Density Urban LUPAG designation. The Puna Community Development Plan (CDP) identifies Pāhoa as a Regional Town Center and clearly encourages the development of public facilities to occur within village/town centers, bringing the public and traffic into areas that are specifically intended for this level of use.

Site 3 (Highway 130 Mauka (DLNR) – TMK (3)1-5-008:001) is correctly identified in your Project Information Summary as being in the Agricultural district with A-1a zoning and an Extensive Agricultural LUPAG designation. Access to this location would be primarily vehicular with the assumed entry being off of Highway 130. This suggests increased congestion as patrons merge onto and exit off of HWY 130. There is no pedestrian access.

Proposed Site 4 (see attached map) As previously stated, we would like to suggest an additional location be included in the Draft Environmental Assessment. There has been discussion about extending Post Office Road to connect Pāhoa Village Road to Pāhoa Regional Park. Considering that discussion, the County's preferred location for the Pāhoa Public Library would be along this new alignment (see attached). Given that the County will be trying to acquire right-of-way for the Post Office Road extension, it would be in line with the State to obtain surrounding properties for the library site. The County is interested in a collaboration/partnership with the State to acquire the best possible location for the Pāhoa Public Library.

This area is walkable by surrounding areas and is centrally located to many regional activities such as the Regional Park, Pāhoa Mainstreet, Puna Kai Shopping Center, Pāhoa Neighborhood Facility, Pāhoa Elementary, Intermediate, and High School, Hawai'i Academy of Arts and Science and would best serve the needs of the greater lower Puna community.

There are current and ongoing planning initiatives affecting Pāhoa Town. The Pāhoa Regional Town Center Master Plan and Wastewater Feasibility Study is anticipated to commence in the coming months and be completed by mid-2020. This plan will reflect the needs and desires of the community and help direct future decision making as it relates to the orderly growth, revitalization, and sustainable development of Pāhoa Town. Hawai'i County is committed to revitalizing our towns and villages; therefore, locating such an important anchor to the community within the village would be another way to amplify the synergy of Pāhoa Village.

The DEA should include discussion of the proposed project's alignment with the CDP including but not limited to:

- *Goal 3.1.1.c Services and community facilities are more accessible in village/town centers that are distributed throughout the region...*
- *Objective 3.1.2.c Enhance the role of existing and new village/town centers by allowing expanded commercial uses, facilitating the development of farmers' markets and community gathering places...*
- *Objective 3.1.2.e Target investments in public services and infrastructure to promote the development of village/town centers and, secondarily, to serve the peripheral subdivision areas.*
- *Action 3.1.3.c Facilitate land use entitlements and other tools for the development of existing and future village/town centers and special design districts by:*
    - *1) Recommending approval of applications for commercial zoning or use permits for existing commercial uses in designated village/town centers that do not presently have appropriate entitlements, and for proposed uses at appropriate nearby locations, provided that the size and use of the expansion area conforms to the criteria applicable to the type of village/town center at that location; and*
    - *2) Recommending denial of applications for zone changes for commercial or light industrial use on sites.*
- *Goal 4.3.1.d Traffic congestion and traffic-related health risks are reduced.*
- *Goal 4.4.1.a Highways have design features that improve traffic safety and reduce collisions particularly at intersections.*

Lastly, the DEA should describe how the proposed use is consistent with the policies, standards, and courses of action of the County of Hawai'i General Plan 2005 (as amended), including but not limited to the following:

- Public Facilities chapter: *"these facilities are often located in larger towns or centrally situated areas that are in close proximity to the commercial, industrial and cultural activities of established communities."*
- Land Use chapter: *The future improvement and development objectives are directed toward making urban and rural centers more efficient, livable, and safe.*
    - *Policy 14.1.3(a) Promote and encourage the rehabilitation and use of urban areas that are serviced by basic community facilities and utilities.*
    - *Policy 14.1.3(j) Encourage urban development within existing zoned areas already served by basic infrastructure, or close to such areas, instead of scattered development.*

The Puna CDP Action Committee recently submitted comments to your office outlining their preference for the Pāhoa Public Library to be located at the Pāhoa Regional Park (Site 2). We

have attached their letter and believe that this fourth option supports the position of the Action Committee without taking recreational space away from the Pāhoa Regional Park.

Again, thank you for allowing the Planning Department to comment on the preferred site for the Pāhoa Public Library. We request that you provide us with a copy of the Draft Environmental Assessment for our review and comment. If you have questions, please feel free to contact Keiko Mercado of this office at Keiko.Mercado@hawaiicounty.gov or (808) 961-8134.

Sincerely,

MICHAEL YEE
Planning Director

KM:ja
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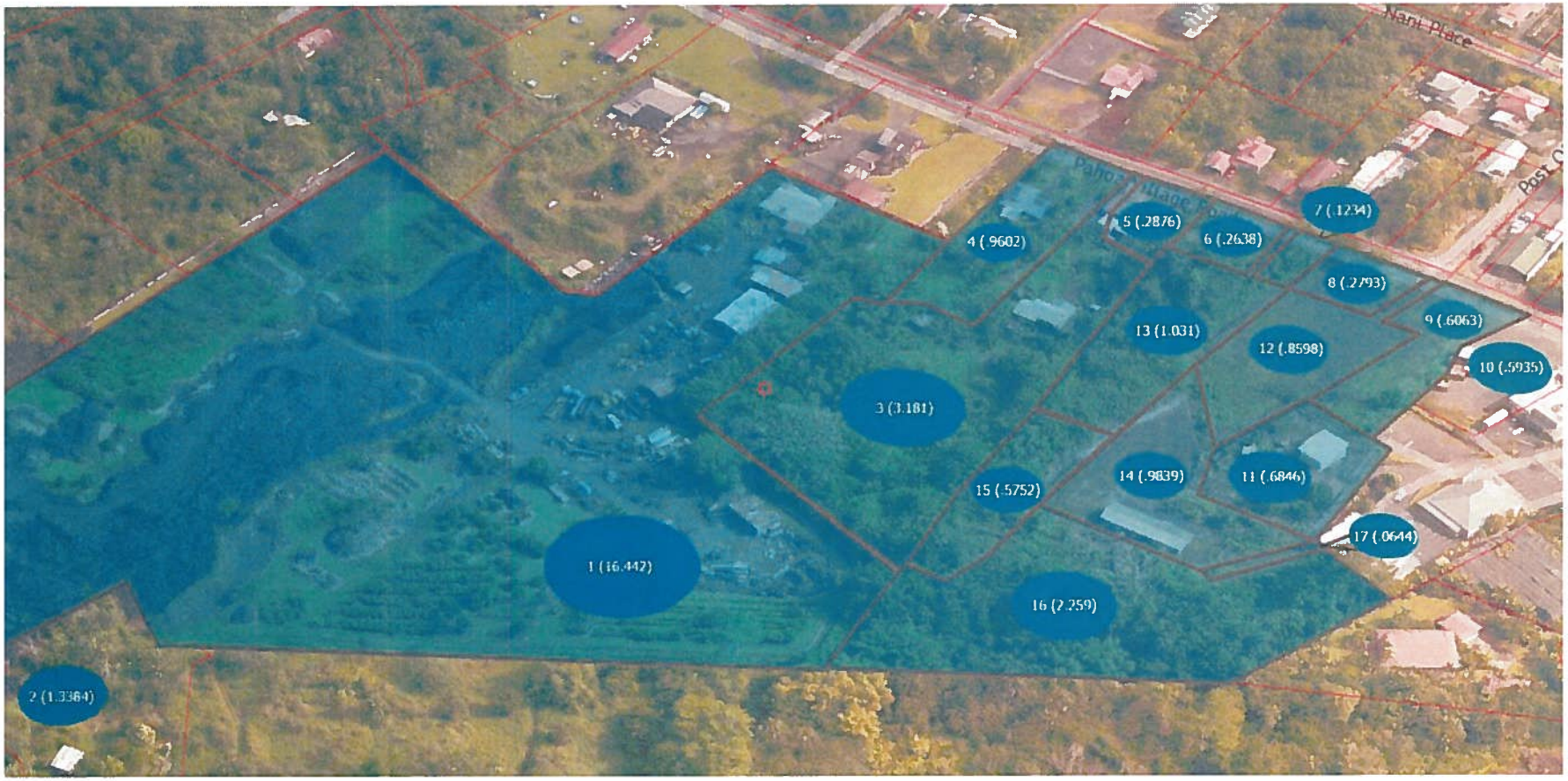
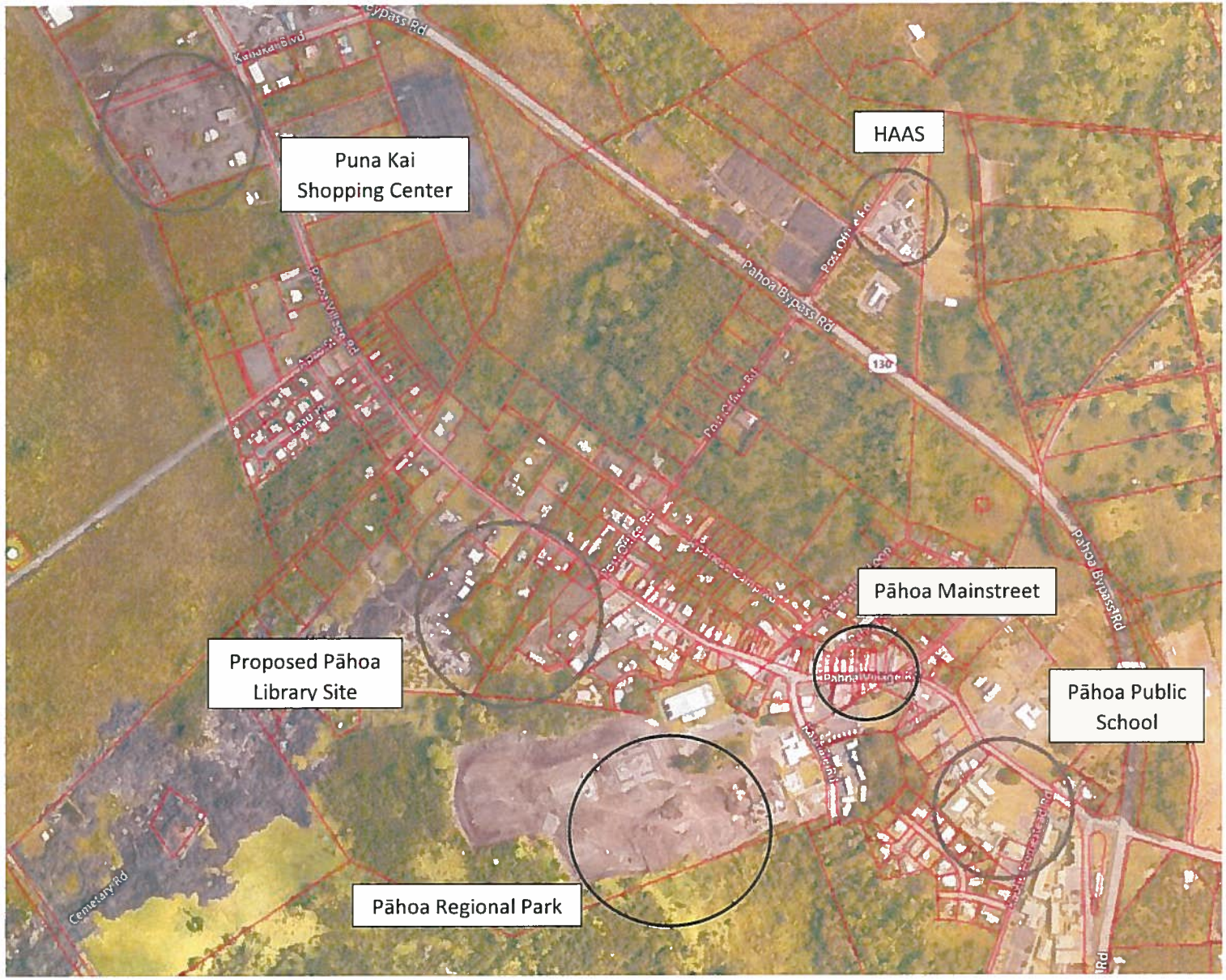
Pāhoa Public Library Alternate Site Proposal
State and County Partnership



Please see the attached matrix for specific parcel information relating to ownership, size, real property tax values, zoning, SLU, and LUPAG. There has been no outreach to the landowners as this a request to include the additional proposed area in the Draft EA.

The proposed site in relation to Pāhoa Elementary, Intermediate, and High School, Hawai'i Academy of Arts and Sciences (HAAS), the new Puna Kai Shopping Center, Pāhoa Mainstreet, and the Pāhoa Regional Park.



Draft alignment for the Post Office Road Extension up to the proposed Library site and alternate entrance to the Pāhoa Regional Park.

Proposed Pāhoa Public Library location in relation to the greater Lower Puna area.

	TMK	Owner	Size	Market Value Land	Market Value Building	Zoning	SLU	LUPAG
1	15013016	SUGIMOTO,TAIZAN SUGIMOTO,CHIEKO SUGIMOTO,MELVIN TSUYOSHI 97 KIMO PL HILO, HI 96720	16.442	$ 94,000.00	$ 225,500.00	RS-15	Urban	MDU
2	15013017	HANNA,REBECCA LYNN PO BOX 465 PAHOA, HI 96778-0465	1.3384	$ 55,100.00	$ 40,900.00	RS-15	Urban	MDU
3	15013018	Gacusana, Maring PO Box 1722 Pahoa, HI 96778-1722	3.181	$ 119,500.00	$ 96,600.00	RS-15	Urban	MDU
4	15013019	Funck, Megan Michelle Curlette, Matthew 13-3542 Maile St Pahoa, HI 96778-8293	0.9602	$ 59,900.00	$ 9,300.00	RS-15	Urban	MDU
5	15013020	Hayashikawa, Tatsuko Hayashikawa, CY PO BOX 125 Pahoa, HI 96778-0125	0.2876	$ 38,200.00	$ 85,300.00	RS-15	Urban	MDU
6	15013021	Christenot, Jeremiah 547 N 300 W Brigham City, UT 84302-1723	0.2638	$ 36,200.00	$ 77,000.00	RS-15	Urban	MDU
7	15013022	Pahoa Property Group LLC Maui Investments INC 189 Kukuau St #100 Hilo, HI 96720-3049	0.1234	$ 16,900.00	$ -	RS-15	Urban	MDU
8	15013023	Maui Varieties Investments Inc 2810 Paa St., Bldg A Honolulu, HI 96819	0.2793	$ 37,900.00	$ 51,300.00	RS-15	Urban	MDU

9	15013024	Pahoa Property Group LLC 189 Kukuau St #100 Hilo, HI 96720-3049	0.6063	$ 48,500.00	$ -	RS-15	Urban	MDU
10	15013025	HMP INC 16-630 Kipimana St Keaau, HI 96749-8021	0.5935	$ 314,400.00	$ -	CV-10	Urban	MDU
11	15013029	Watarida, Glenn Yasuo Watarida, Ryan Shigeo PO BOX 473 Pahoa, HI 96778-0473	0.6846	$ 51,000.00	$ 105,200.00	RS-15	Urban	MDU
12	15013030	Maui Varieties Investments Inc 2810 Paa St., Bldg A Honolulu, HI 96819	0.8598	$ 56,600.00	$ 36,700.00	RS-15	Urban	MDU
13	15013031	Pahoa Property Group LLC 189 Kukuau St #100 Hilo, HI 96720-3049	1.031	$ 65,800.00	$ -	RS-15	Urban	MDU
14	15013032	Iwata, Raymond H Iwata, Jean R Iwata, Lee Kenichi Iwata, Lesley Hiroyuki PO BOX 267 Pahoa, HI 96778-0267	0.9839	$ 60,600.00	$ 111,600.00	RS-15	Urban	MDU
15	15013033	Lewis, Rueselle Elizabeth TR PO BOX 260 Sun City, CA 92586-0260	0.5752	$ 14,200.00	$ -	RS-15	Urban	MDU
16	15013034	McSheehy, Donald S 5201 W Oak Shores Dr Crossroads, TX 76227-2419	2.259	$ 96,500.00	$ -	RS-15	Urban	MDU
17	15013044	Bellman, John V Bellman, Eileen SR-Roadway	0.0644	$ 100.00	$ -	RS-15	Urban	MDU

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

April 12, 2019

Mr. Michael Yee, Planning Director
County of Hawai'i Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

Subject: Early Consultation for Draft Environmental Assessment
Pāhoa Public Library (Puna, Hawai'i, Hawai'i)

Dear Director Yee,

Thank you for your comment letter dated April 27, 2018 concerning the Draft Environmental Assessment (DEA) early consultation for the Pāhoa Public Library project. The following responses are offered to your comments.

1. Site 1 – We acknowledge that the Planning Department is concerned with the presence of lava tubes on Site 1– Pāhoa Fire Station/Department of Motor Vehicles, as well as potential conflict with emergency service operations, traffic impact, and pedestrian access to this site. If Site 1 is implemented, HSPLS will work with the State Historic Preservation Division to properly address cultural resources.

2. Site 2 – Pāhoa District Park, we acknowledge that the Puna Community Development Plan (CDP) identifies Pāhoa as a Regional Town Center and encourages the development of public facilities to occur within village/town centers, which can accommodate high level of public and traffic use.

3. Site 3 – Highway 130 Mauka (DLNR), we acknowledge that the Planning Department is concerned with the potential traffic impact and lack of safe pedestrian access. If Site 3 is selected, a traffic impact assessment will be prepared.

4. Proposed Site 4 – Thank you for your recommendation on the 4th site to be included in the DEA. Per your letter there has been a discussion about extending Post Office Road to connect Pāhoa Village Road to Pāhoa Regional Park and the Planning Department prefers that the new library be located along this future road alignment. The County will be trying to acquire right-of-way for the Post Office Road extension from private landowners, and feasibility and timing of the project appears to be unknown. The costs for land acquisition and associated infrastructure improvements are also unknown. All of the candidate sites that were considered by the HSPLS during the site selection and evaluation process

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are public lands owned by Hawai‘i County or various State of Hawai‘i Departments. HSPLS will keep the recommended Site 4 as a future option, and a supplemental study may be prepared for this site if the three current finalist sites become infeasible.

5. The DEA will include discussion of the proposed project’s alignment with the CDP, including but not limited to, Goal 3.1.1.c, Objectives 3.1.2.c and e, Action 3.1.3.c, Goal 4.3.1.d, and Goal 4.4.1.a.

6. The DEA will describe how the proposed use is consistent with the policies, standards and course of action of the County of Hawai‘i General Plan especially in regards to locating public facilities in larger towns or centrally situated areas that are in close proximity to the commercial, industrial and cultural activities of established communities; and directing future improvement toward making urban and rural centers more efficient, livable, and safe (Policies 14.1.3(a) and (j)).

We will provide your office with a copy of the Draft Environmental Assessment for your review. Thank you for your participation in the environmental review process. Please contact us if you have any questions or require additional information.

Sincerely,

Christine Mendes Ruotola, AICP, LEED AP
Principal

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Harry Kim
Mayor

Paul K. Ferreira
Police Chief

Kenneth Bugado Jr.
Deputy Police Chief

County of Hawai`i

POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawai`i 96720-3998
(808) 935-3311 • Fax (808) 961-8865

January 16, 2018

Ms. Christine Mendes Ruotola, Principal
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, HI 96813-4307

Attention: Vi Verawudh, viv@g70.design

Dear Ms. Ruotola:

SUBJECT: PAHOA PUBLIC LIBRARY SITE SELECTION

Staff has reviewed the Pre-Consultation for Draft Environmental Assessment for the Pāhoa Public Library Site Selection in which three sites are listed with the preferred choice being Site 1- Pahoa Fire Station/Department of Motor Vehicles (DMV).

Site 1 also is where the Pahoa Police Station is located and as such we do have concerns with the selection of that site. The current public parking area established for the Department of Motor Vehicles, Fire, and Police Stations are extremely congested during business hours and filled to capacity.

Should this become the selected site for the Pahoa Public Library, we would stipulate that the library have its own separate driveway entrance from Highway 130 and stand alone public parking area.

If there are any further inquiries regarding this topic, please contact Captain Samuel Jelsma at the Puna Police Station, (808) 965-2716.

Sincerely,

M. Kanehailua

MITCHELL K. KANEHAILUA, JR.
ASSISTANT POLICE CHIEF
AREA I OPERATIONS

SJ:lli/180017

Harry Kim
Mayor

Michael Yee
Director

Daryn Arai
Deputy Director

West Hawai'i Office
74-5044 Ane Keohokalole Hwy
Kailua-Kona, Hawai'i 96740
Phone (808) 323-4770
Fax (808) 327-3563

East Hawai'i Office
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720
Phone (808) 961-8288
Fax (808) 961-8742

County of Hawai'i

PLANNING DEPARTMENT
PUNA COMMUNITY DEVELOPMENT PLAN – ACTION COMMITTEE

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April 6, 2018

Mr. Michael Yee, Planning Director
Planning Department
101 Pauahi Street, Suite 3
Hilo, HI 96720

SUBJECT: Comments Regarding Pre-Consultation for Draft Environment Assessment
Project: Pāhoa Public Library Site Selection
TMK(s): (3) 1-5-002:020, 1-5-007:017, and 1-5-008:001; Puna, Hawai'i

Aloha Director Yee,

Thank you for requesting comments from the Puna Community Development Plan (CDP) Action Committee regarding the preparation of a Draft Environmental Assessment (DEA) for the subject project.

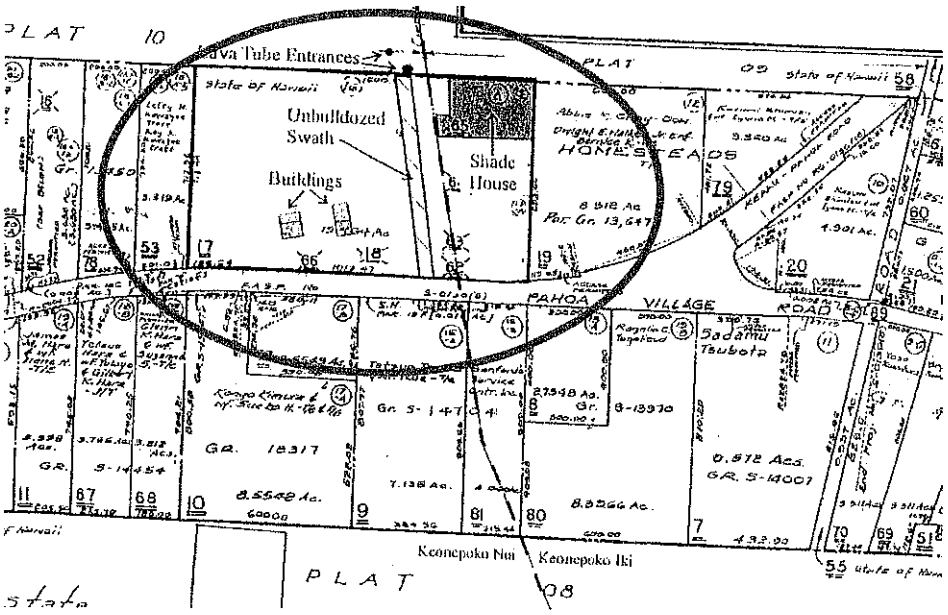
Based on a range of criteria, the State of Hawai'i is considering three sites for the Pāhoa Public Library. For the reasons stated below, the Puna CDP Action Committee would like to respectfully submit Site #2 [Pāhoa District Park – TMK (3)1-5-002:020] as the preferred site.

Site 1 – Pāhoa Fire Station/Department of Motor Vehicles (DMV) – TMK (3)1-5-007:017. A 2005 Environmental Assessment and Environmental Impact Study for the Pāhoa Fire Station and Police Sub-station articulated the following information for the area being proposed:

> *"...the son of the original lessee of the property related that when the initial grading was done the bulldozer broke into a lava tube along the northeastern parcel boundary in the southeastern portion of the property. The tube appeared to project in mauka/makai direction, and it was known at the time that a tube entrance was situated in a due mauka direction on another agricultural lot on the other side of Highway 130. As such, a decision was made to not bulldoze a roughly 30-foot-wide corridor thought to correspond to the*

course of the tube as it ran beneath the property. This is evident today as a swath of natural terrain and vegetation within an otherwise completely altered parcel.

On two separate days (October 18 and November 29, 2004) Matthew Clark, B.A., Dave Nelson, B.A., Christopher Hand, B.A., Michael Rivera, B.A., and Oliver Bautista, B.A., under the direct supervision of Robert Rechtman, Ph.D. carried out both a surface and subsurface reconnaissance of the property. The surface survey included pedestrian transects using a five meter spacing interval across the previously bulldozed portions of the parcel and an intensive 100% survey of the previously unbulldozed swath. At the makai end of the swath makai of the property boundary (off the parcel), a series of interconnected lava tube entrances were identified. The tube was explored in both mauka (on property and makai directions as far as humanly possible."



[Portion of Tax Map (3)1-5-007:017 showing the approximate location of the Fire Station and Police Sub Station, the unbulldozed swath, and lava tube entrances]

Although there were no historic features identified on the property, nor any ancient or historic cultural materials or skeletal remains observed within the lava tubes, the EA goes on to recommend that *"for safety reasons...the existing entrances to the lava tube be barricaded and that the previously unbulldozed area remains in its current state."* It appears that the identified lava tubes traverse an area within the identified 5-acre site.

Access to the Pāhoa Public Library on this site would be mostly vehicular. The assumed entry would be off the main highway possibly increasing traffic and slowing traffic flow in and out of

Pāhoa Town. Pedestrians would need to traverse the limited shoulder of Highway 130 to access this proposed site, which could prove especially dangerous for school aged children.

The Puna CDP sites the following:

- Goal 4.3.1.d Traffic congestion and traffic-related health risks are reduced.
- Goal 4.4.1.a Highways have design features that improve traffic safety and reduce collisions particularly at intersections.

Site 2 – Pāhoa District Park – TMK (3)1-5-002:020. The subject property is located in the heart of Pāhoa Village. The Puna CDP notes that this parcel *"presents a good opportunity to expand the regional park and provide other facilities to stimulate the development of the town core."* The Planning Department is currently in the process of selecting a consultant to develop a Regional Town Center Master Plan and Wastewater Feasibility Study for Pāhoa. Should the Pāhoa Public Library be located on this property, it would mean safe walkable access for two Public schools: Hawai'i Academy of Arts & Science Public Charter School and Pāhoa Elementary, Intermediate, and High School. While the Puna CDP does not speak directly to libraries, it is clear that the intent of the CDP is to encourage development of public facilities within village/town centers. This type of development brings the public and traffic into areas that are specifically intended for that level of use, thus preserving the countryside and surrounding natural resources.

The Puna CDP sites the following:

- Action 3.1.3.c Facilitate land use entitlements and other tools for the development of existing and future village/town centers and special design districts by:
    1) Recommending approval of applications for commercial zoning or use permits for existing commercial uses in designated village/town centers that do not presently have appropriate entitlements, and for proposed uses at appropriate nearby locations, provided that the size and use of the expansion area conforms to the criteria applicable to the type of village/town center at that location; and
    2) Recommending denial of applications for zone changes for commercial or light industrial use on sites.

Site 3 – Highway 130 Mauka (DLNR) – TMK (3)1-5-008:001. This site poses the same access and traffic concerns as Site 1.

As previously stated, Site 2 [Pāhoa District Park] TMK (3)1-5-002:020 is the Puna CDP Action Committees preferred location for the Pāhoa Public Library.

Again, we thank you for allowing the Action Committee the opportunity to comment on the preferred site for the Pāhoa Public Library and we request that you provide us with a copy of the Draft Environmental Assessment for our review and comment.

Sincerely,

Larry Brown
Chair, Puna CDP Action Committee

KM:ja
\\COH33\planning\public\wpwin60\CDP\Puna CDP\Action Committee\Communications\AC Correspondence\2018\AC-PD Pahoa Public Library.FINAL.doc

Cc: √Ms. Christine Mendes Ruotola
G70
925 Bethel Street, Fifth Floor
Honolulu, HI 96813

Vi Verawudh

From: leelani2@aol.com
Sent: Friday, February 02, 2018 11:45 AM
To: Vi Verawudh
Cc: leelani2@aol.com; cheryllcarroll@gmail.com
Subject: Comments on new Pahoa Public Library Site Selection

Friends of Pahoa Library -- 15-3070 Pahoa-Kalapana Rd. - Pahoa, Hawaii 96778

(808) 965-7182 leelani2@aol.com

February 2, 2018

G70

925 Bethel Street, 5th Floor

Honolulu, HI 96813-4307

Attn: Vi Verwudh

Email: viv@g70.design

Dear Ms. Verwudh

Thank you for the opportunity to respond regarding site selection for the proposed new Pahoa Public Library. The Friends of Pahoa Library exists to support the present Pahoa Library and would continue to support any Pahoa area library.

Our first choice by far is Site 1 next to the Pahoa DMV. The library would be highly visible, convenient for all types of transportation including walking, close to business areas, and safe.

Second choice is Site 2 between Pahoa and Ainaloa. Visibility would be good, bus transportation would probably be available. The site appears to be relatively isolated.

Site 3 would not be visible, would only be accessible by car and by walking, and would be quite isolated, raising safety concerns. Either of the other two proposed sites would be vastly preferable.

One additional comment is that our present library has extremely limited parking and has been unable to put on educational and artistic events due to liability concerns. We hope that an overflow parking lot can be included in the plans for the new library to accommodate events of all kinds.

Thanks for your attention,

Lee Maniscalco , President

Cheryl Carroll, Vice-President, Way & Means Chair

Milo Clark, Treasurer

Vi Verawudh

From: Mark Hinshaw <baileysdad@hawaiiantel.net>
Sent: Thursday, February 22, 2018 8:26 AM
To: Vi Verawudh
Subject: Pahoa Public Library Site Selection-Pahoa Area

Follow Up Flag: Follow up
Flag Status: Flagged

Aloha from Pahoa,

I am writing this letter of recommendation for site location of the new Pahoa Public Library, representing three of the largest organizations in Pahoa, Mainstreet Pahoa Association (our Chamber of Commerce), the Pahoa Regional Town Center Plan Steering Committee and the Pahoa Schools Booster Club and Scholarship Fund.

We are in solid and unanimous support of the location within the new Pahoa Regional Park. This ideal location is within the boundaries of Pahoa town and well within biking and walking distance of our schools and churches. We are excited to have this new library within our town and hope that are recommendation is accepted.

Mahalo for your consideration.

Mark Hinshaw
Mainstreet Pahoa Association-Past President
Pahoa Planning Committee-Current Chair
Pahoa Schools Booster Club-Current Chair

DAVID Y. IGE
GOVERNOR
STATE OF HAWAII

SHAN S. TSUTSUI
LT. GOVERNOR
STATE OF HAWAII

JOBIE M. K. MASAGATANI
CHAIRMAN
HAWAIIAN HOMES COMMISSION

WILLIAM J. AILA, JR.
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P. O. BOX 1879
HONOLULU, HAWAII 96805

January 22, 2018

RECEIVED
JAN 2 2 2018
G70

G70
Attn: Vi Verawudh
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Dear Ms. Verawudh:

Subject: Pre-Assessment Consultation for Pahoa Public Library, Puna, Hawaii Island, TMK: 3-1-5-007:017

Thank you for the opportunity to provide comments during the pre-assessment period for the above project. The draft environmental assessment (DEA) should assess the proposed project's potential impacts on Hawaiian Home Lands in the Puna district as well as DHHL's ability to implement its Puna Regional Plan and Hawaii Island Plan.

Additionally, please inform and involve our Makuu Farmers' Association during this consultation process.

If you have further questions, please contact Andrew Choy at (808) 620-9279 or email him at andrew.h.choy@hawaii.gov.

Aloha,

Jobie M. K. Masagatani, Chairman
Hawaiian Homes Commission

c: Makuu Farmers' Association <makuufarmersassociation@gmail.com>

DAVID Y. IGE
GOVERNOR

PANKAJ BHANOT
DIRECTOR

CATHY BETTS
DEPUTY DIRECTOR

RECEIVED
JAN 30 2018
G70

STATE OF HAWAII
DEPARTMENT OF HUMAN SERVICES
Benefit, Employment and Support Services Division
1010 Richards Street, Suite 512
Honolulu, Hawai'i 96813

January 25, 2018

Re: 18-0025

G70
925 Bethel Street, 5th floor
Honolulu, Hawaii 96813
Attn: Vi Verawudh

Dear Ms. Vi Verawudh:

SUBJECT: Pre-Consultation for Draft Environmental Assessment Pahoa Public Library Site Selection (Puna, Island of Hawaii, Hawaii)

This is in response to your letter dated January 5, 2018 requesting the Department of Human Services (DHS) review and comment on the above named project.

The DHS has reviewed the map of the proposed project site selections for the new Pahoa Public Library.

Site 1: Pahoa Fire Station/Department of Motor Vehicle (DMV) – DHS has no comment.
Site 2: Pahoa District Park – DHS has found a licensed group child care facility in the near vicinity.
Site 3: Highway 130 Mauka (DLNR) – DHS has no comment.

If you should have any question regarding this matter, please contact Ms. Lisa Galino, Child Care Program Specialist at (808) 586-5712.

Sincerely,

Scott Nakasone
Assistant Division Administrator

c: Pankaj Bhanot, Director
Christine Mendes Ruotola, Principal

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 5, 2018

G70
Attention: Vi Verawudh
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

via email: viv@g70.design

Dear Ms. Verawudh:

SUBJECT: Pre-Consultation for Draft Environmental Assessment for the **Pahoa Public Library** Site Selection located at Puna, Island of Hawaii; TMK: (3) 1-5-002:020 (por.); 1-5-007:017 (por.); and 1-5-008:001 (por.)

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 (a) Engineering Division and (b) Land Division – Hawaii District on the subject matter. Should you have any questions, please feel free to call Darlene Nakamura at (808) 587-0417. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosures
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

'18 JAN 12 AM 10:29 ENGINEERING RECEIVED LAND DIVISION

2018 JAN 19 AM 11:04 DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

January 12, 2018

MEMORANDUM

~~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 – Hawaii District
X Historic Preservation

~~FROM:~~ TO: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Consultation for Draft Environmental Assessment for the **Pahoa Public Library Site Selection**
LOCATION: Puna, Island of Hawaii; TMKs: (3) 1-5-002:020 (por.), 1-5-007:017 (por.), and 1-5-008:001 (por.)
APPLICANT: Department of Accounting and General Services

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments by **February 1, 2018**.

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.

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

Signed: _____
Print Name: Carty S. Chang, Chief Engineer
Date: 1/12/18

Attachments
cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji
Ref: Pre-Consultation for Draft Environmental Assessment for the Pahoa Public Library Site Selection, Puna, Island of Hawaii; TMKs: (3) 1-5-002:020 (por.), 1-5-007:017 (por.), and 1-5-008:001 (por.)

COMMENTS

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

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM), which can be viewed on our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT).

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

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4846.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 1/10/19

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

2018 JAN 16 P 2:04
RECEIVED
LAND DIVISION
HILO, HAWAII

January 12, 2018

MEMORANDUM

2018 FEB -1 AM 7:21
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII
RECEIVED
LAND DIVISION

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 – Hawaii District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Consultation for Draft Environmental Assessment for the **Pahoa Public Library Site Selection**
LOCATION: Puna, Island of Hawaii; TMKs: (3) 1-5-002:020 (por.), 1-5-007:017 (por.), and 1-5-008:001 (por.)
APPLICANT: Department of Accounting and General Services

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments by **February 1, 2018.**

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.

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

Signed: _____

Print Name: GORDON C. HEIT
Date: 1/31/18

Attachments 1/31/18 - 2 pgs.
cc: Central Files

To: Russell Tsuji
From: HDLO

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

75 Aupuni Street, Room 204
Hilo, Hawaii 96720
PHONE: (808) 961-9590
FAX: (808) 961-9599

January 30, 2018

MEMORANDUM

TO: Russell Y. Tsuji, Land Administrator

FROM: Candace Martin, Land Agent, HDLO

SUBJECT: Pre-Consultation for Draft Environmental Assessment for the Pahoa Public Library Site Selection, Puna, Hawaii, TMK: (3) 1-5-002:020 (por.), 1-5-007:017 (por.) and 1-5-008:001 (por.).

In response to your pre-consultation request for comments dated January 12, 2018 on the above referenced subject matter, we offer the following:

The parcel of land identified as TMK: (3) 1-5-008:00 is 5,125 acres and currently under the ownership of the Department of Land and Natural Resources, Land Division. The 5 acre portion of this parcel identified as "Site 3" is the only highway access point to the parcel. Prudent planning would require Land Division to retain a good portion of this area to meet future access needs of a very large parcel.

If you have any questions, please feel free to contact me at (808) 961-9590. Thank you.

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH

P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

EPO 18-029

February 5, 2018

G70
925 Bethel Street, 5th Floor
Honolulu, HI 96813-4307
Attn: Vi Varawudh
Email: viv@g70.design

SUBJECT: Pre-Consultation Draft Environmental Assessment (DEA) for Pahoa Public Library Site Selection, Puna, Island of Hawaii

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your PC DEA to our office via hard copy letter.

We understand from the letter that the Hawaii State Public Library System (HSPLS) identified various sites based on a range of criteria in order to determine the most ideal site for the new Pahoa Public Library. We understand that three finalist sites were identified as a result of the evaluation process, with Site 1 being the preferred site (Figure 1.1 in your letter). We understand that the three sites are

1. Pahoa Fire Station/Department of Motor Vehicles (DMV)
2. Pahoa District Park
3. Highway 130 Mauka (DLNR)

Hawaii's environmental review laws require Environmental Assessments (EAs) and Environmental Impact Statements (EISs) to consider health in the discussion and the mitigation measures to reduce negative impacts. In its definition of 'impacts,' §11-200-2, Hawaii Administrative Rules (HAR) includes health effects, whether primary (direct), secondary (indirect), or cumulative. Further, §11-200-12(b)(5), HAR, lists public health as one of the criteria for determining whether an action may have a significant impact on the environment.

We advocate that you consider health from a broad perspective; one that accounts for the social, economic, and environmental determinants of health and wellbeing. Community well-being can be impacted by access to physical activity, health care, feelings of social connectedness and safety. Design solutions that take these factors into consideration positively contribute to the social determinants of health in a community, improving the well-being of those who live there by influencing health promoting behaviors. Social determinants contribute to preventable chronic diseases such as asthma, diabetes, obesity, and cardiovascular disease.

An example of social influences include access to safe pedestrian corridors such as pathways, sidewalks, bike lanes, greenways and open space. §11-200-17(h), HAR, says EISs must discuss how proposed actions may conform or conflict with any policies for the affected area. This includes Hawaii's 2009 Complete Streets law, which requires the state and counties to establish policies to accommodate all users of the road, no matter age, ability, or mode of transportation. In 2015, Hawaii passed Act 97 which amended Hawaii's Renewable Portfolio Standards by setting a goal for Hawaii to become one hundred percent renewable by the year 2045. To reach this goal Hawaii should transform its transportation sector from the use of fossil fuels to renewable fuel, electric vehicles (EV)s, and public transit systems including bikeshare programs. To address "range anxiety" and facilitate the adoption of EVs, it is essential that EV charging stations be added to any planned parking areas open to the EV driving public. Plans

should strive to encourage the use of personal bicycles though the development of designated bike lanes and class A bike trails. All efforts should be made to reduce harmful vehicle emissions, reduce vehicle miles travelled (VMT's), encourage alternative modes of transport and increase physical activity.

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance. State standard comments to support sustainable healthy design are provided at: http://health.hawaii.gov/epo/landuse. Projects are required to adhere to all applicable standard comments. If you haven't already, EPO recommends that you review the new Healthy Communities Policy Guide: https://planning-org-uploaded-media.s3.amazonaws.com/document/Healthy-Communities-Policy-Guide.pdf, Plan4health website: http://plan4health.us and the free, on-demand, six part Plan4Health webinar series available on the American Planning Association website.

EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: https://eha-cloud.doh.hawaii.gov. This site 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.

We suggest you review the requirements of the Clean Water Branch (Hawaii Administrative Rules {HAR}, Chapter 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: http://health.hawaii.gov/cwb. If you have any questions, please contact the Clean Water Branch (CWB), Engineering Section at (808) 586-4309 or cleanwaterbranch@doh.hawaii.gov. If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

Injection wells used for the subsurface disposal of wastewater, sewage effluent, or surface runoff are subject to environmental regulation and permitting (HAR, Chapter 11-23, "Underground Injection Control {UIC}"). DOH approval must be obtained before any injection well construction commences. A UIC permit must be issued before any injection well operation occurs. For specific questions please email sdwb@doh.hawaii.gov or call (808) 586-4258.

Please note that all wastewater plans must conform to applicable provisions (HAR, Chapter 11-62, "Wastewater Systems"). We reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please review online guidance at: http://health.hawaii.gov/wastewater and contact the Planning and Design Section of the Wastewater Branch (WWB) at (808) 586-4294.

If temporary fugitive dust emissions could be emitted when the project site is prepared for construction and/or when construction activities occur, we recommend you review the need and/or requirements for a Clean Air Branch (CAB) permit (HAR, Chapter 11-60.1 "Air Pollution Control"). Effective air pollution control measures need to be provided to prevent or minimize any fugitive dust emissions caused by construction work from affecting the surrounding areas. This includes the off-site roadways used to enter/exit the project. The control measures could include, but are not limited to, the use of water wagons, sprinkler systems, and dust fences. For questions contact the Clean Air Branch via e-mail at: Cab.General@doh.hawaii.gov or call (808) 586-4200.

Any waste generated by the project (that is not a hazardous waste as defined in state hazardous waste laws and regulations), needs to be disposed of at a solid waste management facility that complies with the applicable provisions (HAR, Chapter 11-58.1 "Solid Waste Management Control"). The open burning of any of these wastes, on or off site, is strictly prohibited. You may wish you review the Minimizing Construction & Demolition Waste Management Guide at: http://health.hawaii.gov/shwb/files/2016/05/constdem16.pdf Additional information is accessible at: http://health.hawaii.gov/shwb. For specific questions call (808) 586-4226.

If noise created during the construction phase of the project may exceed the maximum allowable levels (HAR, Chapter 11-46, "Community Noise Control") then a noise permit may be required and needs to be obtained before

the commencement of work. Relevant information is online at: http://health.hawaii.gov/irhb/noise EPO recommends you contact the Indoor and Radiological Health Branch (IRHB) at (808) 586-4700 with any specific questions.

A phase I Environmental Site Assessment (ESA) and site investigation should be conducted for residential development or redevelopment projects in current or formerly used industrial areas and on formerly and currently zoned agricultural land used for growing sugar, pineapple or other agricultural products. If the investigation shows that a release of petroleum, hazardous substance, pollutants or contaminants may have occurred at the site, the site should be properly characterized through an approved Hawaii State Department of Health (DOH)/Hazard Evaluation and Emergency Response Office (HEER) soil and/or groundwater sampling plan. Please refer to Sections 3 and 4 of the HEER Office Technical Guidance Manual http://www.hawaiidoh.org.

If the site is found to be contaminated, then all removal and remedial actions to clean up hazardous substance or oil releases by past and present owners/tenants must comply with State Law (HRS, Chapter 128D, "Environmental Response Law", Chapter 451, "State Contingency Plan"). To identify HEER records related to the property, visit http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/public-records. For information on site assessment and cleanup programs review: http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/site-assessment-and-cleanup-programs. Any specific questions should be directed to the HEER office at (808) 586-4249.

If the property is undeveloped it may harbor vectors which may disperse to the surrounding areas when the site is cleared. In accordance with Title 11, HAR, Chapter 11-26, "Vector Control", the applicant shall ascertain the presence or absence of rodents on the property. Should the presence of vectors be determined, the applicant shall eradicate the vectors prior to clearing the site.

The Hawaii Disability and Communication Access Board (DCAB) recommends the inclusion of access for persons with disabilities through all phases of design and construction. New construction and alteration work shall comply with all applicable accessibility requirements. Projects covered by §103-50, Hawaii Revised Statutes, and HAR Title 11 Chapter 216 shall seek advice and recommendations from DCAB on any construction plans prior to commencing with construction. If you have any questions please contact DCAB at (808) 586-8121 or dcab@doh.hawaii.gov.

You may also wish to review the draft Office of Environmental Quality Control (OEQC) viewer at: http://eha-web.doh.hawaii.gov/oeqc-viewer. This viewer geographically shows where some previous Hawaii Environmental Policy Act (HEPA) {Hawaii Revised Statutes, Chapter 343} documents have been prepared.

To better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed an environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: http://www.epa.gov/ejscreen.

We hope this information is helpful. If you have any questions please contact us at DOH.epo@doh.hawaii.gov or call us at (808) 586-4337. Thank you for the opportunity to comment.

Mahalo nui loa,

Laura Leialoha Phillips McIntyre, AICP
Environmental Planning Office

c: DOH: DHO HI, HEER {via email only}

Vi Verawudh

From: Iwasa, Russell <russell.iwasa@hawaii.gov>
Sent: Friday, March 02, 2018 2:04 PM
To: Vi Verawudh
Cc: Tatsuguchi, Ken; Kaneshina, Eleanor
Subject: 2018-017; Pre-Assessement Consultation, DEA, Pahoa Public Library Site Selection

Ms. Verawudh,

I called earlier to inform you that the Hawaii Department of Transportation (HDOT) wanted to make some pre-assessment comments relevant to the Pahoa Public Library DEA. I am sorry that this response is late, however we expect we will be making similar comments should G70 be unable to take them into account.

HDOT Comments:

1. A traffic assessment should be prepared and included in the DEA. The traffic assessment should also discuss non-vehicular access to the library. The traffic assessment should recommend access and other improvements as may be needed.

2. HDOT favors Site 2, Pahoa District Park, TMK 1-5-002: 020 as that location would be expected to minimize impact to our State highway facilities.

3. For Site 1, Pahoa Fire Station, TMK 1-5-007: 017, the access to the library should be located directly across from the side street on the opposite side of Keeau-Pahoa Road to consolidate conflict points, and other access improvements may be required.

4. For Site 3, DLNR land, TMK 1-5-008: 001, may require left-turn storage lane to maintain through capacity of the highway facility and other access improvements.

5. All required improvements shall be provided at no cost to the HDOT.

We would hope that you are able to consider the above comments in your preparation of the DEA. If there are any question please give me a call.

File Number 2018-017.

Thank you,
Russell Iwasa
HWY-PS

587-1833

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
560 N. NIMITZ HWY., SUITE 200
HONOLULU, HAWAI'I 96817

RECEIVED
FEB - 6 2018
G70

HRD18-8418

January 30, 2018

Vi Verawudh
G70
925 Bethel Street, 5th Floor
Honolulu, HI 96813-4307

Re: Request for Comments on a Pre-Consultation for Draft Environmental Assessment
Pāhoa Public Library
Keonepoko Ahupua'a, Puna Moku, Hawai'i Mokupuni
Tax Map Key: (3) 1-5-007:017, 1-5-002:020, and 1-5-008:001

Aloha e Vi Verawudh:

The Office of Hawaiian Affairs (OHA) is in receipt of your January 5, 2018 letter requesting comments on the pre-consultation for the draft environmental assessment (DEA) for the Pāhoa public library site selection.

Three sites are being considered and once the selection of the site is made, the new library is expected to be completed in one phase with an approximately 9,000-square foot enclosed and semi-enclosed building area and 30 parking stalls.

If you have not already done so, OHA recommends consulting with Native Hawaiian Organizations (NHOs), listed in the U.S. Department of the Interior's (DOI) Native Hawaiian Organization List that have expressed interest in the project area. The digital copy of the list is located on the DOI's Office of Native Hawaiian Relations website at www.doi.gov/hawaiian/NHOL. Please note that this list is not comprehensive as additional NHOs may be identified as you move forward with your consultation process.

Thank you for the opportunity to comment. We look forward to reviewing the DEA. Should you have any questions, please contact Kathryn Keala at (808) 594-0272 or kathyk@oha.org.

'O wau iho nō me ka 'oia 'i'o,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KC:kk

DAVID Y. IGE
GOVERNOR

STACEY A. ALDRICH
STATE LIBRARIAN

STATE OF HAWAII
HAWAII STATE PUBLIC LIBRARY SYSTEM
PAHOA PUBLIC & SCHOOL LIBRARY
15-3070 PAHOA-KALAPANA ROAD
PAHOA, HAWAII 96778

February 5, 2018

Re: Pahoa Public Library Site Selection

Thank you for accepting input on this part of the process.

In order of suitability, the proposed sites are ranked as follows:

First choice: Site 1, Pahoa Fire Station / DMV

It is located on the major highway in the area, making power, water, and broadband readily accessible. Vehicular traffic would be easily accommodated, and it is on the County's limited public transportation routes. With the new nearby shopping center (Puna Kai) set to be completed in 2018 , it sites the library in the new focus area of Pahoa, and makes using the library convenient. This site is also within biking and walking distance of Pahoa town, Woodlawn Center, Malama Shopping Center, and as mentioned, the soon to be completed Puna Kai Center.

Second Choice: Site 3, Highway 130 Mauka (DNLR)

While located on the major highway, again making power, water, and broadband readily accessible, the site is otherwise isolated. Vehicular traffic would be accommodated, but it is several miles outside of Pahoa, miles from the closest subdivision, and is not within walking distance of either. County public transportation is limited. The biking distances are not enormous, but in an area of 150" of rainfall per year, that mode of transportation is not dependable. The safety of staff and patrons would be an issue during evening hours in an isolated rural area.

Third Choice: Site 2, Pahoa District Park

This is unsuitable for several reasons. There is currently no road leading to the site, and all utilities would have to be brought in. Each of these factors would add significant costs to the project. The park at this point closes to the public at 7:00pm daily. The library would either have to accommodate its own public service hours to meet this deadline, or assume security for the entire access road through the park. The

safety of staff and patrons during evening hours would be a concern. The street leading to the park from Pahoa Village Road, Kauhele St., is 2-lanes and winds uphill. This hill would make either walking or biking from town difficult, and the road is too narrow to accommodate public transportation.

No matter which site is finally chosen, I do want to take this opportunity to advocate for additional parking. The 30 stalls mentioned would be adequate for the daily usage anticipated. However, the current facilities had to stop holding any type of programming to due to liability concerns because of the large numbers of patrons attending events. There have been many requests to resume programming (children's story hours for our very large home schooled population in particular), and an 'overflow' parking area would be used frequently.

Sincerely,

Gaila Vidunas / Pahoa Public & School Library
Hawaii State Public Library System
15-3070 Pahoa Kalapana Road, Pahoa, Hawaii 96778 / 808.965.2171
E-mail: gaila.vidunas@librarieshawaii.org / Web: librarieshawaii.org

Appendix H

Draft EA Comments

UNIVERSITY OF HAWAI'I AT MĀNOA
Institute for Astronomy
Office of the Director

March 18, 2021

Via email:

Department of Accounting & General Services, State of Hawai'i
1151 Punchbowl Street
Honolulu, HI 96813

Attention: Mr. Brian Isa, (brian.s.isa@hawaii.gov)

Re: Pāhoa Public Library Site Selection Draft EA (AFNSI)
TMK: (3) 1-5-007:017 por; (3) 1-5-002:020 por; (3) 1-5-008-001 por;
Puna, Island of Hawai'i

Dear Mr. Isa:

Thank you for the opportunity to comment on the draft environmental assessment for the proposed Pāhoa Public Library Site referenced above (published February 23, 2021), specifically with respect to issues and concerns regarding light pollution.

The University of Hawai'i Institute for Astronomy (IfA) conducts research in astronomy using telescopes located on Haleakalā and Maunakea and operated by IfA and our partner institutions. Both Haleakalā and Maunakea are among the best sites in the world for astronomical facilities because of their elevation, clear skies, favorable atmospheric conditions, and low levels of light pollution. Hawai'i-based observatories have played major roles in the advancement of astronomy and astrophysics for over 50 years and are well positioned to remain at the forefront of astronomical research for decades to come.

Because of the outstanding quality and productivity of these facilities, IfA is acutely concerned about negative impacts on astronomy from increased light pollution. Our work to combat light pollution has also brought us into contact with others concerned about light pollution for other reasons, including impacts on wildlife (particularly seabirds) and on human health. While IfA's comments focus on the impacts of light pollution on astronomy, appropriate mitigation measures also help to reduce non-astronomy impacts.

With that background, we offer the following comments:

Any new or additional artificial light at night has an adverse effect on astronomical observations by increasing the night sky brightness. Nearly all observations performed by the telescopes on Maunakea are sky-background limited. This means that there is a natural sky brightness coming from airflow and zodiacal light. Artificial light increases the sky brightness, thereby decreasing the sensitivity of the telescopes.

Lights can have an adverse effect on astronomical observations by incrementally increasing the night sky brightness, effectively making the telescope smaller and less sensitive.

Appropriate steps to reduce the impact on the observatories would include:

1. The draft EA mentions that best lighting practices will be employed, but does not mention the Hawai'i County lighting ordinance. Lighting should conform to standards established by the Hawai'i County lighting ordinance (including any future updates). All lighting should be fully shielded. This means that all lighting fixtures must emit zero light above the horizontal plane.
2. The minimum possible amount of outdoor lighting should be used. Motion sensor activated lighting is strongly preferred wherever feasible. Blue light is most harmful to the observatories, so blue-deficient lighting should be exclusively selected. The best choices are filtered LED lights, or amber LED lights. Under no circumstances should high-intensity discharge lamps such as metal halide be used; fluorescent lights also must be avoided. Both of these types of lamps use mercury and emit light at wavelengths that is very damaging to astronomy.
3. White light should be avoided because the blue component of white light is very damaging to astronomy. White light should always have a Correlated Color Temperature of 2700 K or below.

Thank you for your consideration of these comments and attention to IfA's concerns. If you have questions or need further detail regarding these comments, please do not hesitate to contact the undersigned or Richard Wainscoat (rjw@hawaii.edu).

Very truly yours,

for

Karen Meech
Interim Director

cc: Mr. Kawika McKeague, G70 (kawikam@g70.design)

Mitchell D. Roth
Mayor

Lee E. Lord
Managing Director

West Hawai'i Office
74-5044 Ane Keohokālole Hwy
Kailua-Kona, Hawai'i 96740
Phone (808) 323-4770
Fax (808) 327-3563

County of Hawai'i
PLANNING DEPARTMENT

Zendo Kern
Director

Jeffrey W. Darrow
Deputy Director

East Hawai'i Office
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720
Phone (808) 961-8288
Fax (808) 961-8742

RECEIVED
APR 0 2 2021
G70

March 24, 2021

Mr. Mark Kawika McKeague
Group 70 International, INC
111 S. King Street, Suite 170
Honolulu, Hi 96813-4307

Aloha Mr. McKeegue,

Subject: Chapter 343, Hawai'i Revised Statutes, Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI)
Pāhoa Public Library Site Selection
Puna, Island of Hawai'i, Hawai'i
Tax Map Keys: (3) 1-5-007:017 por., (3) 1-5-002:20 por., and (3) 1-5-008:001 por.

Thank you for requesting comments from the Hawai'i Planning Department regarding the Draft Environmental Assessment (DEA) for the subject project. The State has selected Site 1 (Pāhoa Fire Station/Department of Motor Vehicles (DMV) – TMK (3) 1-5-001:17) as its preferred site. We have the following comments for your consideration.

Early consultation comments, found on page 7-3, from Police and HDOT regarding access to Site 1 conflict with each other. Responses acknowledge each comment independently, but no effort was made to incorporate them in site planning to address or provide alternate access to Site 1. Similarly, a Traffic Impact Analysis Report (TIAR) was only conducted for Site 1 utilizing the existing access. We request that an alternative vehicular access point connecting to Auina Rd be evaluated and included in an updated TIAR and the Final EA.

Additionally, Site 1 is approximately a quarter mile away from other shops and services. Pedestrian and bicycle accessibility is limited because of its location on a major highway. High-speed traffic makes walking and biking conditions uncomfortable and may deter those of modes of travel. Thus, Site 1 does not align with the Puna Community Development Plan as follows:

> "Objective 3.1.2.c Enhance the role of existing and new village/town centers by allowing expanded commercial uses, facilitating the development of farmers markets and community gathering places, opportunities for special needs housing, and infrastructure to support more compact development form and multi-modal travel."

Site selection in closer proximity to both of Pāhoa's Town Centers in Figure 5-2 on page 5-8 of the Puna Community Development Plan (Puna CDP) would be more beneficial and increase the Library's accessibility to pedestrians and bicyclists.

Lastly, the County of Hawaii has recently discussed with the Hawaii State Public Library Systems its interest in a collaboration/partnership with the State to co-locate the Pāhoa Public Library with the Pāhoa Transit Hub. In doing so we believe we can achieve the benefits of co-location that includes providing an integrated and improved level of service, both collectively and as individual services, compared to stand alone facilities.

In this collaborative effort, the County and State could acquire the best location that would also provide an economic use of services and resources and create a vibrant regional hub for the Puna community. This also aligns with the Puna CDP objective for compact and multi-modal development previously mentioned. The County is in the beginning stages an Environmental Assessment process for the Pāhoa Transit Hub Project. The DEA for the Pāhoa Transit Hub will include analysis of co-locating the two projects and we request that prior to acceptance of a Final EA for the Pāhoa Public Library, co-location be taken into consideration.

Again, thank you for allowing the Planning Department to comment on the preferred site for the Pāhoa Public Library. If you have any question, please feel free to contact Natasha Soriano of this office at Natasha.Soriano@hawaiicount.gov or (808) 961-8712.

Sincerely,

ZENDO KERN
Planning Director

NS:kvs
\\coh33\planning\public\USER\Natasha\Letters\Pahoa Library DEA comments

Mitchell D. Roth
Mayor

Lee E. Lord
Managing Director

Steven Ikaika Rodenhurst, P.E.
Director

County of Hawai'i
DEPARTMENT OF PUBLIC WORKS
Aupuni Center
101 Pauahi Street, Suite 7 · Hilo, Hawai'i 96720-4224
(808) 961-8321 · Fax (808) 961-8630
public_works@hawaiicounty.gov

MARCH 24, 2021

ATTN: MARK KAWIKA MCKEAGUE, AICP
GROUP 70 INTERNATIONAL, INC.
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
(via email to kawikam@g70.design)

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
PAHOA PUBLIC LIBRARY SITE SELECTION
PUNA DISTRICT, ISLAND OF HAWAII, HAWAII
TMKS: (3) 1-5-002:020, 1-5-007:017, 1-5-008:001

We received the subject dated February 22, 2021 and have the following comments:

The subject parcels are in an area designated as Zone X on the Flood Insurance Rate Map (FIRM) by the Federal Emergency Management Agency (FEMA). Zone X is an area determined to be outside the 500-year floodplain.

All activities shall comply with the requirements of Hawaii County Code, Chapter 10, Erosion and Sedimentary Control.

Kauhale Street and Apaa Street are both maintained by the County. Therefore, construction within these right-of-ways shall comply with HCC, Chapter 22, County Streets.

All development-generated runoff shall be disposed of on site and not directed toward any adjacent properties.

Should there be any questions concerning this matter, please contact Ms. Robyn Matsumoto in our Engineering Division at (808) 961-8924.

ALAN K. THOMPSON, P.E.
Division Chief
Engineering Division

RM

Mitchell D. Roth
Mayor

Paul K. Ferreira
Police Chief

Kenneth Bugado Jr.
Deputy Police Chief

County of Hawai`i

POLICE DEPARTMENT
349 Kapi'olani Street • Hilo, Hawai'i 96720-3998
(808) 935-3311 • Fax (808) 961-2389

RECEIVED
MAR 1 1 2021
G70

March 5, 2021

Mr. Mark Kawika McKeague, Principal
G70
111 S. King Street; Suite 170
Honolulu, HI 96813

Dear Mr. McKeague:

Subject: Pahoa Public Library Site Selection, Puna, Island of Hawaii, Hawaii Tax Map Keys: (3) 1-5-007:017 por., (3) 1-5-002:020 por., and (3) 1-5-008:001 por.

Upon reviewing the provided documents, our staff does not anticipate any significant impact to traffic and/or public safety concerns.

Thank you for allowing us the opportunity to comment.

Should you have any questions, please contact Captain John Briski, Puna District Commander, at (808) 965-2716.

Sincerely,

JAMES B. O'CONNOR
ASSISTANT POLICE CHIEF
AREA I OPERTIONS

JB:lli/21HQ0187

OFFICE OF PLANNING
STATE OF HAWAII

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

DAVID Y. IGE
GOVERNOR

MARY ALICE EVANS
DIRECTOR
OFFICE OF PLANNING

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

DTS202103031604ED

March 29, 2021

Mr. Mark Kawika McKeague, AICP
G70
111 South King Street, Suite 170
Honolulu, Hawai‘i 96813

Dear Mr. McKeague:

Subject: Draft Environmental Assessment and Anticipated Finding of No Significant Impact – Pāhoa Public Library Site Selection, Puna, Island of Hawai‘i
DAGS Job No. 11-36-6553

Thank you for the opportunity to review and provide comments on the Draft Environmental Assessment (DEA) for the Pāhoa Public Site Selection Project prepared for the Department of Accounting and General Services (DAGS) and the Hawai‘i State Public Library System (HSPLS). The Office of Planning (OP) understands that DAGS anticipates issuing a Finding of No Significant Impact (FONSI) for the project.

The Proposed Action, the Pāhoa Public Library Site Selection, was undertaken to identify suitable sites in Pāhoa for the construction of a new public library that would allow the closure of the Pāhoa Public and School Library situated at Pāhoa High School. The study examined six potential sites in and around Pāhoa Village, of which three sites with the highest ratings were assessed in the study.

OP offers the following comments on the DEA and the site selection study.

1. Overall, the DEA generally addresses issues of concern and points of interest with respect to Coastal Zone Management Act (CZMA) matters, including discussion of the Proposed Action in relation to CZM objectives and policies in Hawai‘i Revised Statutes (HRS) Chapter 205A-2. In addition, the study sites do not lie within the Special Management Area (SMA), any shoreline setback area, and do not require permits that would trigger a CZMA federal consistency determination.

   Similarly, the DEA does a good job of cross-walking how the proposed library facility supports policies, objectives, and priority guidelines in HRS Chapter 226, the Hawai‘i State Plan, noting its role in supporting economic development and education. Consideration should be given in the Final EA to calling out the role of the library in providing access to broadband and the availability of broadband

infrastructure in pertinent HRS Chapter 226 policy sections. In addition, the Final EA should note the proposed action aligns with HRS §226-104(B)(2), regarding use of available marginal or nonessential agricultural lands for appropriate urban use, which helps support the use of lands in the State Agricultural District.

OP appreciates the reference in the Discussion section of Facility Systems – Transportation, that HSPLS will coordinate final site selection with the County of Hawai‘i transit-oriented development initiatives.

2. Primary concerns raised by the DEA. The DEA identifies the lack of water supply and wastewater system capacity as key infrastructure constraints for any site in this area: specifically, a new water source and an individual wastewater treatment system that is sized to accommodate events and gatherings are likely to be needed. In addition, the DEA documents comments from various parties as to the lack of safe pedestrian and bicycle facilities, lack of bus stops, and the need for additional highway access for two of the top ranked sites along Highway 130.

   The cost of the required infrastructure and the desire for safe options for users to access the library other than by individual cars are reason to continue to collaborate with the County of Hawai‘i Mass Transit Agency on the potential for co-locating the Pāhoa Library with their proposed Pāhoa Transit Hub. This would allow both facilities to share the cost of road access, parking, water, and wastewater systems that would be needed for each facility. Co-location would not only increase transportation options for trips to the library, but could also help address the request for overflow parking for special events.

   OP recommends that DAGS and HSPLS continue to work with the County to determine whether co-location would be a viable option before proceeding with any site selection for the library. It is hoped that a suitable site closer to Pāhoa Village could be located to increase safe access by pedestrians and bicyclists, and to enable the library to become a destination and gathering place for the community.

3. Specific Comments on the DEA.

   a. Page 1-3, Last sentence in second to last paragraph. Site “3B” should be “3A”.

   b. Page 1-10, Permits and approvals. OP notes that a special permit pursuant to HRS Chapter 205 is being recommended for the proposed action. OP believes it is preferable to pursue a district boundary amendment, although we are cognizant of the perception of the added cost of seeking a boundary

amendment. It is recommended that the applicant consider a County-administered district boundary amendment to the Rural or Urban land use district if the selected site lies within a County rural or urban-like plan designation or rural or urban County zoning district.

c. Page 2-4, Impacts and Mitigation, Storm water Runoff. The County Department of Public Works commented that all runoff shall be retained onsite. Specific reference to the use of low impact development techniques or practices should be included in the Final EA.

d. Page 4-21, Discussion under Goal 3. Final EA should insert "fuels" after "fossil".

e. Page 5-3, Paragraph 11. Although the conventional language used here does not cite lava hazards, the Final EA should include site/facility vulnerability to lava hazards in the discussion.

OP does not object to the anticipated Finding of No Significant Impact for the Proposed Action. OP also supports any DAGS and HSPLS action to pursue the viability of co-location of the proposed Pāhoa Public Library and the County Pāhoa Transit Hub.

Thank you again for the opportunity to review and provide comments on the DEA and the Proposed Action. If you have any questions, please contact Ruby Edwards, Land Use Division, at (808) 587-2817.

Mahalo,

Mary Alice Evans

Mary Alice Evans
Director

c: Brian Isa, Department of Accounting and General Services
Stacey Aldrich, Hawai'i State Public Library System
Zendo Kern, County of Hawai'i Planning Department
Brenda Carreira, County of Hawai'i Mass Transit Agency

DAVID Y. IGE
GOVERNOR

CATHY BETTS
DIRECTOR

JOSEPH CAMPOS II
DEPUTY DIRECTOR

RECEIVED
MAR 15 2021
G70

STATE OF HAWAII
DEPARTMENT OF HUMAN SERVICES
BENEFIT, EMPLOYMENT AND SUPPORT SERVICES DIVISION
1010 Richards Street, Suite 512
Honolulu, Hawai'i 96813

Re: 21-0485
BESSD 21.C0301

March 10, 2021

Group 70 International, Inc.
111 S. King Street, Suite 170
Honolulu, Hawaii 96813
Attn: Mark Kawika McKeague, AICP

Dear Mr. McKeague:

Subject: Chapter 343, Hawaii Revised Statutes, Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI)
Pahoa Public Library Site Selection, Puna, Island of Hawaii, Hawaii
Tax Map Keys: (3) 1-5 007:017 por., (3) 1-5 002:020 por., and (3) 1-5 008:001 por.

The Department of Human Services (DHS) has reviewed the DEA-AFONSI for the Pahoa Public Library Site Selection. At this time, DHS has no comments.

If you have any questions regarding this matter, please contact Ms. Lisa Galino, Child Care Program Specialist at (808) 586-5712.

Sincerely,

Scott Nakasone

Scott Nakasone
Assistant Division Administrator

c: Cathy Betts, DHS Director

From: Kawika McKeague
Sent: Wednesday, March 24, 2021 12:54 PM
To: Reyna L. DePonte; Vi Verawudh
Subject: FW: Pahoa Public Library Site Selection--Draft EA

Kawika McKeague, AICP
Principal
t 808.441.2120
e kawikam@g70.design

Click here to download Outlook vCard.

From: Cab General <Cab.General@doh.hawaii.gov>
Sent: Wednesday, March 24, 2021 12:53 PM
To: Isa, Brian S <brian.s.isa@hawaii.gov>; Kawika McKeague <kawikam@g70.design>
Subject: Pahoa Public Library Site Selection--Draft EA

Aloha

Thank you for the opportunity to provide comments on the subject project.
Please see our standard comments at:

https://health.hawaii.gov/cab/files/2019/08/Standard-Comments-Clean-Air-Branch-2019.pdf

Please let me know if you have any Questions

Lisa M.M. Wallace
EHS QA Officer
Clean Air Branch
Environmental Health Office
Hilo, Hawaii 96720

Standard Comments for Land Use Reviews
Clean Air Branch
Hawaii State Department of Health

If your proposed project:

Requires an Air Pollution Control Permit

You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch.

Includes construction or demolition activities that involve asbestos

You must contact the Asbestos Abatement Office in the Indoor and Radiological Health Branch.

Has the potential to generate fugitive dust

You must control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, business, public areas and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does *not* require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.

You should provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

a) Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive 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 airborne, visible fugitive dust from shoulders and access roads;
e) Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Controlling airborne, visible fugitive dust from debris being hauled away from the project site.

If you have questions about fugitive dust, please contact the Enforcement Section of the Clean Air Branch

Clean Air Branch (808) 586-4200 cab@doh.hawaii.gov	Indoor Radiological Health Branch (808) 586-4700

April 1, 2019

Mitchell D. Roth
Mayor

Lee E. Lord
Managing Director

Steven Ikaika Rodenhurst, P.E.
Director

County of Hawai'i
DEPARTMENT OF PUBLIC WORKS
Aupuni Center
101 Pauahi Street, Suite 7 · Hilo, Hawai'i 96720-4224
(808) 961-8321 · Fax (808) 961-8630
public_works@hawaiicounty.gov

MARCH 24, 2021

ATTN: MARK KAWIKA MCKEAGUE, AICP
GROUP 70 INTERNATIONAL, INC.
111 S. KING STREET, SUITE 170
HONOLULU, HAWAII 96813
(via email to kawikam@g70.design)

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
PAHOA PUBLIC LIBRARY SITE SELECTION
PUNA DISTRICT, ISLAND OF HAWAII, HAWAII
TMKS: (3) 1-5-002:020, 1-5-007:017, 1-5-008:001

We received the subject dated February 22, 2021 and have the following comments:

The subject parcels are in an area designated as Zone X on the Flood Insurance Rate Map (FIRM) by the Federal Emergency Management Agency (FEMA). Zone X is an area determined to be outside the 500-year floodplain.

All activities shall comply with the requirements of Hawaii County Code, Chapter 10, Erosion and Sedimentary Control.

Kauhale Street and Apaa Street are both maintained by the County. Therefore, construction within these right-of-ways shall comply with HCC, Chapter 22, County Streets.

All development-generated runoff shall be disposed of on site and not directed toward any adjacent properties.

Should there be any questions concerning this matter, please contact Ms. Robyn Matsumoto in our Engineering Division at (808) 961-8924.

ALAN K. THOMPSON, P.E.
Division Chief
Engineering Division

RM

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI'I
345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAI'I 96720
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

March 17, 2021

RECEIVED
MAR 19 2021
G70

Mr. Mark Kawika McKeague, AICP
G70
111 South King Street, Suite 170
Honolulu, HI 96813

Dear Mr. McKeague:

Subject: Draft-Environmental Assessment and Anticipated Findings of No Significant Impact
Pāhoa Public Library Site Selection
Tax Map Key 1-5-002:020, 1-5-007:017 and 1-5-008:001

We have reviewed the subject Draft Environmental Assessment and have the following comments.

The Department requires that the applicant submit a detailed estimated maximum daily water usage calculation for the proposed public library, prepared by a professional engineer, licensed in the State of Hawai'i, for review and approval. The water usage calculations should include the total estimated daily water usage in gallons per day (GPD) and the estimated peak flow, in gallons per minute (GPM).

Based on the water usage calculations provided, the Department will determine if the existing water system is adequate to support the additional water demand, facilities charge and necessary water system improvements. Please be informed that the water availability in the area is limited, and additional water may not be available.

Should there be any questions, please contact Mr. Ryan Quitoriano of our Water Resources and Planning Branch at 961-8070, extension 256.

Sincerely yours,

Keith K. Okamoto, P.E.
Manager-Chief Engineer

RQ:dfg

copy – Ms. Stacey Aldrich, Hawai'i State Public Library System

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 1, 2021

G70 International, Inc.
Attention: Mr. Mark Kawika McKeague via email: kawikam@g70.design
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. McKeague:

SUBJECT: Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed **Pahoa Public Library** Site Selection located at Puna, Island of Hawaii; TMKs: (3) 1-5-007:017 por., (3) 1-5-002:020 por., and (3) 1-5-008:001 por. on behalf of State of Hawaii, Department of Accounting and General Services

Thank you for the opportunity to review and comment on the subject matter. In addition to our previous comments dated March 22, 2021, enclosed are comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: darlene.k.nakamura@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosures
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
ELIZABETH A. CHAR, M.D.
NEIL J. HANNAHS
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

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

April 1, 2021

REF: RFD.5617.8

TO: Mr. Russell Tsuji, Administrator
Land Division

FROM: M. Kaleo Manuel, Deputy Director
Commission on Water Resource Management

SUBJECT: Pahoa Public Library Site Selection, Puna

FILE NO.: RFD.5617.8
TMK NO.: (3) 1-5-002:020, (3) 1-5-007:017, (3) 1-5-008:001

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

Our comments related to water resources are checked off below.

- [ ] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
- [ ] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- [ ] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
- [X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.
- [X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/
- [X] 6. We recommend the use of alternative water sources, wherever practicable.
- [X] 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.
- [X] 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.

☐ 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) are required before the commencement of any well construction work.

☐ 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 can be made to the bed and/or banks of a steam channel.

☐ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is 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: Planning - The proposed water source(s) and projected water demands for the project, both potable and non-potable, should be identified and the calculations used to estimate demands should be provided. A discussion of the potential impacts on water resources and other public trust uses of water should be included, and any proposed mitigation measures described. Water conservation and efficiency measures to be implemented should also be discussed.

As noted above, the Commission supports the use of alternative resources wherever practicable to conserve natural supplies. It is the policy of the Water Commission to promote the viable and appropriate reuse of reclaimed water insofar as it does not compromise beneficial uses of existing water resources

If you have any questions, please contact Neal Fujii of the Commission staff at 587-0216.

3/12/21

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 4, 2021

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_Engineering Division (DLNR.ENGR@hawaii.gov)
_X_Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks
_X_Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands
_X_Land Division – Hawaii District (gordon.c.heit@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed **Pahoa Public Library** Site Selection
LOCATION: Puna, Island of Hawaii; TMKs: (3) 1-5-007:017 por., (3) 1-5-002:020 por., and (3) 1-5-008:001 por.
APPLICANT: Group 70 International, Inc. dba G70 on behalf of State of Hawaii, Department of Accounting and General Services

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **March 19, 2021.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on The Environmental Notice in the middle of the page.)

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

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

Signed: [signature]
Print Name: GORDON C. HEIT
Division: Land
Date: 3/16/21

Attachments
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 22, 2021

G70 International, Inc.
Attention: Mr. Mark Kawika McKeague via email: kawikam@g70.design
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. McKeague:

SUBJECT: Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed **Pahoa Public Library** Site Selection located at Puna, Island of Hawaii; TMKs: (3) 1-5-007:017 por., (3) 1-5-002:020 por., and (3) 1-5-008:001 por. on behalf of State of Hawaii, Department of Accounting and General Services

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

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

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosures
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 4, 2021

MEMORANDUM

FROM:

~~TO:~~ **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_Engineering Division (DLNR.ENGR@hawaii.gov)
_X_Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks
_X_Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands
_X_Land Division – Hawaii District (gordon.c.heit@hawaii.gov)

TO:

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

SUBJECT: Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed **Pahoa Public Library** Site Selection

LOCATION: Puna, Island of Hawaii; TMKs: (3) 1-5-007:017 por., (3) 1-5-002:020 por., and (3) 1-5-008:001 por.

APPLICANT: Group 70 International, Inc. dba G70 on behalf of State of Hawaii, Department of Accounting and General Services

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **March 19, 2021.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on The Environmental Notice in the middle of the page.)

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

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

Signed: [signature]
Print Name: Carty S. Chang, Chief Engineer
Division: Engineering Division
Date: Mar 10, 2021

Attachments
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 4, 2021

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
X Engineering Division (DLNR.ENGR@hawaii.gov)
X Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks
X Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands
X Land Division – Hawaii District (gordon.c.heit@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed **Pahoa Public Library** Site Selection
LOCATION: Puna, Island of Hawaii; TMKs: (3) 1-5-007:017 por., (3) 1-5-002:020 por., and (3) 1-5-008:001 por.
APPLICANT: Group 70 International, Inc. dba G70 on behalf of State of Hawaii, Department of Accounting and General Services

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **March 19, 2021.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on The Environmental Notice in the middle of the page.)

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

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

Signed: DGS
Print Name: DAVID G. SMITH, Administrator
Division: Division of Forestry and Wildlife
Date: Mar 19, 2021

Attachments
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

March 16, 2021

MEMORANDUM *Log no. 3054*

TO: RUSSELL Y. TSUJI, Administrator
Land Division

FROM: DAVID G. SMITH, Administrator
Division of Forestry and Wildlife

SUBJECT: Division of Forestry and Wildlife Comments on the Draft Environmental Assessment (DEA) and Anticipated Finding of No Significant Impact (FONSI) for the Proposed Pāhoa Public Library

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your inquiry regarding the DEA and anticipated FONSI for the proposed Pāhoa public library in Pāhoa on the island of Hawai'i, TMKs: (3) 1-5-007:0017 (por.), (3) 1-5-002:020 (por.), and (3) 1-5-007:0017 1-5-008:001 (por.). The proposed project consists of constructing an 8,000 square foot enclosed, air conditioned structure and a 1,000 square foot indoor-outdoor entry lanai activity area.

The State listed Hawaiian Hawk or 'Io (*Buteo solitarius*) is known to occur in the project vicinity. DOFAW recommends surveying the area to ensure no Hawaiian Hawk nests are present if trees are to be cut. 'Io nests might be present during the breeding season from March to September.

The State listed Hawaiian Hoary Bat or 'Ōpe'ape'a (*Lasiurus cinereus semotus*) has the potential to occur in the vicinity of the project area and may roost in nearby trees. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.

To prevent the spread of Rapid 'Ōhi'a Death (ROD), if 'ōhi'a trees are present and will be removed, trimmed, or potentially injured DOFAW requests that the information and guidance at the following website be reviewed and followed: https://cms.ctahr.hawaii.edu/rod.

DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawai'i-Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project (https://sites.google.com/site/weedriskassessment/home). We recommend that you refer to www.plantpono.org for guidance on selection and evaluation for landscaping plants.

DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid ʻŌhiʻa Death), vertebrate and invertebrate pests (e.g. Little Fire Ants), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the Big Island Invasive Species Committee at (808) 933-3340 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol solution to prevent the spread of Rapid ʻŌhiʻa Death and other harmful fungal pathogens.

We note that artificial lighting can adversely impact seabirds that may pass through the area at night by causing disorientation. This disorientation can result in collision with manmade artifacts or grounding of birds. For nighttime lighting that might be required, DOFAW recommends that all lights be fully shielded to minimize impacts. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawaiʻi please visit: https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.

We appreciate your efforts to work with our office for the conservation of our native species. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Paul Radley, Protected Species Habitat Conservation Planning Coordinator at (808) 587-0010 or paul.m.radley@hawaii.gov.

Sincerely,

DAVID G. SMITH
Administrator

DAVID Y. IGE
GOVERNOR

JADE T. BUTAY
DIRECTOR

Deputy Director
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

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

IN REPLY REFER TO:
DIR 0167
HWY-PS 2.5281

March 31, 2021

Mr. Mark Kawika McKeague
Principal
Group 70 International, Inc.
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Dear Mr. McKeague:

Subject: Request for Comments for Draft Environmental Assessment
Pahoa Public Library
Puna, Hawaii
Tax Map Key Nos.: (3) 1-5-007: 017 (Por.), 1-5-002: 020 (Por.), and 1-5-008: 001 (Por.)

Thank you for your letter dated February 22, 2021 and the opportunity to review the above-referenced project which includes a Traffic Impact Analysis Report (TIAR) dated February 2018. The Draft Environmental Assessment (DEA) required by Chapter 343, Hawaii Revised Statutes is due to the use of State or County land and funds. The purpose of the DEA is to evaluate the three final alternative locations considered for the new Public Library. The three locations are: the site by the Pahoa Division of Motor Vehicles (Site 1), the Pahoa District Park (Site 2), and the site by State Highway Route 130 Mauka (Site 3A).

The proposed work will include the construction of an 8,000-square-foot (sq. ft.) building facility, and 1,000 sq. ft. of outdoor area with a community garden and areas for various activities.

A total of 30 parking spaces are planned and all 3 alternative sites are accessible from Keaau-Pahoa Road; State-owned, Route 130.

The Hawaii Department of Transportation (HDOT) has the following comments:

1. As noted in our comments during the Early Consultation review, the HDOT remains in favor of Alternative Site 2, the Pahoa District Park with the least traffic impact to the State highway facilities.

2. The TIAR for the Alternative Site 2 should be revised or an addendum should be included, since it did not provide a conclusion or any mitigation recommendations.

   2.1. On Page 4, 1.0 Executive Summary states that "The addition of project trips are expected to exacerbate undesirable operations in the PM peak hour." However, the study did not address or offer any recommended mitigation to the traffic attributed by the project. The DEA and the TIAR should be revised to provide a discussion on mitigation recommendations to the project traffic.

3. On Page 12, 3.1.1 Existing Roadway System states that "Pahoa Bypass Road is under the jurisdiction of the County of Hawaii and it is a north-south two-lane facility with a posted speed limit of 45 mph." We note that Pahoa Bypass Road is part of Route 130 under the State jurisdiction of the HDOT; therefore, the statement should be corrected.

4. The Multi-Modal Assessment (Page 33) concluded that the pedestrian demand will be mild; therefore, no improvements will be proposed. However, the HDOT encourages pedestrian enhancement should be looked at given that the site location may generate pedestrian movement. As stated in the assessment, the site is only a half mile to the closest residential area and a quarter mile to the closest commercial center.

5. On the Multi-Modal Assessment, we found the two statements below appear to be inconsistent: "People on bicycles may also access the project site from the adjacent residential neighborhoods as well as the Pahoa Village Center via Keaau-Pahoa Road." However, the 3rd paragraph further stated that, "As noted previously, no existing pedestrian or bicycle facilities connect to the proposed library site on Keaau-Pahoa Road." Therefore, the study should be revised for clarity.

If you have any questions, please contact Jeyan Thirugnanam, Systems Planning Engineer, Highways Division, Planning Branch at (808) 587-6336 or by email at jeyan.thirugnanam@hawaii.gov. Please reference file review number PS 2021-035.

Sincerely,

JADE T. BUTAY
Director of Transportation

Thomas Pi'ilani Smith

From: Christopher Joseph <mr.luckyref@gmail.com>
Sent: Wednesday, February 24, 2021 8:01 AM
To: Vi Verawudh
Subject: Library

I think site 2 would be best based on previous lava flows that has happened. Mother nature has a way of popping up and it wasn't to long ago the whole location was evacuated. Just saying...

Chat with you soon

Lucky Joseph

Thomas Pi'ilani Smith

From: leelani2 <leelani2@aol.com>
Sent: Thursday, March 18, 2021 12:45 PM
To: Vi Verawudh
Subject: New location for Pahoa library

I have been a devoted patron of the current Pahoa library since 1999. I have been a substitute employee and in more recent years I have volunteered twice a week in the library (until COVID, of course.) I am also president of Friends of Pahoa Library although I am speaking for myself and not for other members.

Here is my evaluation of the three proposed sites:

Site 1 - near Pahoa Fire Station. Excellent location for car access from the Pahoa area, visibility to the community, easy to give directions, reachable by public transportation. This location would help the community hub aspect of the current library to expand - more computers and fast wifi. With a good sized meeting room and good parking it would be possible to have actual community classes, events and meetings.

Please put in nice public restrooms. The current library (before COVID) had one of the only public restrooms in Pahoa, a real service! Hitchhikers may not seem like an important community anywhere else but there were a significant number of them in the Pahoa area before COVID. Hitchhiking and walking access would be best at this site.

This site would always have the police and the fire station nearby to create a sense of security.

This is the best possible location!

==========

Site 2 - in Pahoa District Park. My view is that this will make the library less visible to the community. The library users would be more of an in group. The area seems hidden and lonely and deserted at night.

What can I say? I just don't like this site.

==========

Site 3 - Highway 130 1.5 miles north of Pahoa. I'm not sure exactly where this is but it is on the highway which makes car access and visibility good and the site is big.

This would be my second choice but it is not a close second. It's too far away for the walkers. I have spent a lot of time in the library and observing the population in Pahoa. There are a lot of walkers.

==========

Thanks so much for your attention. Whatever happens, we will be deeply grateful for a new facility. Before Covid the current library was the third busiest library (based on circulation) on the island, pretty good for a small rural library. With a pre-Covid staff of 4 1/2, patrons got real personal service. (During Covid the library is down to 2 1/2 staff members!) Maybe we will be sacrificing some of that personal service in a larger facility with, presumably, a larger staff. I will be so happy to start volunteering at the new library. Of course the Friend's financial resources will continue to be available. An area earmarked for Friend's book sales would be great!

Lee Maniscalco
333-8669 voice/text
leelani2@aol.com
0025012501

Sent from the all new Aol app for iOS

Thomas Pi'ilani Smith

From: Cheryl Carroll <cheryllcarroll@gmail.com>
Sent: Saturday, March 20, 2021 1:06 PM
To: Vi Verawudh
Subject: Pahoa Library location opinion

Aloha,
My name is Cheryl Carroll and I serve on the Board of the Friends of Pahoa Library.
I believe the best and only choice for the new library location is choice #1, by the police station.
I hope you will see its many advantages.

Sent from my iPhone

Thomas Pi'ilani Smith

From: George Gorman <littlespots@yahoo.com>
Sent: Monday, March 22, 2021 2:37 PM
To: Vi Verawudh
Subject: Library Site

Hi Viv,

I live in Leilani and I vote for the second possible site above the Community Center. Libraries and highway noises don't go well together. And it would be easier for more young people to get to.

Thanks,
George Gorman

Thomas Pi'ilani Smith

From: gaila vidunas <gailav@yahoo.com>
Sent: Wednesday, March 24, 2021 8:05 AM
To: Vi Verawudh
Subject: Fw: Pahoa Public Library location

Good morning

I re-read my original e-mail and found an error in the portion about Site #2. (I'll blame it on being more lax about self-editing during retirement !). Please use the corrected version below in your considerations. Thank you. GV

----- Forwarded Message -----
From: gaila vidunas <gailav@yahoo.com>
To: viv@g70.design <viv@g70.design>
Sent: Tuesday, March 23, 2021, 04:07:00 PM HST
Subject: Pahoa Public Library location

Hello

I am writing in support of Site #1 (TMK 1-5-007-:017), on Hwy 130 next to the Fire Station/DMV, for the location of a new Pahoa Public Library.

I was the Branch Manager at Pahoa Public & School Library when the preliminary search was begun, and at that time I thought Site #1 was the best choice. I have since retired, still reside in Puna, and continue to think that Site #1 would be the most suitable.

Site #1 : the best location choice
- Necessary infrastructure (water, electricity, telephone, broadband) readily brought in from Highway 130
- Located on the main road (Hwy 130) leading into Pahoa, making access by car or bus very easy
- Located a very short distance of the Woodlawn Center, and the Puna Makai Shopping Centers, the new focal points of Pahoa town
- High visibility to the public

Site #2: a very distant 3rd choice
- That particular section of the county park is prone to flooding: the recent weeks of heavy rain have turned it into a lake. It would take a substantial drainage plan/project to fix. Other infrastructure is also more distant to bring in than for Sites #1 or #3.
- The road connecting the park and Pahoa Village Road is too narrow and winding for a county bus. This site is mauka from town, making it a strenuous trek, in an area that averages over 120" of rain per year, for anyone walking from the Pahoa Village Road, and/or the bus stop
- Poor visibility to the public

Site #3: a distant (literally) 2nd choice
- While it shares some of the positive attributes of Site #1 (infrastructure accessibility, on Hwy 130 for car and bus access), the fact that it is a far distance from Pahoa itself would make a less desirable location.

On related topic, writing as the former branch manager, an area for the Friends of the Library would be very, very useful when the building itself is being designed. Due to

tight state budgets, the Pahoa Friends support for library operations has been of enormous value, similar to large Friends groups on Oahu and Maui. Having their functions organized in one place instead of various members' homes would be of great benefit to the library.

Thank you for taking community perspectives into consideration.

Gaila Vidunas

Thomas Pi'ilani Smith

From: George Gorman <littlespots@yahoo.com>
Sent: Monday, March 22, 2021 2:37 PM
To: Vi Verawudh
Subject: Library Site

Hi Viv,

I live in Leilani and I vote for the second possible site above the Community Center. Libraries and highway noises don't go well together. And it would be easier for more young people to get to.

Thanks,
George Gorman

viv@g70.design

Aloha,

Comments RE Pahoa Library EA. It's as if the geology and hazards are being dismissed out of hand. What is the clear justification for spending millions on infrastructure in Pahoa?

First below: "drought tolerant" is not an issue in Pahoa. If water supply is an issue, construct a water catchment tank for irrigation. I highly encourage a native and endemic plant palette utilizing plants not easily found in nurseries. Ohia, akia shrubs and trees, alahee, lama, ohe mauka, pukiawe, aalii, pili, would be good choices.

Landscaping at the Pāhoa Public Library will integrate water conservation principles such as the use of native or adaptive plant species that are drought tolerant, synthetic turf, water-efficient drip irrigation system, and climate sensing device to minimize impact on the water resource.

2-12 G70

BELOW: How does "consider...lava hazards" influence site and building design? Best is not to build in hazardous areas! I remind you that in 2014 a lava flow entered the premises of the Pahoa Dump. Spending tens of millions of dollars on a Library in Pahoa seems not a good idea. If a community gathering place and access to broadband is needed, build that.

2.5.2 VOLCANIC HAZARD

Existing Conditions – The three final candidate sites are all located in an area of relatively high lava flow risk – Zone 2 and 3 (on a scale from 9 to 1, Zone 1 presents the highest risk). Refer to *Figure 2.3*. Sites 1 and 2 are located in volcanic hazard Zone 2 which is a relatively high lava flow risk. However, Site 1 is positioned near the boundary of Zone 3 (Areas gradationally less hazardous than Zone 2 because of greater distance from active vents or topography). Site 3 is located in Lava Zone 3 which is less hazardous than Zone 2. In addition to lava flow, other lava-related hazards include airborne lava fragments, volcanic gas and wildfire ignition (Hawai'i Wildfire Management Organization 2013, *Appendix D*).

Impacts and Mitigation – All three final candidate sites are situated father from the east rift zone than the current location of Pāhoa library. Specific site and building design should consider potential lava hazards.

BELOW: None of the sites are on Maunaloa. Use Geological Maps to determine flow ages and origins.

2.2 GEOLOGY

Existing Conditions – The sites lie partly on the lower slopes of Mauna Loa, but is located mostly on the lava shield of Kīlauea. The sites are located within an elevation range from 600 to 700 feet above MSL. The sites naturally slope from southwest to northeast direction. Geologically, the Project area consists almost entirely of Pāhoehoe Lava Flows with small pockets of soils from the Keaukaha Series, the Keei Series, the Olaa series and the Papai Series

Impacts and Mitigation – The proposed Project will not substantially alter the overall existing geology and topography of the sites. Mitigation measures related to soils and grading are described in the following section.

Bobby Camara
Volcano HI

Thomas Pi'ilani Smith

From: Linda <ljmoore1@hawaiiantel.net>
Sent: Thursday, March 25, 2021 11:56 AM
To: Vi Verawudh
Subject: New Pahoa library location

Aloha,
I would like to see the new Pahoa library built on Site 2, at the Pahoa District Park. I would much prefer to be able to access the library without having to get on the highway, especially during peak traffic hours. I like the location of the current library and at least with Site 2 the library would still be in Pahoa.
Mahalo,
Linda Moore

Sent from my iPhone

From: Ben <bighawaiiben@gmail.com>
Sent: Monday, May 17, 2021 8:32 PM
To: Vi Verawudh <viv@g70.design>
Subject: pahoa library design comments?

I know i'm late to the comment window.

Just trying to suggest that with the new generation of people reading books online that you design a library that is multi purpose. more community use than just a moldy book shelf. maybe with an outdoor theater/stage area can be used for both book reading groups and outdoor events. indoor auditorium for author presentations and movies.

etc!

Thanks
Ben

Testimony on choice of sites for Pahoa Library, Puna, Hawaii Island

Submitted by Dr. Stephen M. Smith,

March 24, 2021

A new library for Pahoa is a worthy project, and one that I support. I do have some information that must be considered in the choice of the site for this project. Site #1 is problematic for a number of reasons, and should be dropped from consideration. My top three reasons for removing Site #1 from consideration are as follows:

1. There are known Hawaiian cultural features that would be harmed by development of Site #1. I reference Survey of Lava Tubes in the Former Puna Forest Reserve and on Adjacent State of Hawaii Lands, prepared in 1991 by H. McEldowney and F. D. Stone for State Historic Preservation Division, Division of Water Resource Management, and Department of Land and Natural Resources. This report documents numerous natural and cultural features, some of which would be impacted by development of Site #1.

2. There is significant risk of property damage, possible morbidity, and even possible mortality as a result of collapse of subterranean voids during construction, or even after construction might be completed. There are known subterranean voids that occupy significant portions of this property. There is also possibility of additional unknown subterranean voids. Please see the attached screen shot from Google Earth with red area showing known potential area of concern as it relates to this property. This figure was created with information from a survey conducted in the past.

3. Subterranean voids are habitat for unique ecosystems with organisms distinct to those ecosystems. Some of those animals are unique to Hawaii. There is some documentation of such species in the above mentioned publication (McEldowney and Stone). Such ecosystems are fueled by energy that is input through the roots of trees and vegetation on the surface. These roots fuel the ecosystem, and bring energy into the voids. Destruction the surface vegetation destroys the subterranean ecosystem.

In conclusion, I would like to commend the county and state for putting resources into building new libraries for Puna. Libraries are magical places, where people find opportunity for growth. Please build them! But, please, do not build this library on Site #1. Please do not build anything on Site #1. Any development on this property stands to lose more than whatever else we might gain.

Respectfully,

Dr. Stephen M. Smith

TO:
brian.s.isa@hawaii.gov
viv@g70.design
kawikam@g70.design
oeqchawaii@doh.hawaii.gov
susan.a.lebo@hawaii.gov

FROM :
Deborah Ward
P. O. Box 918
Kurtistown HI 96760
cordylinecolor@gmail.com

RE: Pahoa_Library_Site_Selection_DEA_Feb2021.pdf

DAGS Job Number I1-36-6553

Aloha,
I am strongly in support of construction of a new library for Pahoa, preferably close to the school and playgrounds.
I recently became aware of the Pahoa Library EA, and the sites selected in the proposal.

Selection of Site #1 next to the Pahoa Fire Station would be a very poor choice, however. Even a discussion of this site is of concern, due to the lack of critical information in this document regarding the cultural, archaeological and ecological values that have been known, reported and discussed for years with SHPD, NARS, County of Hawai'i Planning Department, and Civil Defense. As indicated in

the preface to the CIA, but there is extensive documentation of subterranean passages that run under the property. A Survey of Lava Tubes in the Former Puna Forest Reserve and Adjacent State of Hawaii Lands was conducted by my late partner Dr Fred Stone and Dr. H. McEldowney in 1991. Some years ago, Pahoa land (including this site) was nominated to the NARS for consideration, and more recently, a bus hub was proposed and then disregarded, due to the sensitivity of the site and the capacity for injury should any of the passages collapse. The planning department has the records on file.

Thank you,
Deborah Ward

Appendix I

A Survey of Lava Tubes in the Former Puna Forest Reserve and Adjacent State of Hawaii Lands

SURVEY OF LAVA TUBES IN THE FORMER PUNA FOREST RESERVE AND ON ADJACENT STATE OF HAWAII LANDS

H. McEldowney
A.B.D, Prehistory, Australian National University
Staff Archaeologist, State Historic Preservation Division

F. D. Stone
Masters of Science, Entomology, Cornell University
PhD., Geography, University of Hawaii
Instructor in Science, Hawaii Community College

Prepared for:
State Historic Preservation Division
Division of Water Resource Management
Department of Land and Natural Resource, State of Hawaii

October 1991

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This study was initiated after members of the Puna community brought to the attention of the Historic Preservation Office that major lava tube systems extended from the Pahoa area into at least portions of the former Puna Forest Reserve (TMK: 3-1-2-10: 2 and 3). They were concerned that planned geothermal exploration and development could damage these lava tubes which they said contained extensive evidence of past Hawaiian use including fortifications, shrines, platforms and burials. Geothermal development is currently being planned by Campbell Estate and True Geothermal Energy Company in the southern portion of the former Reserve which has been designated by the State of Hawaii as one of the three Geothermal Sub-Zones in Puna.

To demonstrate these claims, two staff members of the Historic Sites Section were shown examples in a lava tube *makai* of the Campbell Estate boundary. After reviewing the archaeological and historical reports commissioned for geothermal exploration, it was agreed that if these lava tubes did extend inland and continued to contain archaeological sites or burials then the potential of significant sub-surface sites had not been adequately addressed in the Historic Sites Section review process. Most reports acknowledged the possibility of lava tubes in the area and that they could contain burials, but no tube systems were ever identified or explored during any of the field surveys. These surveys primarily assessed the presence or absence of cultural properties that occur on the surface or as deposits within the soil layer (see discussion below).

With the assistance of the Division of Water Resource Management (DWRM), the Historic Sites Section agreed to conduct this survey because those community members who came forward requested that this information be handled by a neutral party. They asked that documentation occur in such a manner that it could be kept as confidential as possible while still providing enough information to protect any sites from damage.

The survey had three major aims. The first was to establish whether or not the lava tubes continued into the land now held by Campbell Estate or the Geothermal Sub-Zone. The second was to assess the extent to which any lava tube systems found contained archaeological remains or burials and, if so, to evaluate their general significance. The third was to define, if possible, any patterns in the distribution of the lava tube systems or the archaeological remains within them. Such patterns can allow general predictions to be made about which areas are most likely to have similar tube systems with significant archaeological sites. This is of particular importance in this region where large portions of the former Forest Reserve and the Geothermal Sub-Zone have not been inspected, and conducting extensive surveys is extremely difficult because of dense vegetation, hazardous conditions and poor ground visibility. One of the authors (Stone) has a background in Hawaiian lava tube biology, so we were able to include a preliminary survey of the invertebrate fauna found in these underground ecosystems.

Although only a small portion of the Campbell Estate land could be covered during this survey, it indicated that extensive lava tube systems do extend into the former Puna Forest

Natural Area Reserve. Because there is no single place name for the study area it will be called the Puna Forest Reserve or Campbell Estate land in the following report.

The topography and surface geology of the study area reflect the very active and recent eruptive history of Kilauea Volcano. The Middle East Rift Zone dissects the property and lava from it and the Summit Region of Kilauea have created a variable surface of differing flow types and ages. Much of the surface near the Rift has been fractured by fissures and numerous long faults or cracks. Approximately a fourth of the parcel lies on the steeply sloping south flank of the Rift and the remainder extends across the broader and more gently sloping north flank. According to Holcomb's map of Kilauea's surface geology and eruptive history (Holcomb 1980), lava flows grouped as historic (1840 to 1977) or as forming during the late 1700's, dominate the middle rift zone itself and that part of the south flank which falls within the study area. Defining flow boundaries and age groupings on the north flank was more difficult because of dense vegetation cover, particularly in the up-slope areas. Roughly half are defined as being composed of flows dated between 350 and 500 BP with the remainder estimated to be older than 1500 BP. The younger flows, grouped as the Ai-Laau series, are mainly comprised of long-duration, tube-fed pahoehoe flows which cover most of Kilauea's north flank and approximately 30% of the surface of Kilauea Volcano (Holcomb 1987:346). Kilauea has created some of the longest lava tubes in the world and many of these, including those described in this report, formed during this period. The highest single, topographic feature within the property, Puu Heiheiahulu, lies to the south of the rift and formed as a lava shield with a crater during the 1700's.

Historical and Archaeological Work.

Most historical and archaeological studies conducted for geothermal development in the Puna Forest Reserve repeatedly portray the area as a remote and inhospitable rain forest in which human use was periodic and sparsely distributed. Dominating these activities were the gathering of forest resources, including bird catching, the use of trails and temporary habitation associated with these activities. Burial, religion and limited agriculture were also given as possibilities although less frequently. Most researchers believed that tangible remnants of all these activities should be present but they expected them in low numbers and to be difficult to recognize, particularly when compared to those found in the more intensely used coastal areas or prime agricultural lands. The dominant activities were seen, at least in this region, as being less prone to produce stone, structural remains or substantial deposits of durable food remains, debris from tool manufacture or charcoal. The distribution of potential remains was not only predicted to be sparse but uneven. Greater concentrations were expected along trails, in areas where lava tubes could provide shelter or burial sites and in the seaward portions of the parcel where limited agriculture may have taken place. All studies emphasize the problems of dense vegetation which compound the difficulty of finding what is already hypothesized to be scant evidence. The vegetation

'awapuhi (*Zingiber zerumbet*). *Kukui* was seen on two reconnaissance transects along the south flank of the Rift Zone at elevations of 1,500 and 1,440 ft (Haun, Rosendahl and Landrum 1985:6) and at a proposed well site on the northern flank at 1,480 ft above sea level (Lamoureux, Whistler and Imada 1990:5). *Ki* is more common, occurring in a scattered distribution on both the southern and northern flanks to a maximum elevation of 1600 ft (Haun, Rosendahl and Landrum 1985:6,7; Bonk 1989c:11; 1990:7; Lamoureux, Whistler and Imada 1990:2). The two sightings of banana from the helicopter were both on the southern flank slightly below the 1,600 ft elevation (Haun, Rosendahl and Landrum 1985:Fig. 23). *'Awa* was also seen at the 1,240 ft elevation (Bonk 1989c:11; True Mid-Pacific 1985:Appendix A) and a few examples of *'awapuhi* were noted during the survey of three proposed well pads and access roads (Bonk 1990:7; Lamoureux, Whistler and Imada 1990a:5; Lamoureux 1990b:9). These plants, particularly *kukui*, *ki* and banana, are considered probable indicators of past use for two reasons: they were of great value and utilitarian importance to the Hawaiian culture and are unlikely to become established in rain forest communities without the aid of man either through propagation, clearing or initial tending.

In regard to lava tubes, a major oversight of these studies was the omission of Yent's survey (1983) of a "Pahoa Cave" (called the Middle Tube System here). Although the report shows the location of a single entrance on State land to the east of Campbell Estate property, the distances and bearings given in the report indicate that Yent explored at least 2,000 ft into the Forest Reserve and found defensive structures, burials, midden deposits and terracing within this stretch. Despite this omission, three overviews did consider the possibility of lava tubes with archaeological remains. The Research Design calls for surveys to pay special attention to pahoehoe flows where lava tubes could be present and could contain remnants of campsites and burials. The assessment of archaeological potential for all three Geothermal Sub-Zones simply stresses that lava tubes with remains rank as one of the major site types of Puna (Cultural Surveys of Hawaii 1989). Holmes felt that it "would not be unreasonable" to "conjecture" that there were caves in the Forest Reserve (Holmes 1985:6). Their significance, however, would be "minimal" because they would be "occasional shelter or possibly but not likely burial (because of distance from regular habitation)" (Ibid.). Our survey demonstrates that, to identify lava tubes within a study area, it may be necessary to begin the search, either in the literature or on the ground, from neighboring parcels.

Native Invertebrates and Lava Tube Ecosystems

Hawaiian native invertebrates as a whole have won recognition in the world scientific community as being an integral part of Hawaii's unique "evolutionary experiment." An important dimension of studying these evolutionary processes in Hawaii has been to contrast these cave-dwelling species with their surface-dwelling relatives. There are few other areas in the world where it is possible to find related yet distinct taxa existing both above and

could extend into the Geothermal Sub-Zone or near the proposed well sites. This remained a strong possibility because the up-slope extent of all three tubes and their eruptive sources have never been identified because dense vegetation obscures evidence of tube directions or flow boundaries throughout much of the property.

In the following report, these three tube systems, or segments of them, will be referred to as the Southern, Middle and Northern Tube systems. A total of 11 days was spent in the field searching for tube entrances above ground and mapping those which could be followed. In addition, a three-hour helicopter survey helped locate entrances on aerial photographs and probable access routes to them. In all, 42 tube entrances were visited, about nine miles of lava tube were traversed, and approximately 6.6 of these were mapped. Another 12 to 13 miles were covered above ground by foot in attempts to find additional entrances. This effort still represents coverage of less than 1/4 of the area which could have lava tubes or tube segments on Campbell Estate land.

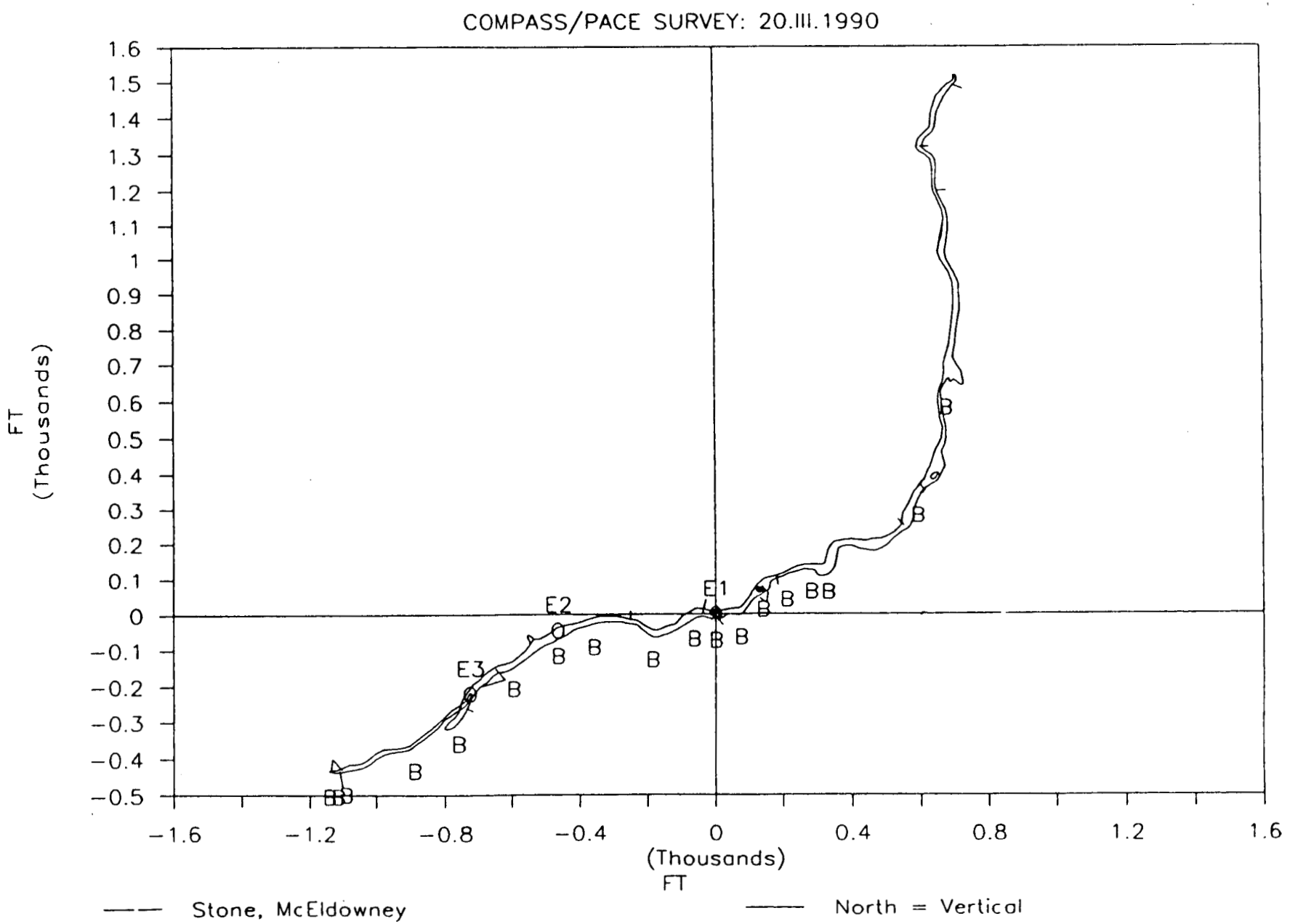
The lava tubes were mapped by the pace and compass survey method with corrections in alignment and distance being made where tube entrances could be identified and plotted on aerial photographs. This method was chosen primarily for its speed. Although relatively less accurate than other methods, it was the most efficient for documenting the course of tube systems given the limited time available and rigorous working conditions which included climbing numerous collapse piles and crawling through tight passages. With these limitations in mind, this study and the maps produced should be considered preliminary and are by no means complete or exhaustive.

SOUTHERN TUBE SYSTEM

Instead of a continuous tube system, only four tube segments could be found within a corridor that approximates the hypothesized Southern Tube. Three days were spent searching 3.2 miles of the hypothesized tube course from an elevation of 700 to 1200 ft. About 0.7 miles of this area lies within the Geothermal Sub-Zone where dense vegetation made looking for additional entrances inland unfeasible. It is possible that additional segments occur further inland in the subzone, but rigorous surface reconnaissance will be necessary to locate them. In all, an estimated 10 to 12 miles were covered above ground in the effort to locate tube openings.

Of the four segments, three were primarily used as burial tubes and each was located on State Land adjacent to the sub-zone. No evidence suggests that these burial tubes served any other function and the two larger segments, both described below in more detail, should be considered major burial caves as they contain a combined total of at least 100 individuals. The third segment (Site 50-10-55-14,903), located between the 930 and 950 ft contours, was little more than a narrow space surrounding the base of a collapse pile that filled most of the entrance. The badly disturbed bones of a single individual were mixed

Fig. 1 Southern Tube System – Lower Segment



the passage above. In the elevated passage, remains of 5 to 10 individuals cover the floor and are tucked in crevices along the tube walls. The remains are mixed with charcoal or decayed organics throughout and one red glass bead and some bottle glass were also present, suggesting that at least some of the burials date to the historic period. A strong breeze from a nearby entrance can be felt through cracks in the ceiling above the passage suggesting that an opening may have been artificially sealed with break-down rubble and roof fall slabs.

St. U12 to U11 - Up-slope from the St. U11, badly deteriorated human bone and charcoal are dispersed for a 20 ft stretch of the tube floor. The occasional scatter of charcoal and wood splinters continues beyond the bone scatter.

St. U10 to U9 - With the exception of horse bones and old bottles which were probably used as kerosene lamps, nothing was found between these stations and an upper level passage of the tube which truncates after 150 ft.

St. U9 (Entrance 3, Fig. 2a) to U8 - The double entrance at Station 9 is separated by a natural bridge. What appears to be an artificial or modified gap (2 m wide, 5 m long) crosses the down-slope end of the collapse pile under the lower entrance. The tube splits into an upper and lower passage below this entrance. The lower area has the appearance of having been roughly paved with a layer of flat, roof fall slabs.

St. U7 to U8 - Only one human bone lay on the tube floor down-slope of Station 8.

St. U7 to U6 (Entrance 2, Fig. 2a) - Two elevated shelves halfway between the stations contain burials as well as sizable amounts of organic matter, wood fragments and, next to at least one burial, a medicine jar and buttons. Large rocks appear to have been intentionally scattered on the floor, one being placed as a stepping stone to the ledge.

St. U5 to U4 - Human bone was found on shelves along the Hilo and Ka'u side of the tube as well as scattered across the floor. The shelf (1 by 10 m, 1 m high) on the Ka'u side probably holds several individuals whose bones are dispersed for several meters along the shelf and mixed with historic artifacts (glass, Chinese teacup, bottles, and long wood fragments with nails). On the Hilo side, human bone on the shelf (1 by 4 m) and floor are mixed or covered with substantial amounts of decaying wood fragments that obscure parts of the burial.

St. U4 - A single, badly deteriorated burial lies on a shelf (3 x 7 m, .75 m high) about 2 m up-slope from the station. Several small pieces of plastic are mixed with the burial.

Fig. 2a Detail of Southern Tube System – Lower Segment (Map 1)

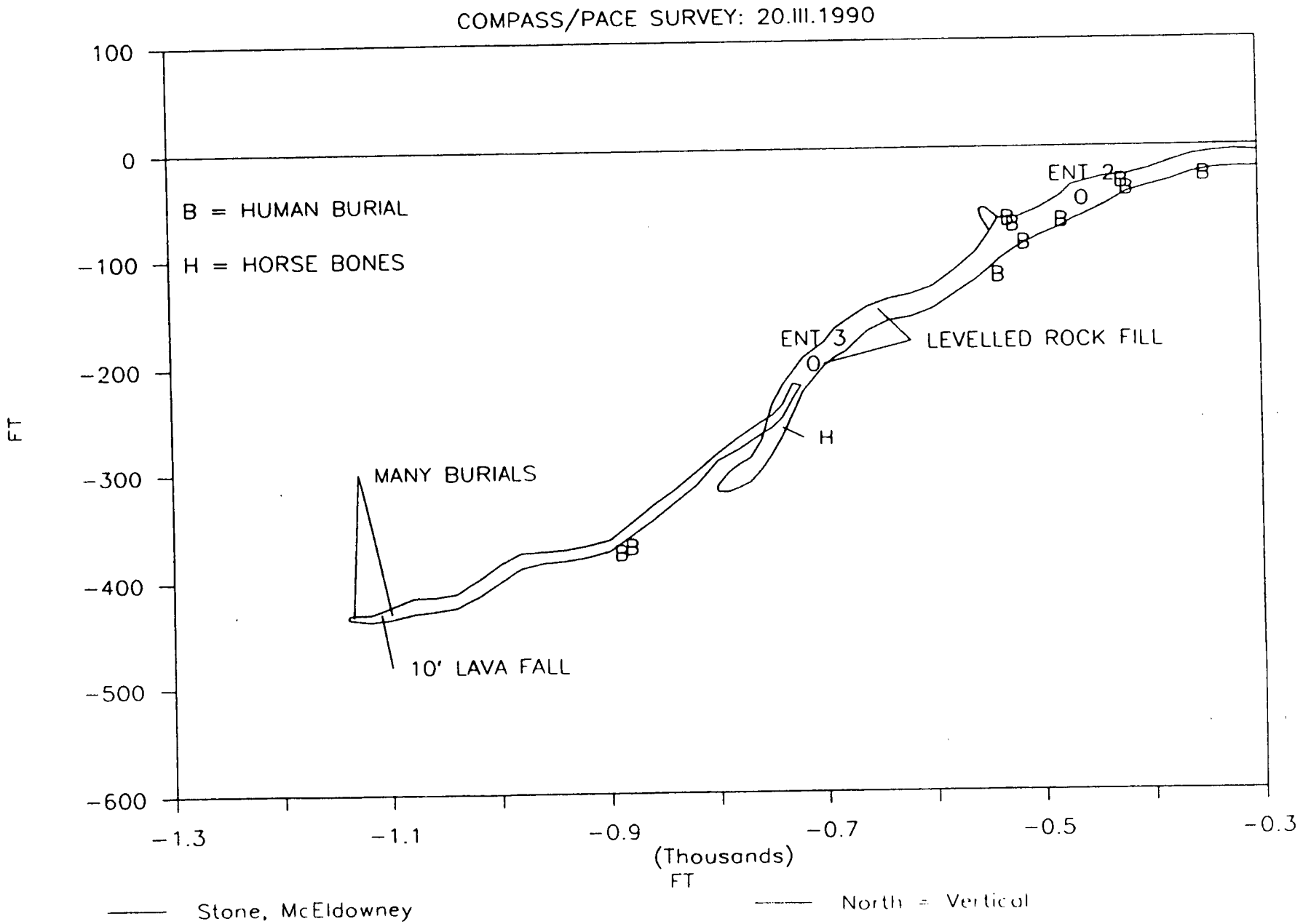
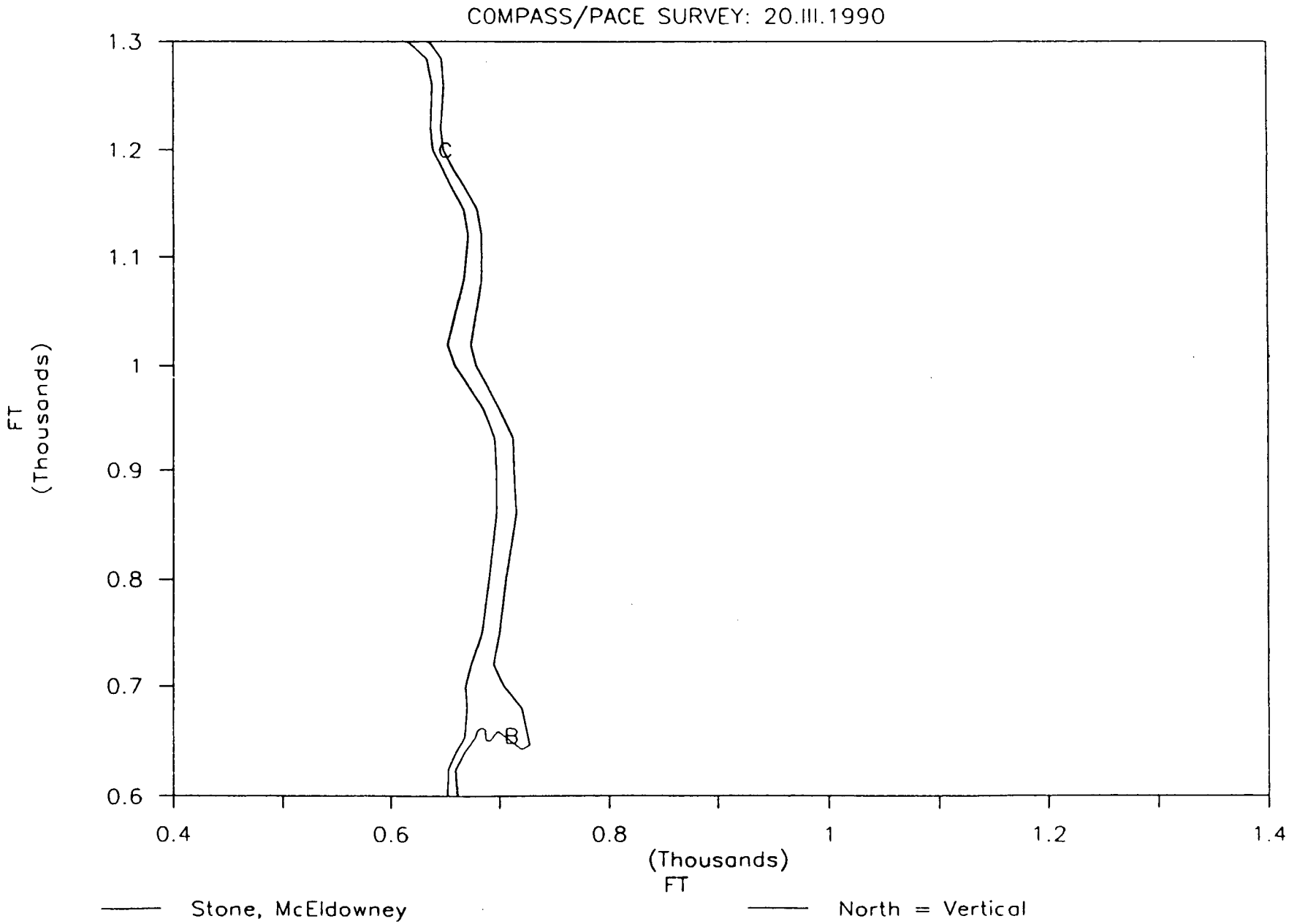


Fig. 2c Detail of Southern Tube System – Lower Segment (Map 3)



St. D6 - On the Ka'u side of the station, remains of a single individual lie on a broad shelf (1.5 m wide). The badly fragmented skull indicates that it is the remains of a single individual. An old bottle was also placed on the shelf but it is not clear if it was associated with the burial or if it was left by someone passing through.

St. D6 to D10 - The only sign of human use in this stretch of tube was a single bottle on a shelf and scattered charcoal fragments along the tube floor. Burials were absent despite an ample number of shelves.

St. D11 - About 4 m from the station, an extended burial lies on the floor of the tube parallel and adjacent to the tube wall. The long piece of wood remaining with the burial could have been a litter stick used to carry the body. The skull, although badly collapsed, was still evident.

St. D12 to D13 In this stretch, only a few pieces of charcoal were evident on the floor and collapse piles.

St. D14 - A scatter of very small, non-human bones was found about 20 ft down-slope from St. D14 on the Ka'u side of the tube. It was difficult to tell if it should be considered midden or the remnants of a natural death.

St. D15 to D16 - Ten meters up a side passage, an extended or flexed burial of a single individual is either covered or mixed with large amounts of charcoal or decaying organics. Many shelf formations are available in this section of the tube but none were used for burial.

St. D17 to D27 - The remainder of the tube contained only scattered fragments of charcoal indicating that this down-slope segment was at least explored. The up-slope portion of this segment is broad but becomes gradually more narrow as the tube ends in a low crawl and a lava seal. A large number of lava drip spires formed in this section as the flow of lava slowed and cooled at this impasse.

Upper Segment of the Southern Tube (50-10-55-14,902)

Located at an elevation of approximately 930 ft, this tube segment is entered through a small opening in the side of an elongated collapse which resembles an open trench. It could only be followed down-slope for a distance of 250 ft and averages 20 to 30 ft in width and 8 to 10 ft in height. An estimated 30 to 35 individuals were buried by being placed on the tube floor, on low shelves, within shallow holes in break-down piles or, in one case, on an intentionally leveled rubble pile or platform. As was the case in the lower segment, estimating the number of burials was difficult because the bones are badly deteriorated or

A total of five days was spent exploring and mapping this one tube. On the first day, the survey began near the highway to verify that the tube segment previously mapped by Stone extended to the Campbell Estate boundary and that it linked with that mapped and described by Yent (1983). Once this was established, four days were spent exploring and mapping the tube in successive increments inland through the Campbell property and into the Geothermal Sub-Zone. It took approximately 16 hours to reach and return from entrance 32 and to map the last section surveyed.

The following descriptions of the Middle Tube and the archaeological remains encountered address only the upper 5.1 miles of the tube or that which runs between entrances U20 and U32 (Figs. 6a-6c, 7a-7e). Of this stretch, 4.2 miles essentially cut through the center of the Campbell Estate parcel in a northeast to southwest direction. Each entrance is numbered in ascending order from the main Pahoa highway and carries the prefix U to designate that it lies up-slope of the highway. Again, because the tube meanders substantially, magnetic orientation is not used to designate which side of the tube is being discussed. Instead, anything noted as being on the Hilo side lies on the right hand side of the tube as one faces up-slope and that on the left hand side is noted as being on the Ka'u side.

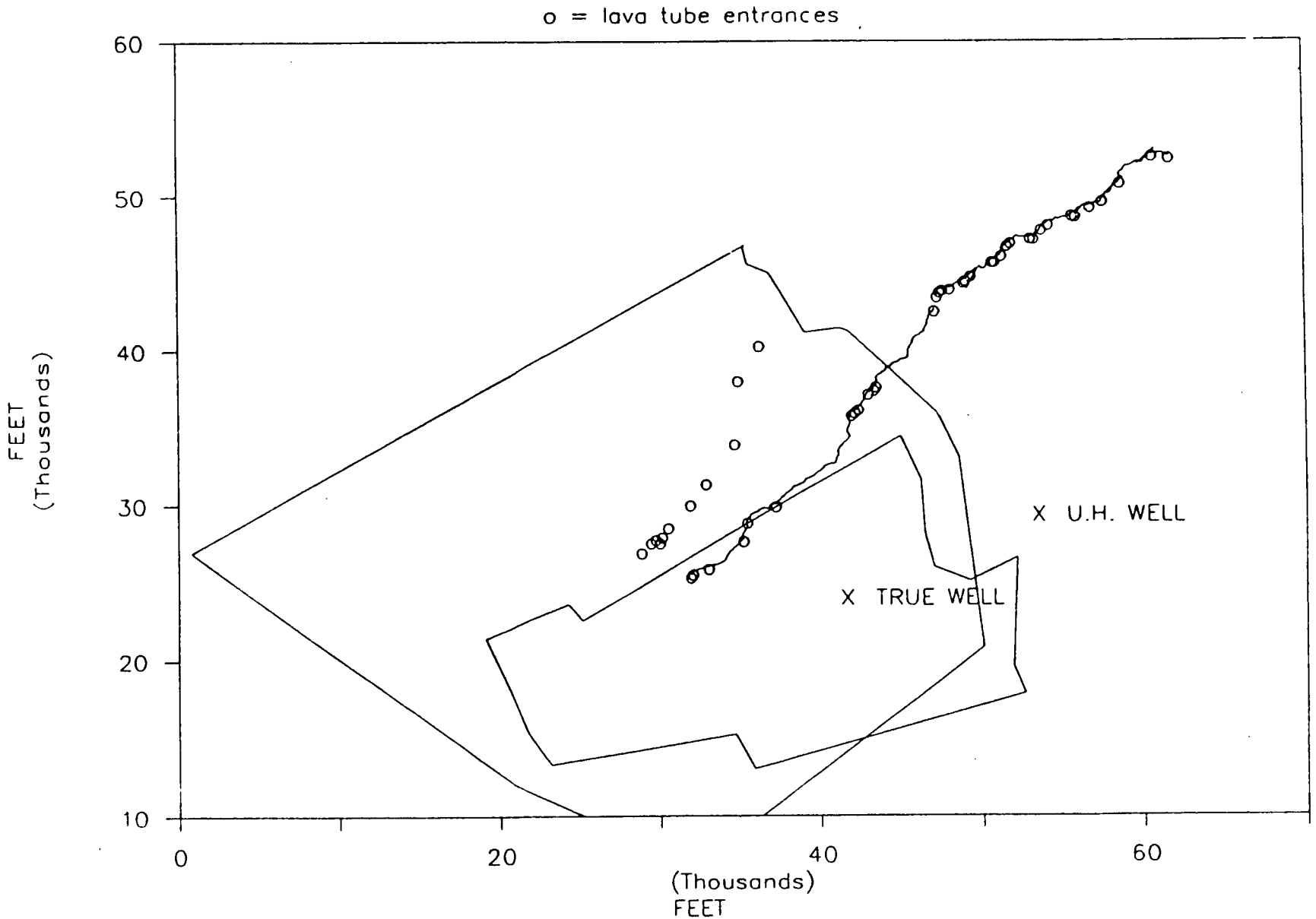
An additional lava tube was entered near entrance U20 of the Middle Tube. Only a few hundred feet was explored and no evidence of human use was found. This tube should be fully explored in the future, particularly if there are any planned development activities to the north of the Middle Tube.[1]

Despite occasional sections where the tube narrows to crawl ways or is constricted by break-down piles, the average width and height of the tube chamber remained relatively similar throughout the length mapped. Between entrances U20 and U27 (3.5 miles), the width of the tube averages 15 to 16 ft and, above U27 (1.6 miles), it averages 20 ft. The average heights vary from 11 to 13 ft throughout the 5.1 mile stretch. Some of the larger chambers mapped reach maximum widths of 35 to 40 ft and have heights of 20 to 25 ft.

Not only is this tube notable for its size, but two long sections run continuously without any openings or entrances to the surface, one being 1.4 miles long (U20 to U21) and the other

[1]On July 20, 1991, we mapped three tube segments from this entrance; two that branch from the initial entrance and eventually rejoin and a third which leaves and rejoins the northern segment. These segments continued 1,370 ft up-slope until roof collapse and lava seals blocked passage and no additional entrances were readily found above ground. Chamber width averages 20 ft while heights range between 6 and 12 ft. If unexplored segments continue up-slope on the same orientation, they could intersect the Middle Lava Tube at the first major bend up-slope from entrance U20. Of the four entrances visited, three contained evidence of human use that essentially conforms with that found at entrances of the Middle and Northern Tube. Breakdown piles at or near the entrances were shaped into several small platforms, leveled areas or, in one instance, short wall segments bordering modified areas. These and deposits of charcoal, *kukui* and *'opihi* suggest intermittent use by those working in the area or passing through. No attempts at fortification were noted nor were any burials seen although some could be well hidden.

Fig. 3 Middle Lava Tube System and Known Tube Entrances to the Northern Tube System



North = Vertical

features. Although they seem to have no apparent function and their size and shape varied considerably, they appeared to be out of place and could not be readily attributed to a nearby source. Overall, the general lack of artifacts throughout the tube, even when Yent visited it in 1984, may indicate that the tube has been looted of most artifacts. Signs of modern visitors were apparent as far inland as just beyond entrance U26.

Although burials are present in the Middle Tube, this use should probably be considered secondary to its other functions. By combining our observations with those of Yent, we can say that there are at least a total of 15 individuals buried at seven different locations from the area around U20 to that of U32. This does not include the one instance in which fragments of human bone were found on the tube floor. Because of time constraints, we were unable to search all the ledges or side passages for potential burials during our survey and it is therefore possible that the actual number of burials is substantially greater than that indicated by this total. This is illustrated by the fact that at least three of the burials recorded by Yent may not have been found during our survey because of the speed with which we had to map the tube and describe the archaeological features found in order to reach the inland portions of the tube. Despite these limitations, the number of burials probably does not approach that recorded in either of the two segments of the Southern Tube System where burial was apparently the exclusive use of the tube segments, and the chambers were probably used repeatedly for this purpose.

Within these 15 examples, extended, flexed and bundle burial positions are all represented. Burials were also placed in a variety of locations including elevated ledges, recessed corners, side passages, the base of collapse piles and the middle of the tube floor. With the exception of those found up-slope of entrance U20 and U23, most are located in areas that are spatially discrete or removed from areas where other major activities took place. In two cases, both reported by Yent, roof fall debris was used either to cover the burial or surround it. No grave goods were found with any of the burials which again may indicate that the lava tube may have been looted. The lack of any historically manufactured items, particularly small glass beads, suggest that the burials are more likely to be prehistoric than historic period burials. Most burials appeared to be those of adults although we caution that neither author has the background to make definite age determinations.

Detailed Archaeological Descriptions of the Middle Tube between Entrances U20 and U32

U20 (900 ft el., Fig. 4a, 5a) - Of all the tube sections described below, that which extends from this entrance contains the greatest amount and diversity of evidence for past Hawaiian use. The following description essentially summarizes that given by Yent (1983) with some of our own observations and interpretations added.

Fig. 4a Middle Lava Tube with Numbered Entrances -- Up-slope End of State Land

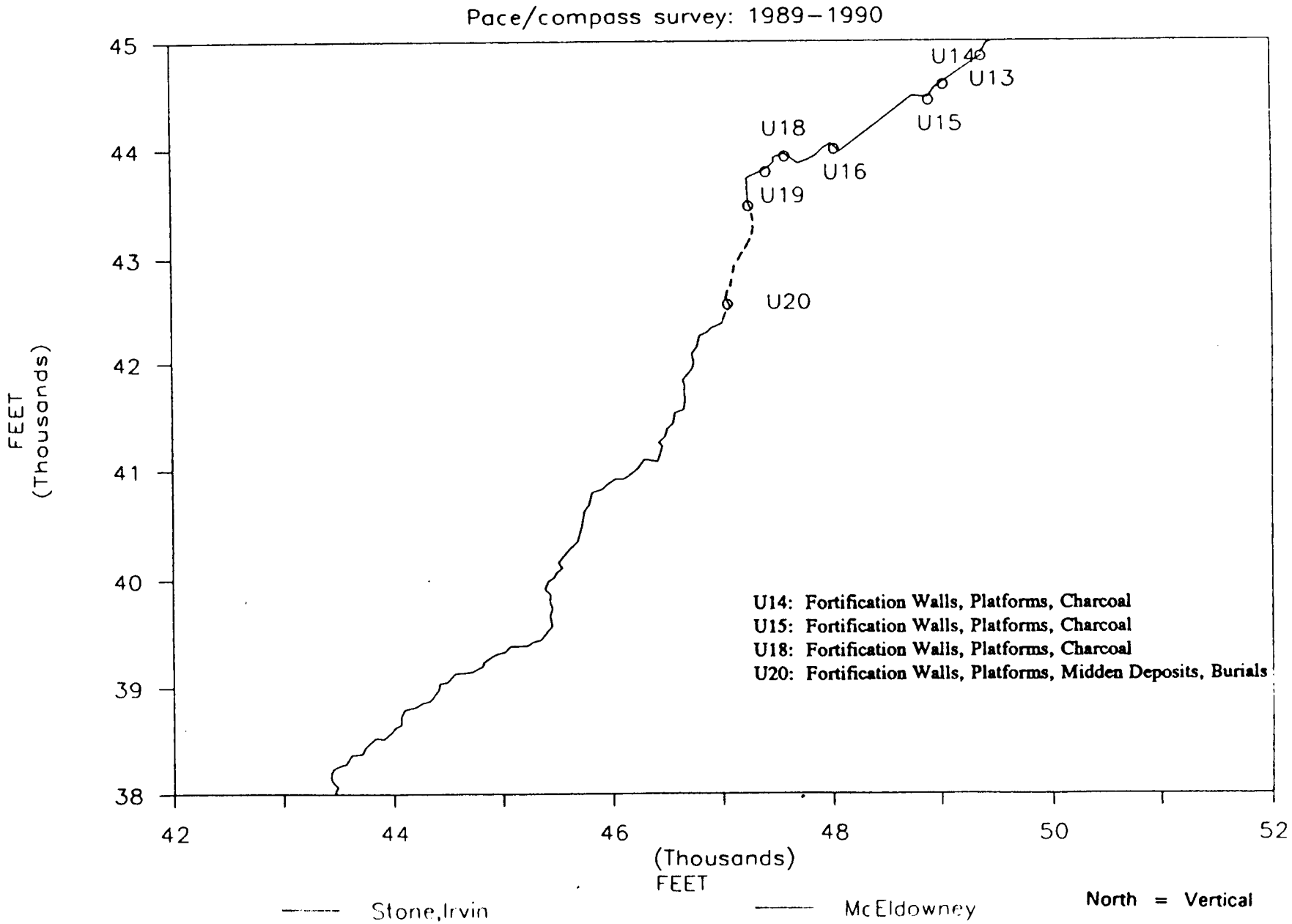


Fig. 4c Middle Lava Tube with Numbered Entrances - Campbell Estate Land and Geothermal Sub-Zone

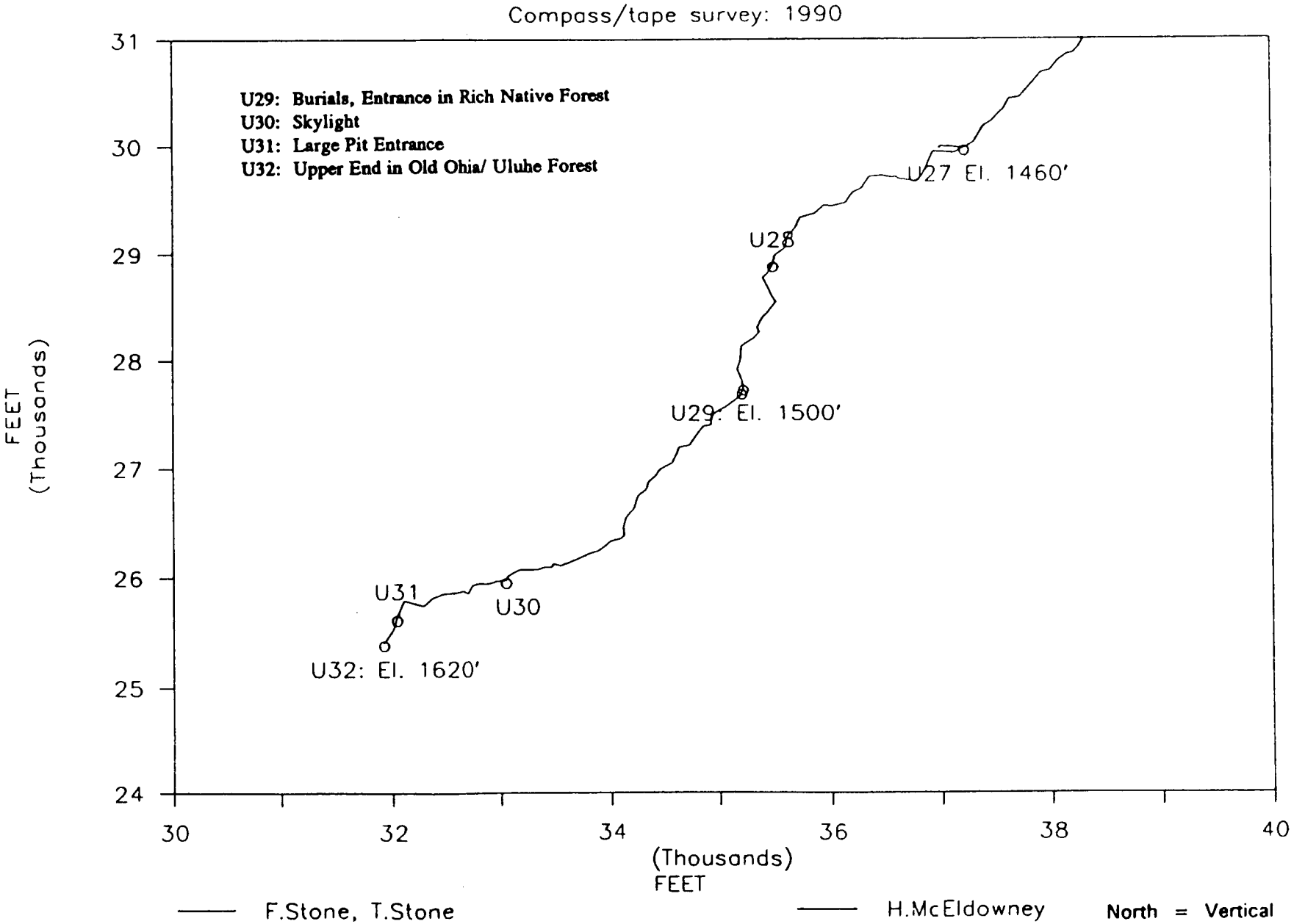


Fig. 5b Middle Lava Tube with Numbered Entrances -- Distribution of Natural Features, Collapse Piles, Archaeological Features, Cave Invertebrate Species and Tree Root Formations

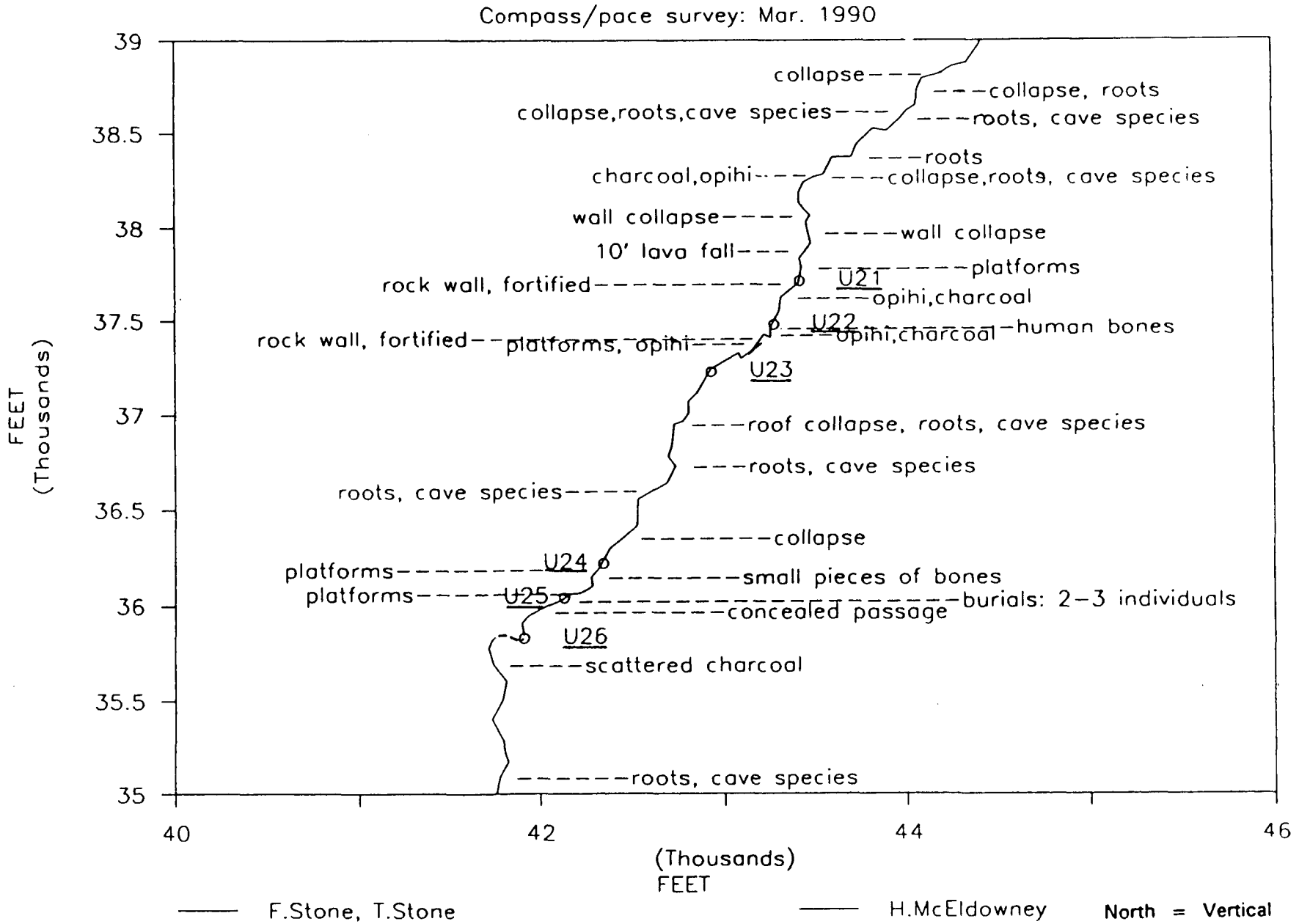
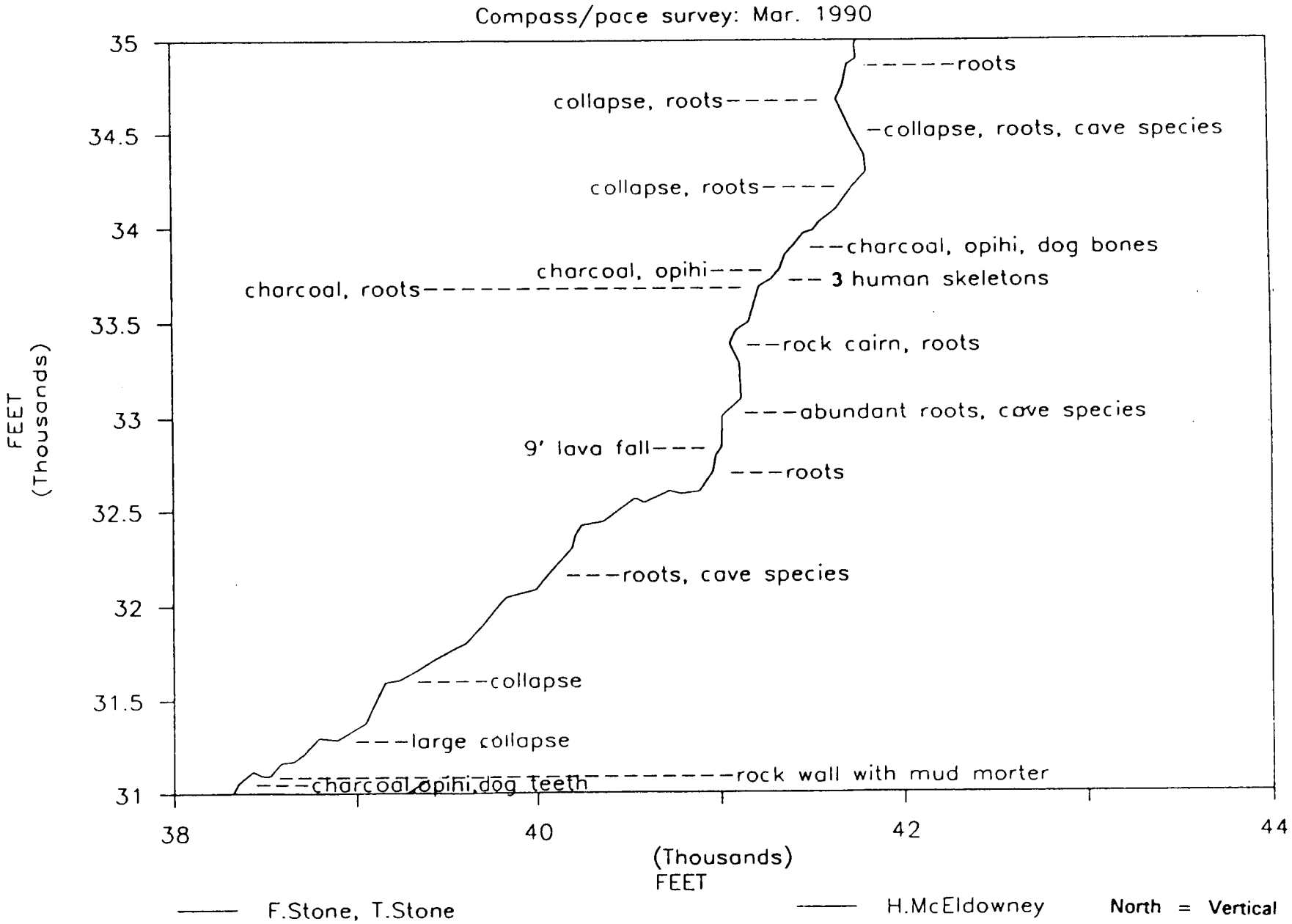


Fig. 5d Middle Lava Tube with Numbered Entrances -- Distribution of Natural Features, Collapse Piles, Archaeological Features, Cave Invertebrate Species and Tree Root Formations



concealed by stone on one of the natural, elevated shelves that run along the walls of the tube.

For approximately 100 ft above the wall, substantial amounts of break-down debris have been modified and rearranged to form broad level areas and two distinct platforms. Midden, charcoal, wood, unidentified organics and several rock-lined fire pits occur throughout the reworked area. The well-formed platforms are basically rectangular (2 by 3.5 m and 2 x 3 m) and 50 cm. high. Their function is not clear and it is possible that they were built either for burials or as resting surfaces. Another, smaller platform (1 by 2 m, 40 cm high) lies just beyond this continuous stretch of modified rubble and, directly beyond it, two 5 m long parallel alignments lie in the center of the tube floor. In some respects, they resemble alignments that delineate trails.

Evidence for human use occurs continuously for the next 425 ft (600 ft from the entrance) but with less over all density. Included in this stretch are more leveled and rearranged break-down piles and several instances where single rock alignments, often in a retangular form, appear to delineate portions of the tube floor. The stones in some of these alignments had to have been brought to that specific locale because the ceiling and walls of the surrounding tube remained unbroken. Distinct scatters of bone (pig and bird), shell (mostly *`opihi*), organic debris and charcoal concentrations occur along the tube floor in four sections. In many cases, the midden form small clusters adjacent to the tube walls, leaving the center of the floor free of refuse. Yent collected a basalt pestle and two adze from these midden areas. From 600 to 1264 ft from entrance U20, the only indications of past use were very scattered pieces of shell, bone, charcoal, organic material and roof-fall that had obviously been shifted from its original location.

U21 (1090 ft el., Fig. 4b & 5b) - About 25 ft up-slope from the skylight the tube divides into a shallow, dead-ended upper passage and a lower passage through which the main tube continues. Below this divide, a false or greatly enhanced collapse pile blocks the main tube, allowing only a narrow passage along the Ka'u side of the pile and a small gap at the roofline which could be used for observation. Looking from the down-slope side, the blockade appears natural with the exception of a small (1.5 x 1.5 m), slightly leveled area on the Hilo side of the rubble slope. The break-down pile below the skylight is uncharacteristically flat and uneven, suggesting that it was robbed of stone to build the blockade. The artificiality of the pile is obvious on the up-slope side and along the narrow passage where the rocks clearly form a stacked face. Charcoal and decayed sticks, with some *`opihi*, are prevalent along the up-slope side of the tube floor for approximately 25 ft.

the drip-line. Passage through the main tube was blocked, naturally, by a large collapse pile which can be skirted by crawling through a narrow space at the edge of the pile. About 50 ft past the collapse, the tube narrows into a crawl way, and at the juncture of the collapse and the narrowed tube two bundle burials were placed in a small alcove.

U26 (1185 ft el., Fig. 4b, 4c) - Again, the outside entrance leads to an upper level of the tube while that to the main tube is a narrow segment blocked by break-down-debris. To a great degree, this break-down appears to have been rearranged to conceal the passage. Access is only through an artificially created hole (50-60 cm wide) that is faced with flat roof fall slabs and leads to a drop of about 2 m. A conveniently placed stone underneath the hole provides a foothold so that access is through lifting oneself in and out of the hole.

U26 (1185 ft el) to 27 (1435 ft el.) - A number of features are present in the long stretch between entrances 26 and 27. Heading up-slope 1,972 ft, the first is an area of scattered charcoal concentrations and midden composed mostly of shell (*`opihi*) and some bone (including dog). Shortly beyond this area (205 ft), but clearly distinct from it, is a burial with three individuals. One is fully extended, lying on the floor perpendicular to the tube walls, while the bones of the other two are mixed with the lower half of the extended burial. A long, decaying stick lies along the length of the extended burial.

Approximately 3,890 ft above these burials is another artificial barrier which blocks the main passage at a point where the lava tube divides into an upper and lower passage. While the upper level truncates after a short distance, the lower passage can be reached only by crawling through a small gap on the top of what appears to be a natural break-down pile if seen from the down-slope side. The up-slope side of the pile, however, was not only clearly stacked but was also partially faced with upright stones. A mud-like mixture of charcoal and decayed organics was stuffed between the stones of the wall face, giving it the appearance of mortar. Instead of stabilizing the wall, this addition may have been an attempt to block the wind which can blow quite briskly through the lava tube. The modified break-down covers the 5 m width of the lava tube and ranges in height from 1.5 to .75 m.

Further up-slope (125 ft), at least 130 ft of the lava tube floor is littered with dense concentrations of charcoal, shell (*`opihi*) and bone midden and decayed organic material (including *kukui* nut). In one section (4.5 by 2 m), long lines of decayed organic material, presumably the remnants of wooden sticks, form a lattice of four vertical strips and six horizontal ones. This lattice was partially lying against the lower edge of the tube wall, suggesting that it may have been a rack of some sort that was left partially propped against the tube wall.

Southern Tube, is fragmented. The large size of the tube openings indicate that it had been the main channel of a very-high volume flow but the flow probably did not run consistently or long enough to create a stable or continuous tube.

A total of 3 days was spent locating access routes to this tube system and finding the two segments which we mapped. Approximately eight to nine miles were covered in these efforts which included a brief reconnaissance of a forested *kipuka* to the southeast of the tube system. It was clear from the air that *kukui* trees (*Aleurites moluccana*) and *ki* plants (*Cordyline terminalis*), usually indicators of past Hawaiian use in an area, were prominent in portions of the *kipuka*. No structural features, such as agricultural mounds and walls or residential platforms, were seen in the *kipuka* but the abundance of *kukui* trees and *ki* plants do suggest that the area was probably cultivated, especially in the rocky depressions where soil accumulates.

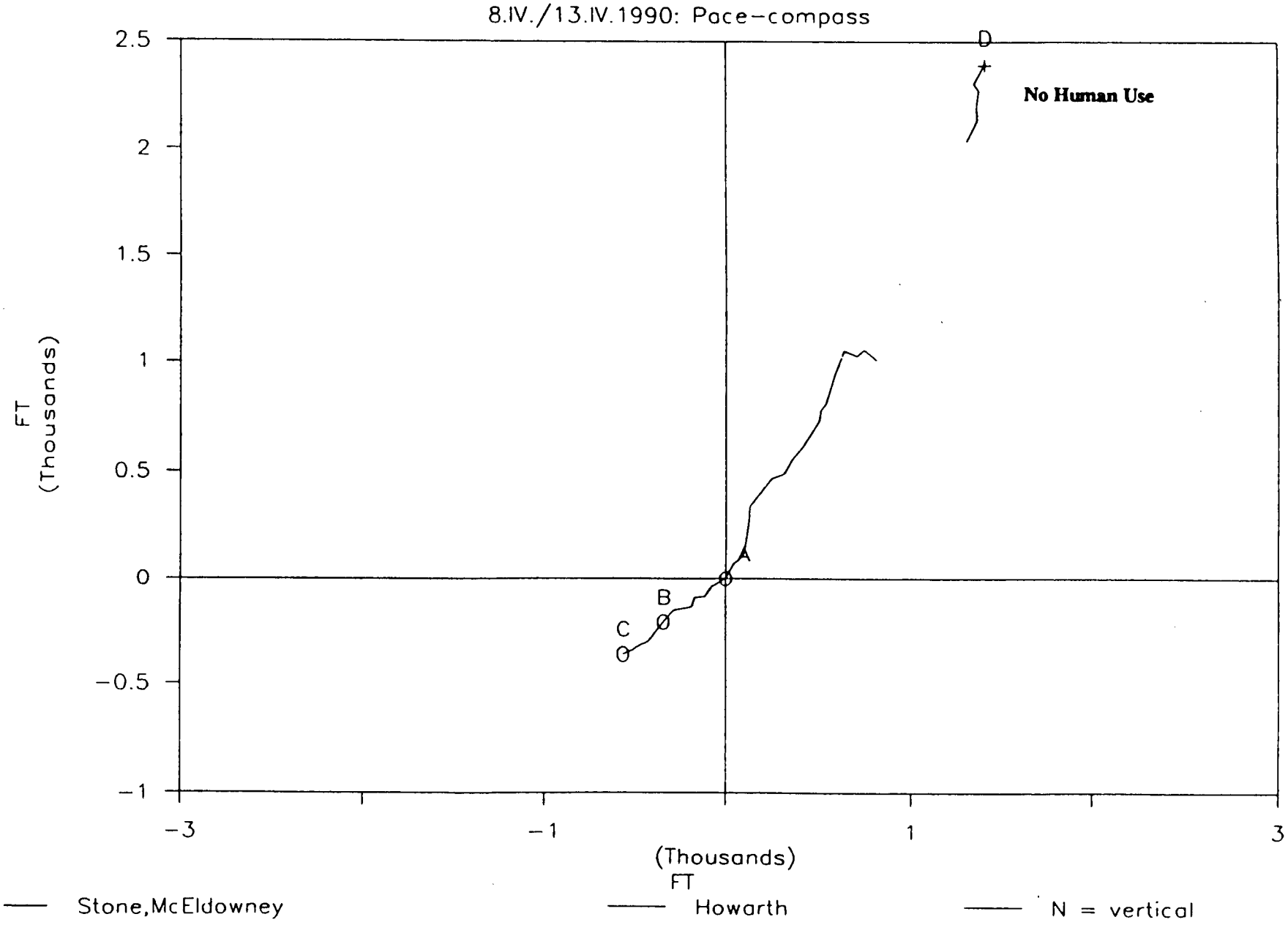
Of the two tube segments visited, only the lower one (50-10-55-14,899) contained evidence of human use, which included three burials and a structurally modified collapse pile (Fig. 6). Located at an elevation of 1,160 ft, we mapped this segment for a distance of 2,205 ft. The upper segment (1,210 ft el) was a relatively narrow and low tube (3 to 10 ft high) which we could only map down-slope for 500 ft (Fig. 7). No sign of past use was seen in any part of this upper segment.

The lower segment had to be entered by rope through a large, deep, overhung opening (Fig. 6:Entrance A). A single burial lies at the edge of the collapse pile about 10 m from this opening on the up-slope side. The bones were badly deteriorated and jumbled but, given the circular form of the scatter, it appears to have been a bundle burial. This was the only evidence of human use in the up-slope extent of the segment which could be followed only for 1500 ft and had an average height of 8 ft and width of 20 ft.

On the down-slope side, two more badly disturbed burials were found about 12 m from the entrance. One was placed directly behind a large slab of roof fall while another lies on top of a slab. Both were mixed with substantial amounts of charcoal or decayed organics and one contained two small blue beads indicating that these burial practices continued into the historic period.

A small skylight (Entrance B) lies 350 ft down-slope from the first entrance and directly beneath it a platform was created from the break-down pile. The platform (7 m by 4.5 m) covers the width of the tube, but the varying degree to which the surface was filled and leveled with small rubble suggests that construction of the feature was not completed. On the platform and directly under the opening, a substantial pile of stones probably aided access through the opening, although a ladder or rope would still be needed to reach the skylight. The tube floor leading to the platform on the up-slope side was paved with flat, roof fall slabs forming a pathway about 5 m long. The location of these features beneath a

Fig. 7 Northern Lava Tube System – Upper and Lower Segments



Nicoletia meinerti (Lepismatiedae): silverfish
Cryptostigmata: mite
Mesostigmata: mite
Astigmata: mite
Oxidus gracilis (Diplopoda): alien millipede

The biological importance of preserving native invertebrate populations in the Middle Tube rests mainly with their uniqueness and diversity. Their uniqueness arises from the high degree of localized variation that occurs among taxa in the different tube systems of Puna. This has already been demonstrated for the native crickets and planthoppers collected in the Middle Tube. The State-funded, collaborative research effort being undertaken by researchers from the University of Hawaii and the Bishop Museum has shown that significant differences exist between the crickets of the Middle Tube and those of other tube systems. Similarly, the University of Marberg, Germany, study shows that the Middle Tube planthoppers vary significantly from others in the region, adding strength to the hypothesis that various populations have adapted to specific conditions in each lava tube. The diversity of the populations is shown in the cricket taxa where three closely related species of cave-adapted crickets in the genus Caconemebius co-exist in the Middle Tube. Only one other lava tube in Hawaii has this many native cricket species, and it is in a subdivision undergoing rapid deforestation.

It was suggested in the Supplemental EIS (1986:134) that disturbed wildlife may have to relocate to another area. If disturbance proves to be substantial and extensive it is unfounded to assume that native invertebrate fauna would migrate or that they could become established in neighboring areas where the forests may already be supporting a maximum number of native species. Given the great diversity of native species, neighboring forests or other lava tubes even a few miles away will have different species or varieties which may not be compatible with intruding migrators. More important, however, is the fact that the amount of forest to which species could migrate is diminishing. Substantial portions of neighboring forest land to south, west and north have been removed or depleted by the current eruption, expansion of papaya plantations, woodchipping and development within private subdivisions. Apart from the Kahaualea area, very little of the adjacent land currently has preservation zoning.

If the native invertebrates and the lava tube ecosystems in the Middle Tube are to be provided positive protection, the native forest above the course of the tube must be protected by an adequate buffer zone. These tube ecosystems are primarily dependent on tree roots, mostly those of *Metrosideros* sp. (*'ohia*), through which essential organic nutrients are continually renewed.

RECOMMENDATIONS AND CONSIDERATIONS

Our recommendations for the treatment of known or potential lava tube segments within the Campbell Estate Land and the Geothermal Sub-Zone are covered by five major topics: significance evaluations for the historic properties identified during the survey: the justification and means for preserving the Middle Lava Tube System; procedures for predicting lava tubes and significant archaeological remains within the study area; identifying and protecting unknown lava tube segments which could contain historic remains (including burials); approaches that could minimize disturbance of undetected tubes during construction activities and drilling.

Most recommendations apply specifically to geothermal exploration and development within this Geothermal Sub-Zone and accommodate the guidelines stipulated in the CDUA Decision and Order (No. Ha-12/20/85) for these projects. In some cases, the suggested approaches could serve as guidelines for geothermal or other development projects in areas where lava tubes with historic remains are likely.

Significance Evaluations:

These initial significance assessments are based on criteria set out in the Draft Rules and Regulations of the State Historic Preservation Division which, with the exception of Criterion "e", conform with those used to determine eligibility for inclusion in the National Register of Historic Places (36 CFR Part 60). All sites possess a high degree of integrity in location, setting, feeling and association.

1. **Southern Tube Segment (Sites 14,901 - 3).** These three tube segments were all used for burial and are therefore significant for their importance or value to the Hawaiian culture (Criterion "e"). They are also significant for the information they could yield (Criterion "d").

2. **Middle Lava Tube (Site 14,900).** This extensive lava tube and the combined historic properties found over at least 9 miles of its length, is significant under several criteria. Despite probable looting of artifacts, most of the lava tube above the Pahoa Highway is essentially undisturbed. It contains burials and is therefore significant to the Hawaiian culture (Criterion "e"). The numerous structural features and midden deposits found are significant for information they could yield on the prehistory of the region, particularly concerning past resource use and conflict (Criterion "d"). The walls built for defensive purposes embody the distinctive characteristics of a type and method of construction (Criterion "c") and exemplify a range of fortification structures. The possibly unfinished edifice at U20 is of particular important for demonstrating construction techniques. These

during the daytime and down the mountain at night. Within the lava tube, air flows generally up-tube during the day and down-tube at night. Our observations during the survey confirm that this pattern holds true for the Middle Lava Tube. If pollutants are accidentally released during exploration or development activities, surface air flow might be expected to disperse pollutants. In lava tubes, however, a heavier-than-air substance such as hydrogen sulfide could be confined or channeled for a long distance. Concentrations of these confined or channelled pollutants could impact invertebrate populations.

3. **Definition of Buffer Zone Boundary**. The boundary of the buffer zone should lie 1,500 ft to either side of a line which averages, in increments, the many bends and meanders in the tube's course. This places Alternative Well Site # 2 about 3,200 ft from the boundary and Alternative Well Site # 3 about 3,500 ft from it. At the closest point, the Alternative Well Sites are 4,800 ft and 4,500 ft from the lava tube itself. If development plans followed that depicted in the Supplemental EIS (Fig. 5), development areas A and C would lie on the boundary of the buffer zone. An adequate buffer reduces the possibility of damage due to construction activities, accidental waste spillage or destruction of the forest above the tube. Final definition of this buffer zone should follow a more accurate survey of the portion of Middle Tube where it passes beneath Campbell Estate land.

4. **Complete Mapping of the Middle Tube System**. The Middle Lava Tube was only mapped to an elevation of 1,620 ft and, based on its size at this point, we assume that it continues. We expect that continuous and diverse evidence of human use is unlikely in the upper, unmapped portions of the Middle Tube although burials could be present at entrances as is the case at entrance U29. If any exploration or development is planned for that portion of the sub-zone which lies above 1,620 ft and within the projected course of the buffer zone, then mapping of the Middle Tube should be continued.

5. **Incorporation of Middle Tube in Historic Preserve**. The Historic Preservation Division is considering setting aside the State-owned portion of the Middle Tube as an Historic Preserve. An agreement might be reached in which those portions of the Middle Tube which lie on Campbell Estate land are included in this Historic Preserve and managed accordingly. A management agreement is currently being negotiated by the State Department of Agriculture and University of Hawaii at Hilo for a portion of this lava tube that lies *makai* of the Pahoa Highway. Other lava tubes of comparable significance are held by multiple owners in private subdivisions and are therefore much more difficult to protect.

Some perceptions of the study area being remote probably arose when many of the basic themes and approaches used for the Kahaualea study were applied to the former Puna Forest Reserve. In the case of Kahaualea, the land division was a single *ahupua'a* and more conventional land use patterns could be applied when predicting the probability of historic remains. Major settlement areas were depicted as being located near the coast while the agricultural or planting areas stretched up-slope until reaching the vast forested area which grew increasingly remote with elevation. This general orientation becomes more complex in the case of the Puna Forest Reserve. At least six *ahupua'a* converged in the study area from the south and the east (Holmes 1985) and generalized assessments of land use would have to be viewed as converging from these directions. A combination of factors, however, tended to focus attention on the southern approach to the Forest Reserve. The Geothermal Sub-Zone itself lies in the southern half of the property and both the studies by Holmes and Haun et al paid more attention to the southern slopes. For example, Holmes's map (1985:Fig. 22b) showing different types of land use only attempted to depict agricultural land and planting areas along the southern slope although they also occurred on older substrates to the southeast and east. Haun, Rosendahl and Landrum (1985) placed four of their five transects on the southern slope during their reconnaissance survey. With all agricultural areas identified to the south, it was probably assumed that, like Kahaualea, an increasingly remote forested area stretched inland from the depicted planting areas to the northern boundary of the Puna Forest Reserve. This skewed orientation probably contributed to the north flank lava tubes being overlooked in the literature reviews.

Also reducing the remoteness of the eastern side of the Forest Reserve is the presence of at least one substantial settlement in the interior. The accounts and maps produced by the U. S. Exploring Expedition in 1840 show a village named Kahuhali in the vicinity of what is now Pahoa. Such exceptions to the much more common coastal settlements generally occur where broad and gradual slopes allow an expanse of agriculturally suited environments to occur at substantial distances from the coast. The broad Lower Rift Zone and adjacent flanks are such an expanse and any inland settlements would increase the degree to which nearby areas were used.

The recent and active geologic history of the study area also has a bearing on how extensively the study area was used for forest resources and cultivation, particularly when compared to other forested or agricultural lands at similar elevations. The mosaic of lava flow types and ages created both limitations and advantages. If much of the north flank of the East Rift is dominated by pahoehoe flows 300 to 500 years old or younger, then substantial portions of the study area were not forested when many of the predicted archaeological remains were created. Tall stature and diverse forests only develop after plant communities become established on new flows and then pass through varying stages of succession, a

of trails shown by Wilkes as surrounding this hill was in Kahaualea. Holcomb (1987:317) thought that Wilkes' "Kalalua" was actually Heiheiahulu while we believe that it could be Iilewa, given the proportional distances and angles between this hill and other landmarks given on the map. A more thorough analysis of varying journal accounts and land records is needed to resolve this question, but with either interpretation, the main inland route taken by the Wilkes party still runs through the study area although farther to the south than shown by Holmes. Of the other trails shown as heading north or northeast from "Kalalua," only one would cross through the eastern side of the Forest Reserve. We concur with Holmes that the inland route running parallel to the Rift was a well-known and established route although, as noted by Pickering (1840-41:182), his guides during the Expedition preferred to go down to Kalapana and up through Panau to reach the Volcano rather than to take the more arduous inland trail with few places to get provisions.

Identification and Protection of Lava Tube Segments

1. **Recommended Survey Procedures for Identifying Lava Tubes Near Construction Area.** To improve the probability of finding lava tubes that could run beneath a well site, we recommend that a systematic survey be made of a rectangular area measuring 1,000 ft up-slope and down-slope of each proposed well site (area to be disturbed around the drilling rig) and 500 ft to the northwest and southeast. The survey would, if the current well sites are representative in size, be about 2,400 ft long and 1,400 ft wide. The survey corridor should be aligned due northeast to southwest which offsets it slightly from the general trend of Kilauea's East Rift Zone. This roughly reflects the trend of the major tube systems and flows on Kilauea's north flank. For projects elsewhere, the corridor alignment would have to reflect the dominant flow direction of that particular area. Although two segments of the Middle Tube System run for 1.4 and 1.5 miles without openings, we feel a 2,000 ft long survey corridor would have located many entrances from different points along the tube's course. The 1,000 ft width of the corridor accommodates the degree to which the tube meanders between most entrances.

2. **Coverage within the Survey Corridor.** To locate entrances within the survey corridor we feel that visual coverage should be as close to 100% as possible unless a sampling design can be devised which targets particular flow types or formations that prove, over time, to be associated with a high incidence of lava tubes. The analysis of clear, low level aerial photographs and maps of the vegetation, geology and surface topography could help identify indicators of tube openings or trends. A sampling design would help lessen problems of reduced mobility and low ground visibility due to dense vegetation and hazardous ground conditions.

mitigation measures to take place immediately. Such follow-up measures could include use of a down-hole camera to help determine if the void is a lava tube and if historic remains were likely. If they are, then additional surveys would be needed to find an entrance to the tube, to assess any historic remains present and to propose an appropriate mitigation plan. Alternatively, the specific well site could be moved to avoid the cavity.

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