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NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 27 2012

PM-3069.2

Mr. Gary Hooser
Director
Office of Environmental Quality Control
Department of Health
State of Hawai'i
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

RECEIVED
'12 MAR 27 P2:37
OFC. OF ENVIRONMENTAL QUALITY CONTROL

Dear Mr. Hooser:

Subject: Final Environmental Assessment/Finding of No Significant Impact
ICSD Mt. Ka'ala Radio Facility Improvements Project
D.A.G.S. Job No. 12-10-0624
Waialua and Wahiawā, O'ahu, Hawai'i

The State of Hawai'i, Department of Accounting and General Services (DAGS), serving as the approving agency, has reviewed the Final Environmental Assessment (Final EA) prepared for the subject project.

Based on the significance criteria under Title 11, Chapter 200, Hawai'i Administration Rules, we have determined that the preparation of an Environmental Impact Statement (EIS) is not required, and have issued a Finding of No Significant Impact. Please publish notice of the availability of this Final EA in the April 8, 2012 issue of the *Environmental Notice*. We have enclosed a completed OEQC Publication Form, a hard copy of the Final EA, and a copy of the Final EA document in pdf format on a CD.

If you have any questions, please call Mr. Daniel Jandoc of the Project Management Branch at 586-0476.

Sincerely,

DEAN H. SEKI
Acting State Comptroller

Enclosure
c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

Publication Form
The Environmental Notice
Office of Environmental Quality Control

Instructions: Please submit one hardcopy of the document along with a determination letter from the agency. On a compact disk, put an electronic copy of this publication form and a PDF of the EA or EIS. Mahalo.

Name of Project:	ICSD Mt. Ka‘ala Radio Facility Improvements Project
Applicable Law:	Chapter 343, HRS and National Environmental Policy Act
Type of Document:	Final Environmental Assessment
Island:	O‘ahu
District:	Honolulu
TMK:	(1) 7-07-001: portions of 001; 6-07-003 portions of 023 and 025
Permits Required:	Conservation District Use Permit; Natural Area Reserves Special Use Permit; NPDES Permit (Construction Activities) and Construction Noise Permit.
Name of Applicant or Proposing Agency:	Division of Public Works, Project Management Branch State of Hawai‘i
Address	1151 Punchbowl Street, Room 427
City, State, Zip	Honolulu, Hawai‘i 96813
Contact and Phone	Telephone: (808) 586-0476 Contact: Mr. Daniel Jandoc, Project Manager
Accepting Authority:	Division of Public Works, Project Management Branch
Address	State of Hawai‘i
City, State, Zip	1151 Punchbowl Street, Room 427
Contact and Phone	Honolulu, Hawai‘i 96813 Telephone: (808) 586-0476 Contact: Mr. Daniel Jandoc, Project Manager
Consultant	Helber Hastert & Fee, Planners
Address	733 Bishop Street, Suite 2590
City, State, Zip	Honolulu, Hawai‘i 96813
Contact and Phone	Ronald A. Sato, AICP, Senior Planner Phone: (808) 545-2055

Project Summary: Summary of the direct, indirect, secondary, and cumulative impacts of the proposed action (less than 200 words).

The State of Hawai‘i, Department of Accounting and General Services, Information and Communication Services Division (ICSD) is proposing to implement repair and renovation improvements to their existing telecommunications building, a tower, a downhill antenna site along with conduit lines serving it, and other accessory electrical improvements located on Mt. Ka‘ala. The State’s radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Ka‘ala Air Force Station (AFS) situated at the

summit of Mt. Ka‘ala. The State also has a microwave antenna site located downhill off Kamaohanui Ridge connected to the radio facility by an above-ground conduit line.

The objective for the project is to support the State ICSD’s efforts to provide efficient and effective telecommunication services to all agencies in the State of Hawai‘i needed for public safety, emergency services, disaster response, and essential government operations. The project is not expected to have significant direct, indirect, secondary or cumulative impacts on the environment. Project effects are primarily associated with temporary constructed related activities, and best management practices would be implemented to mitigate effects.

Final Environmental Assessment
Information and Communication Services Division
Mt. Ka'ala Radio Facility Improvements Project

MARCH 2012

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

In Association with:
U.S. Department of Homeland Security
U.S. Coast Guard, Civil Engineering Unit Honolulu

Final Environmental Assessment
Information and Communication Services Division
Mt. Ka'ala Radio Facility Improvements Project

Wahiawā, waialua, O'ahu, Hawai'i

MARCH 2012

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

In Association with:
U.S. Department of Homeland Security
U.S. Coast Guard, Civil Engineering Unit Honolulu

Prepared by:
Helber Hastert & Fee
Planners, Inc.

UNITED STATES COAST GUARD

FINDING OF NO SIGNIFICANT IMPACT

FOR

INFORMATION AND COMMUNICATION SERVICES DIVISION
MT. KA'ALA RADIO FACILITY IMPROVEMENTS PROJECT

This project has been thoroughly reviewed by the USCG and it has been determined, by the undersigned, that this project will have no significant effect on the human environment.

This Finding of No Significant Impact (FONSI) is based on the attached applicant-prepared Environmental Assessment (EA), which has been independently evaluated by the USCG and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project, and provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. The USCG takes full responsibility for the accuracy, scope, and content of the attached environmental assessment.

26 March 2012		Env. Protection Specialist
Date	Environmental Reviewer	Title/Position

I have considered the information contained in the EA, which is the basis for this FONSI. Based on the information in the EA and this FONSI document, I agree that the proposed action as described above, and in the EA, will have no significant impact on the environment.

26 MAR 2012		CO, CEU HONOLULU
Date	Responsible Official	Title/Position

UNITED STATES COAST GUARD

ENVIRONMENTAL ASSESSMENT

FOR

INFORMATION AND COMMUNICATION SERVICES DIVISION
MT. KA'ALA RADIO FACILITY IMPROVEMENTS PROJECT

This U.S. Coast Guard (USCG) Environmental Assessment was prepared in accordance with Commandant's Manual Instruction M16475.1D and is in compliance with the National Environmental Policy Act of 1969 (P.L. 91-190) and the Council of Environmental Quality Regulations dated November 28, 1978 (40 CFR Parts 1500-1508).

This Environmental Assessment serves as a concise public document to briefly provide sufficient evidence and analysis for determining the need to prepare an Environmental Impact Statement or a Finding of No Significant Impact.

This Environmental Assessment concisely describes the proposed action, the need for the proposal, the alternatives, and the environmental impacts of the proposal and alternatives. This Environmental Assessment also contains a comparative analysis of the action and alternatives, a statement of the environmental significance of the preferred alternative, and a list of the agencies and persons consulted during the document's preparation.

March 26, 2012		Associate
Date	Preparer	Title/Position
26 March 2012		Env. Protection Specialist
Date	Environmental Reviewer	Title/Position

In reaching my decision/recommendation on the USCG's proposed action, I have considered the information contained in this Environmental Assessment on the potential for environmental impacts.

26 MAR 2012		CO, CEU Honolulu
Date	Responsible Official	Title/Position

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- Section 106 Comment Letters Received
- USCG Section 106 Determination Letter (March 6, 2012)

A-3 Draft EA Comments and Responses

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- Section 7 Consultation Letter to FWS (October 20, 2011)
- FWS Concurrence Letter (December 20, 2011)

APPENDIX B ..... Photos of Existing Project Site

APPENDIX C ..... Botanical Report

Botanical Resources Assessment for the Proposed ICSD Mt. Kaʻala Radio Facility Improvements Project (May 2011)
Prepared by: LeGrande Biological Surveys, Inc.

APPENDIX D ..... Avian and Terrestrial Mammals Report

Avian and Terrestrial Mammalian Surveys Conducted for the Information and Communication Services Division Mt. Kaʻala Radio Facility Improvements Project, Waialua and Wahiawā Districts, Island of Oʻahu (February 2011)
Prepared by: Rana Biological Consulting, Inc.

APPENDIX E ..... Invertebrate Report

Terrestrial Invertebrate Resources at the Site of the Mt. Kaʻala Radio Facility Project, Mt. Kaʻala, Oʻahu, Hawaii (May 2011)
Prepared by: Steven Lee Montgomery, Ph.D.

APPENDIX F ..... Archaeological Reports

Archaeological Assessment for the Information and Communication Services Division Mt. Kaʻala Radio Facility Improvements Project, Kamananui Ahupuaʻa, Waialua District, Island of Oʻahu (Revised March 2012)
Prepared by: Cultural Surveys Hawaiʻi, Inc.

CHAPTER 1
INTRODUCTION AND BACKGROUND

The State of Hawai‘i (State), Department of Accounting and General Services (DAGS), Information and Communication Services Division (ICSD) is proposing to implement repair and renovation improvements to their existing telecommunications building, a tower, a downhill antenna site along with conduit lines serving it, and other accessory electrical improvements located on Mt. Ka‘ala. This project is referred to as the "ICSD Mt. Ka‘ala Radio Facility Improvements Project."

1.1 PURPOSE FOR ENVIRONMENTAL ASSESSMENT

This project triggers the State environmental review process under Chapter 343, Hawai‘i Revised Statutes (HRS) because the improvements involve the use of State funds and lands. The State environmental review process is also triggered because the proposed action is located within the State's Conservation District, and will require a Conservation District Use Permit from the Board of Land and Natural Resources. Some of the improvements will also occur within the State's Mt. Ka‘ala Natural Area Reserve.

The proposed replacement of an existing telecommunications tower with a new one will also involve the use of Federal funds from the United States Coast Guard (USCG). Therefore, this project is subject to environmental requirements prescribed under the National Environmental Policy Act (NEPA). Project improvements will also occur on Federal property owned by the U.S. Army as part of the Schofield Barracks Military Reservation. These improvements have not been "Categorically Excluded" under the USCG's NEPA compliance regulations; thus, an Environmental Assessment under NEPA is also required. Consequently, a joint Federal and State environmental document has been prepared.

1.1.1 Applicant and Approving Agency

Helber Hastert & Fee, Planners, Inc. (HHF) is serving as the "Authorized Agent" on behalf of the State DAGS ICSD (Applicant) in the preparation of this environmental document. The project is an "Agency Action" under the State's environmental review regulations because DAGS ICSD is the proposing agency. The State DAGS will also serve as the "Approving Agency" for the Environmental Assessment with regard to Chapter 343, HRS. Table 1.1 provides a summary of pertinent project information.

Table 1.1
Summary of Project Information

Project Name:	Information and Communication Services Division (ICSD), Mt. Ka‘ala Radio Facility Improvements Project
Approving Agency: State Chapter 343, HRS	Division of Public Works, Project Management Branch Department of Accounting and General Services State of Hawai‘i 1151 Punchbowl Street, Room 427 Honolulu, Hawai‘i 96813 Telephone: (808) 586-0476 Contact: Mr. Daniel Jandoc, Project Manager Civil Engineering Unit, Honolulu
National Environmental Policy Act	United States Coast Guard, Civil Engineering Unit Honolulu U.S. Department of Homeland Security 300 Ala Moana Boulevard, Room 8-134 Honolulu, Hawai‘i 96850-4982 Telephone: (808) 535-3464 Contact: Dr. Dennis Mead, Environmental Protection Specialist
Preparers of Environmental Assessment:	Helber Hastert & Fee Planners, Inc. 733 Bishop Street, Suite 2590 Honolulu, Hawai‘i 96813 Telephone: (808) 545-2055 Contact: Mr. Ronald Sato, AICP, Associate
Project Location:	The State’s radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Ka‘ala Air Force Station (AFS) situated at the summit of Mt. Ka‘ala. The State also has a microwave antenna site located downhill off Kamaohanui Ridge connected to the radio facility by an above-ground conduit line.
Tax Map Key Parcels:	(1) 7-07-001: portions of 001; (1) 6-07-003: portions of 023 and 025
Project Area:	Less than one quarter of an acre (<0.15 acre)
Existing Use:	The Mt. Ka‘ala AFS property is owned by the U.S. Army, and maintained by both the U.S. Air Force and FAA. The U.S. Army has tenant agreements with other Federal and State agencies for telecommunications use at this site.
State Land Use District:	Conservation District
Sustainable Communities Plan Land Use Designation:	Central O‘ahu SCP: Preservation Areas North Shore SCP: Preservation
Special Management Area:	Project area is outside the SMA boundary.
City and County of Honolulu Zoning District:	P-1, Restricted Preservation District
Flood Zone Designation:	Zone D – Unstudied areas where flood hazards are undetermined, but possible.

A Draft Environmental Assessment (Draft EA) was prepared pursuant to Chapter 343, Environmental Impact Statements, HRS, as amended (State of Hawai'i, 2007), and Title 11, Chapter 200, (Environmental Impact Statement Rules) of the State Department of Health's (DOH) Administrative Rules, as amended (State of Hawai'i, 1996). The notice of the availability of the Draft EA was published in the November 23, 2011 issue of the State Office of Environmental Quality Control's *The Environmental Notice*. The 30-day public comment period for the Draft EA ended on December 22, 2011.

This Final Environmental Assessment (Final EA) has subsequently been prepared based upon the published Draft EA and review comments received. A Negative Declaration, also referred to as a Finding of No Significant Impact (FONSI), is warranted for this project based upon these results. Copies of comment letters received from consulted parties and responses to them are included in Appendix A, and this process is discussed in more detail later in Chapter 7.

The USCG served as the lead Federal Agency, or Administrator, responsible for the Environmental Assessment's preparation in compliance with NEPA documentation and processing requirements. The USCG has reviewed comments received on the published Draft EA, and determined that a FONSI is warranted for this project under NEPA. The USCG's FONSI determination is attached to the front of this document.

1.1.2 Applicant Background

State DAGS, Information and Communication Services Division

The project's Applicant is the Information and Communication Services Division of the State DAGS which is the lead agency for information technology in the Executive Branch of the State of Hawai'i. This division's mission is to provide information technology support services and leadership to State programs. They are responsible for comprehensively managing the information processing and telecommunication systems in order to provide services to all agencies of the State of Hawai'i.

Over the years, there have been tremendous advances in technology and an increased reliance on telecommunications and computers in the workplace. The ICSD role is to meet the challenges of the information industry by implementing cost-effective and efficient information and communication services. The proper application and installation of these technologies continues to be a key component towards the accomplishment of the business operations and services of State government (DAGS, no date).

ICSD operates a centralized computing facility and network that interconnects all State agencies. They provide statewide administrative support and overall strategy and direction for information and communication technology. The operational support and services provided are an integral part of the day-to-day operations of State agencies, and are especially critical to agencies with responsibility for the public's health and safety (DAGS, no date).

U.S. Coast Guard

The U.S. Coast Guard is organizationally placed under the U.S. Department of Homeland Security and is responsible for safeguarding the Nation's maritime interests within the United States; in the ports, at sea, and around the globe. Today's USCG is a unique force that carries out an array of civil and military responsibilities touching almost every facet of the U.S. maritime environment. The USCG currently shares telecommunication infrastructure with the State DAGS ICSD at the State's Mt. Ka‘ala radio facility.

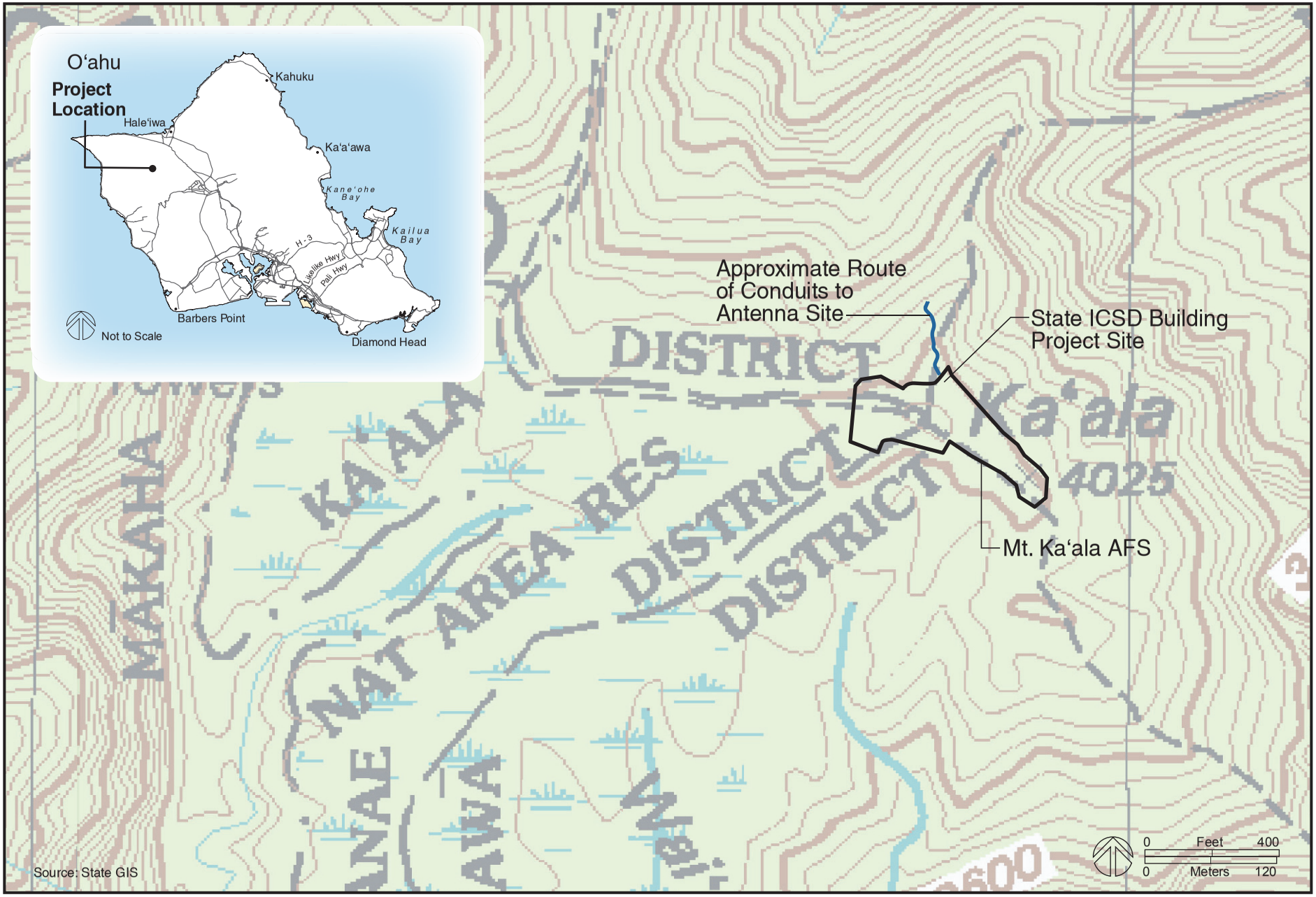
1.1.3 Mt. Ka‘ala Background

Mt. Ka‘ala is located at the northern end of the Wai‘anae Mountain Range, and is the highest point on O‘ahu at 4,025 feet in elevation above mean sea level. Figure 1.1 shows the project's location. The Mt. Ka‘ala summit encompasses an area that is situated within both the U.S. Army's Schofield Barracks Military Reservation and State's Natural Area Reserves system which are discussed below.

Schofield Barracks Military Reservation

The Schofield Barracks Military Reservation (SBMR) is one of seven major training sites on O‘ahu managed by the U.S. Army Garrison, Hawai‘i (USAG-HI). This reservation encompasses approximately 9,520 acres located in central O‘ahu, west of the town of Wahiawā (CEMML, July 2010). The SBMR includes Schofield Barracks and generally extends from Kamehameha Highway inland (westbound) up to the Wai‘anae Mountain Range. The Mt. Ka‘ala Natural Area Reserve located to the north borders a portion of the SBMR, and to the west are the Wai‘anae Kai Forest Reserve and Lualualei Naval Reservation. Figure 1.2 shows the general area encompassing this SBMR.

The SBMR's mission is to provide installation support and services for joint warfighters, their families, and the military community. Schofield Barracks consists of the cantonment area providing urbanized base facilities and a large area to the west serving as the primary range complex for individual weapons qualification with limited light maneuver training areas.
The Army's Integrated Natural Resources Management Plan (INRMP) guides implementation of their natural resources management program. The plan provides for the conservation and rehabilitation of natural resources and the sustainable multi-purpose use of USAG-HI resources subject to safety requirements and military security. It provides for "no net loss" in the capability of installation lands to support the military mission and other activities as considered appropriate to the military (CEMML, July 2010).



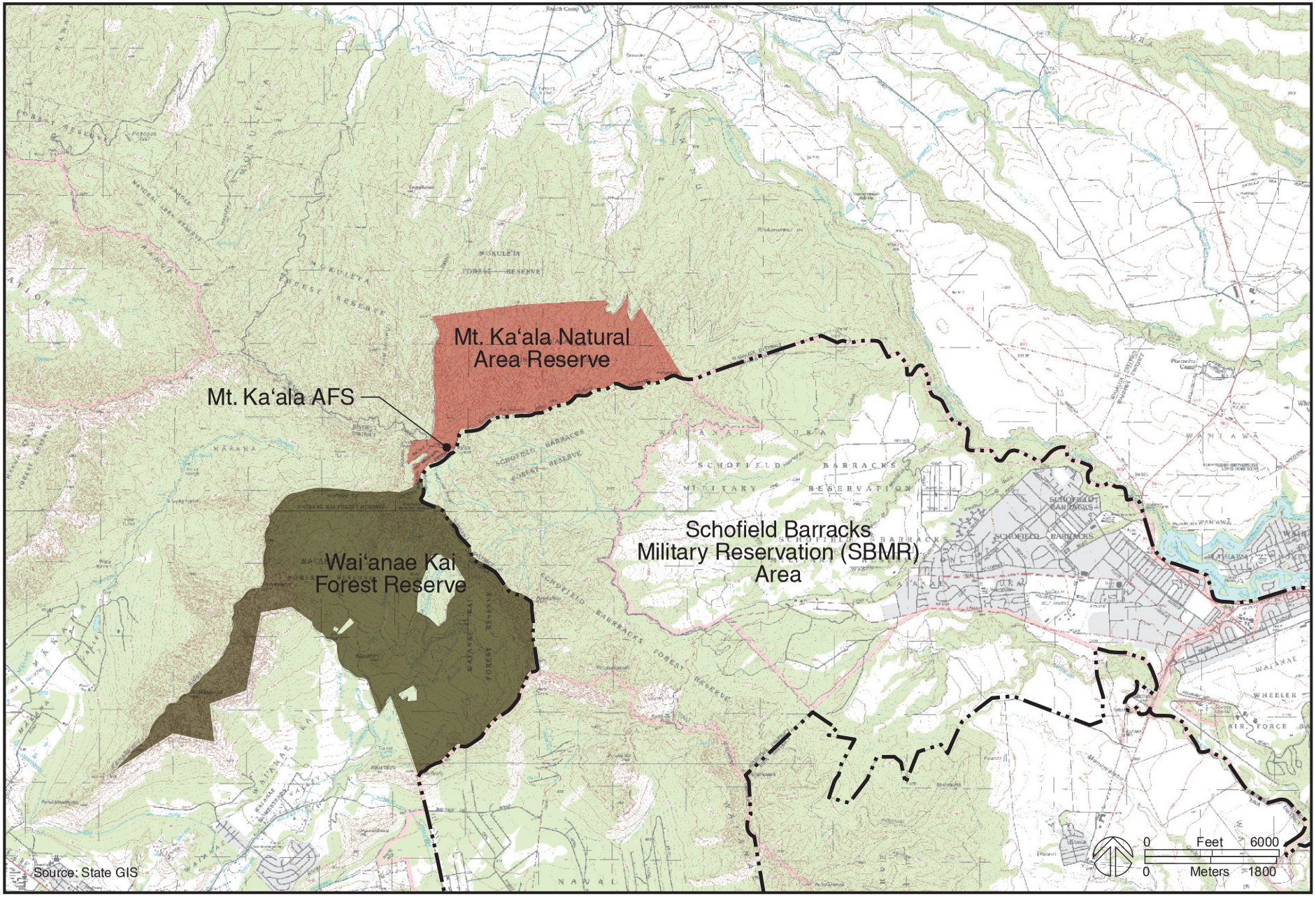
Project Location Map

Figure 1.1

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division



Schofield Barracks Military Reservation (SBMR) Location Map

Figure 1.2

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Mt. Ka‘ala Natural Area Reserve

The Mt. Ka‘ala Natural Area Reserve (NAR) is State-owned property encompassing about 1,100 acres generally located at the summit of Mt. Ka‘ala on the northern end of the Wai‘anae Mountain Range. Figure 1.2 shows this general area. The SBMR is located to the south of this NAR, and to the west are the Wai‘anae Kai and Mokulē‘ia Forest Reserves.

The Mt. Ka‘ala NAR is part of the Hawai‘i Natural Area Reserves System that is administered by the State Department of Land and Natural Resources, Division of Forestry and Wildlife. This reserve was established in 1981 by Executive Order 3099, and it protects a diversity of native ecosystems, including native shrublands, forests, and a montane bog. Vegetative communities in this reserve range from dry lowland shrublands to wet montane forests, and it includes two rare forests. Important biological resources in the reserve include the montane bog community at the summit of Mount Ka‘ala. A management plan for the Mt. Ka‘ala NAR was established in 1990 which describes programs intended to maintain the reserve’s resources (DOFAW, April 1990).

1.2 FEDERAL REGULATORY OVERVIEW

The following is a summary of Federal laws and consultations that are relevant to implementing the ICSD Mt. Ka‘ala Radio Facilities Improvement Project (Proposed Action), and are addressed in this environmental document.

National Environmental Policy Act

This project is subject to compliance with the National Environmental Policy Act (NEPA) of 1969, 42 United States Code (USC) §4321, as implemented by the Council on Environmental Quality regulations, 40 Code of Federal Regulations (CFR) Parts 1500-1508 (40 CFR §1500 *et seq*.). The USCG has guidance documents to comply with NEPA requirements. This environmental document was prepared in compliance with these regulations and guidelines in coordination with the USCG.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended (16 USC §470) recognizes the Nation’s historic heritage and establishes a national policy for the preservation of historic properties as well as the National Register of Historic Places. Section 106 of the NHPA requires Federal agencies to take into account the effects of Federal undertakings on historic properties. The Section 106 process, as defined in 36 CFR §800, provides for the identification and evaluation of historic properties, for determining the effects of undertakings on such properties, and for developing ways to resolve adverse affects through the process of consultation.

Coastal Zone Management Act

The purpose of the Coastal Zone Management Act (CZMA) of 1972, as amended (16 USC §1451 *et seq.*) is to encourage states to manage and conserve coastal areas as a unique, irreplaceable resource. Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs. Chapter 205A, HRS, implements this program for the State, and the City's Special Management Area (SMA) regulations under Chapter 25, ROH specifies the procedures for reviewing a project's consistency with coastal zone management objectives and policies for the island of O'ahu.

Endangered Species Act

The Endangered Species Act (ESA) (16 USC §1531 *et seq.*) establishes a process for identifying and listing species. It requires all Federal agencies to carry out programs for the conservation of federally listed endangered and threatened plants and animals, and prohibits actions by Federal agencies that may adversely affect listed species or adversely modify designated critical habitat without formal consultation with the U.S. Fish and Wildlife Service or the National Oceanographic and Atmospheric Administration (NOAA). Section 7 of this Act specifies the consultation program conducted with these Federal agencies.

Clean Water Act

The Clean Water Act (CWA) of 1972 is the primary Federal law that protects the nation's waters, including lakes, rivers and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation's waters.

Section 401 of the CWA requires a Water Quality Certification (WQC) be obtained from the State (or territory) for actions that require a Federal permit to conduct an activity, construction or operation that may result in a discharge into waters of the United States. The State of Hawai'i Department of Health, Clean Water Branch (DOH-CWB) implements this program issuing WQC permits for activities affecting jurisdictional waters.

Section 402 of the CWA establishes a National Pollution Discharge Elimination System (NPDES) general permit process for point and non-point source discharges such as storm water discharges associated with construction activities. Such a permit would be required if construction activities disturb a land area of one acre or more and discharge storm water from the construction site to waters of the U.S. The DOH-CWB implements this NPDES for the State.

Section 404 of the CWA requires a permit for the discharge of dredged or fill material into a wetland, navigable water, or jurisdictional waters of the United States. The U.S. Army Corps of Engineers (USACE) issues a permit under these regulations.

Executive Order 11988 Floodplain Management

Executive Order 11988 requires Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of flood plains. It also requires agencies to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The Environmental Protection Agency (EPA) has policies and procedures for implementing this Order, and each federal agency is responsible for implementing these procedures.

Executive Order 11990 Protection Of Wetlands

Executive Order 11990 was issued to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. This Order requires Federal agencies, in their planning actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The EPA has policies and procedures for implementing this Order, and each federal agency is responsible for implementing these procedures.

Executive Order 12898 Environmental Justice

Executive Order 12898 (Environmental Justice) issued in 1994 relates to the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Federal agencies must identify and address disproportionately high and adverse environmental effects from an action on minority and low-income populations.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act was enacted to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The federal agency must consider the effect that water-related projects would have on fish and wildlife resources, take action to prevent loss or damage to these resources, and provide for the development and improvement of these resources. This regulation is administered by the FWS and the National Marine Fisheries Service, as appropriate.

1.3 PROJECT LOCATION

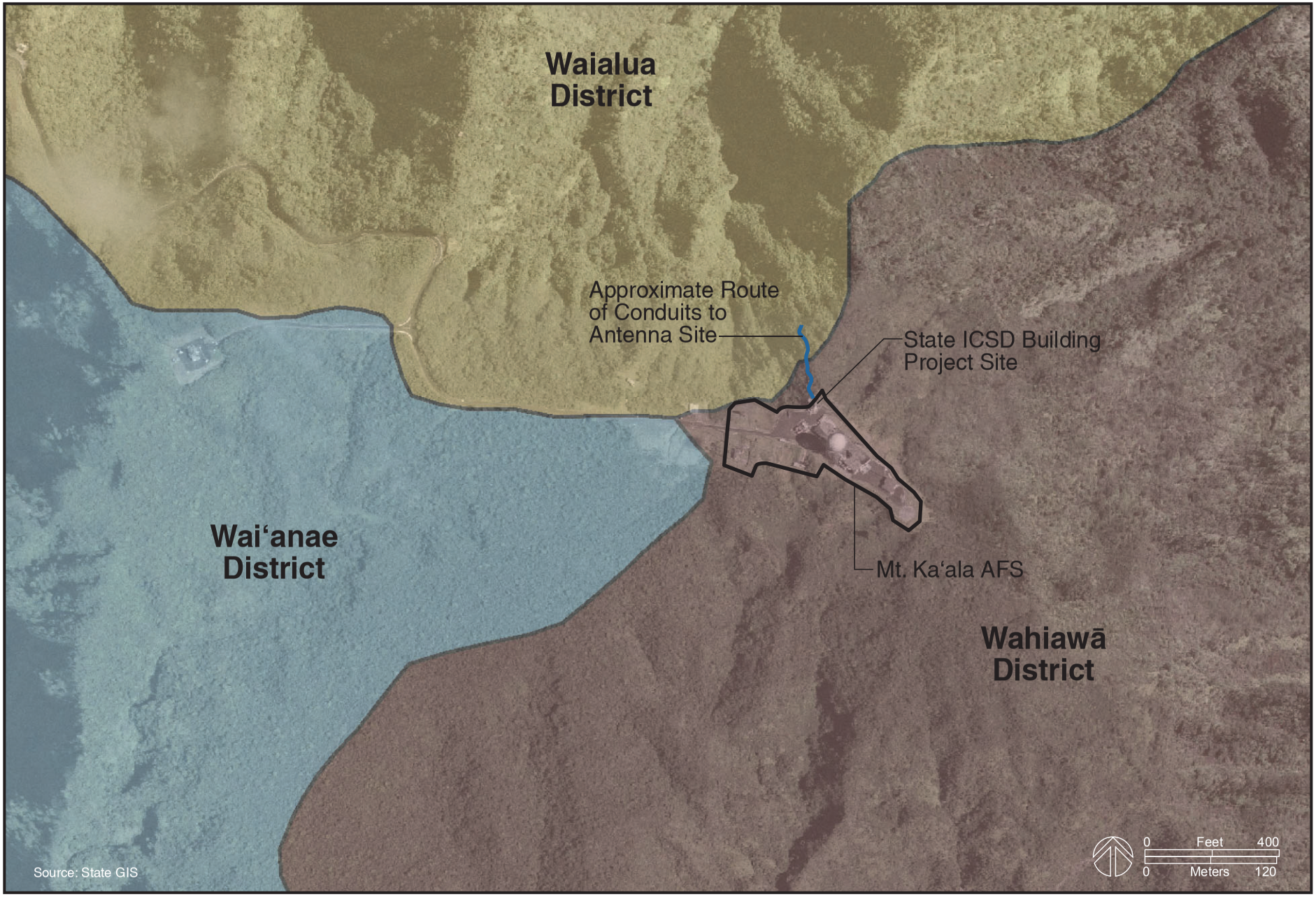
The State ICSD's licensed radio facility is located within the larger Mt. Kaʻala Air Force Station (AFS) site situated at the summit of Mt. Kaʻala. The Mt. Kaʻala AFS is located where the districts of Wahiawā, Waialua, and Waiʻanae all converge at this mountain's summit. A map showing the general boundaries of these districts is included as Figure 1.3. As shown on this map, the Mt. Kaʻala AFS is situated within the Wahiawā district, and existing conduits leading downhill of Kamaohanui Ridge to a lower dish antenna site enters into the Waialua district. Exhibit 1.1 shows a photograph of this summit from Mt. Kaʻala Road situated just off Farrington Highway.

Exhibit 1.1 Photo of Mt. Kaʻala Summit from Mt. Kaʻala Road

1.3.1 Mt. Kaʻala Air Force Station

The original Mt. Kaʻala installation was constructed and developed by the U.S. Army in 1944 as a Very High Frequency (VHF) radio station and base camp. The installation was abandoned by the U.S. Army from 1948 to 1962. Because of their similar needs for air traffic control, the Federal Aviation Administration (FAA) and the U.S. Air Force, with its augmentee, the Hawaii Air National Guard (HIANG) jointly developed the site in April 1962. The installation became fully operational in July 1965 for its current mission which is providing detection and tracking of aircraft operating in the Hawaiian Islands (15 CES/CEVR. February 2004).

The Mt. Kaʻala AFS consists of about 6.6 acres of land, the majority of which is owned by the U.S. Army as part of their SBMR. This facility site is jointly permitted to the U.S. Air Force and the FAA by the U.S. Army. The northwest portion within the fenced area of the station is leased to the U.S. Air Force by the State of Hawaiʻi. The U.S. Air Force maintains tenant agreements with the State ICSD for its site and with other Federal agencies for communication facilities located in the U.S. Army's building (formerly the FAA's ARSR-3 building). Figure 1.4 includes a site plan of the Mt. Kaʻala AFS. A Joint Use Coordinating Committee comprised of the U.S. Air Force, HIANG, and the FAA jointly manage improvements and other activities occurring at this installation.



Regional Districts Map

Figure 1.3

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Source: U.S. Air Force 15th Airlift Wing, February 2004
FAA, Honolulu Airports District Office

Mt. Ka'ala Air Force Station Site Plan

Figure 1.4

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

The installation is co-operated by the FAA and HIANG. As indicated on Figure 1.4, the HIANG and the FAA share a building in the middle of the site that is used as an administrative center for each of their operations. The FAA operates and maintains the on-site ARSR-4 radar (air route surveillance radar) for air traffic control purposes. Radar tracking information is shared with the HIANG for air defense purposes as part of the Hawai‘i Region Air Operations Center. The U.S. Air Force maintains a building used by various Federal agencies for communications purposes (the former FAA ARSR-3 building).

The State of Hawai‘i has a communications building used by ICSD for their communications operations. The U.S. Navy maintains a building to the west and outside of the Mt. Ka‘ala AFS. The Mt. Ka‘ala Access Road traverses over lands leased to the FAA from the State of Hawai‘i, Dole Food Company, Inc., and Pioneer Hi-Bred International properties. Use of the Mt. Ka‘ala Access Road is for official use only and required to be coordinated with the FAA.

The facility is surrounded by a chain-link fence about 13 feet high with barbed-wired for security. Vehicular access is via Mt. Ka‘ala Road off Farrington Highway in the Waialua district. This is a controlled government access road not open to the public, and is maintained by the FAA with the U.S. Air Force sharing maintenance costs.

1.3.2 State ICSD Radio Facility

The State ICSD’s licensed radio facility at Mt. Ka‘ala AFS was constructed after 1988, and is 1,161 square feet in size. The building is situated in the northern corner of this installation. This State facility also includes an existing 25-foot telecommunications tower located near the building to the northeast. Another tower situated further below (*makai*) the building is owned and used by the U.S. Navy. Exhibit 1.2 includes a photograph of this State building and tower.

This unmanned concrete building has a footprint dimension of 12 feet by 18 feet, and is almost 20 feet tall. It is a two-story building with exterior stairs providing access to the second floor. There a several telecommunication antennas situated on its roof, and the building is air-conditioned. Appendix B has more photos of this State radio facility.

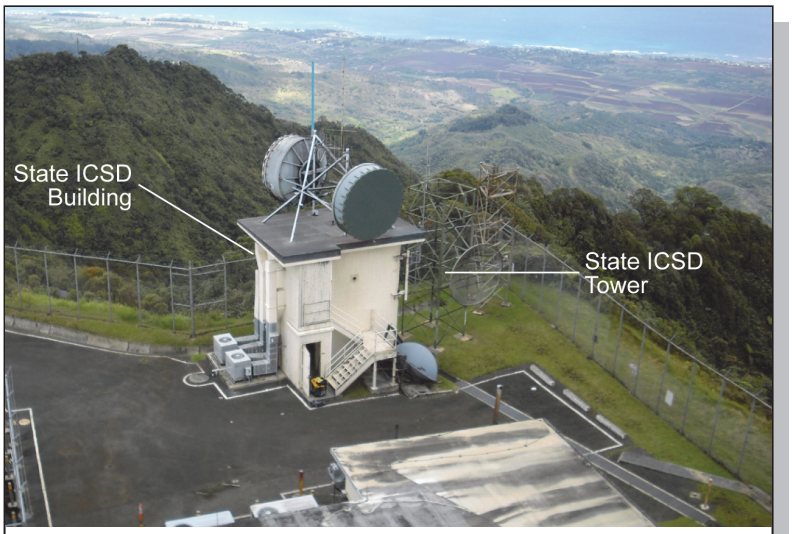


Exhibit 1.2 Photo of State ICSD Radio Facility and Tower

The State also has an existing microwave antenna site located downhill off Kamaohanui Ridge that has two antenna mounting

structures. An existing antenna dish is present on the higher of the two antenna mounts. The lower antenna mount is vacant now because a VHF corner reflector antenna is to be relocated here from its current location on the roof of the State’s building. Exhibit 1.3 includes a photograph showing the location of this antenna site and the State building. Figure 1.5 is a project vicinity map with an aerial photo that identifies the State facilities in relation to the Mt. Ka‘ala AFS and immediate surrounding area.

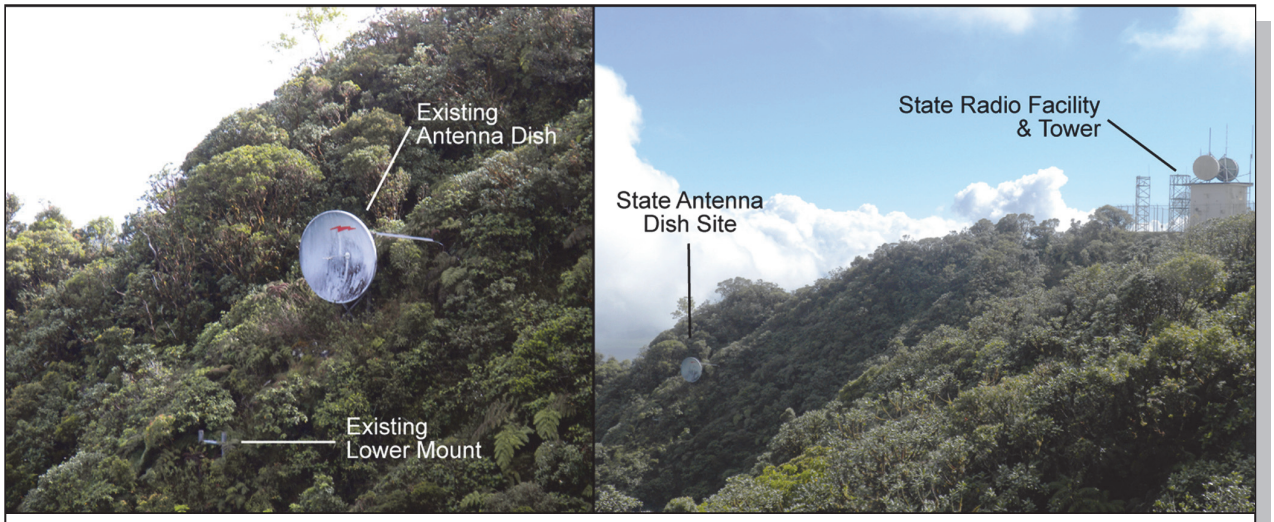


Photo of Existing Dish and Lower Mount | Photo of State Facility and Antenna Dish Site

Exhibit 1.3 Photos of State ICSD Radio Facility and Antenna Dish Site

1.3.3 General Site Conditions

The immediate area surrounding the Mt. Ka‘ala AFS is undeveloped as previously shown on Figure 1.5. A Navy building supporting their Pacific Missile Range Facility is situated just outside of this installation’s fence along Mt. Ka‘ala Access Road. A shed for the State DLNR is also located further downhill along this access road. The only other feature at this site is an unlined drainage detention basin along the access road situated across from the Navy’s building.

Surrounding areas outside of this installation consists of vegetation characteristic of a Montane Wet Shrubland that is found at higher elevations. Existing vegetation in this area is dominated by native plant species with some areas having introduced plant species. The northwest area outside this installation consists of Kamaohanui Ridge that has very steep slopes leading down Kaumokunui Cliffs into the Mokulē‘ia Forest Reserve in the Waialua district. Exhibit 1.4 provides an oblique aerial view of this facility, and additional photos of portions of this facility are included in Appendix B.

Project Vicinity Map

Figure 1.5

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

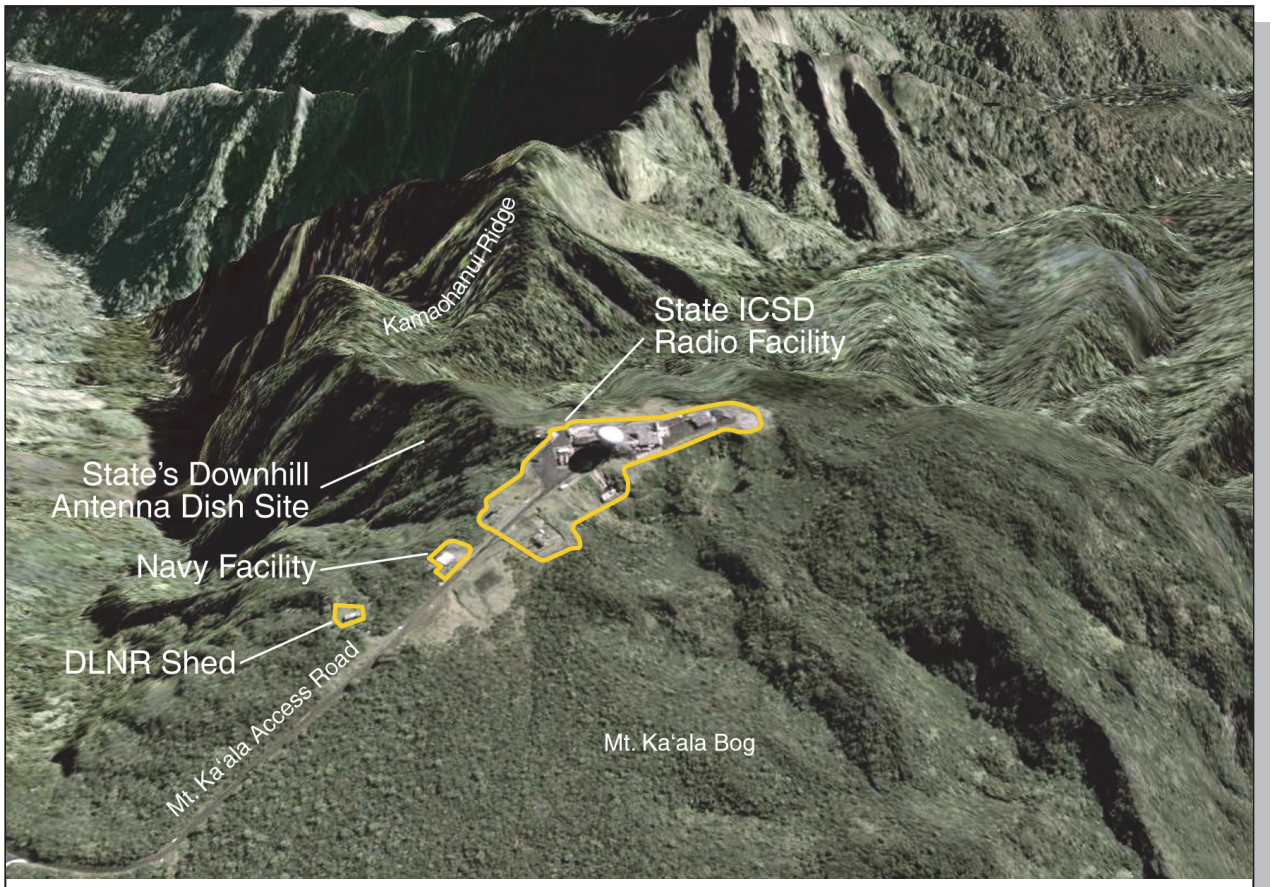


Exhibit 1.4 Oblique Aerial View of Mt. Ka‘ala AFS Site

Source: Google Earth

The west and southern area below this installation located on the opposite side of Kamaohanui Ridge consists of the Mt. Ka‘ala bog which is a large wetland that has accumulated peat. A portion of this bog is located within the State's Mt. Ka‘ala Natural Area Reserve with remaining areas located with the SBMR. Hiking trails starting from both the Waialua and Wai‘anae districts lead up to this bog, and a boardwalk provides public access through this bog. Exhibit 1.5 includes a panoramic view of this bog. Hikers using the hiking trail are prohibited from using the Mt. Ka‘ala Access Road because this road is for official use only.

Exhibit 1.5 Panoramic Photo of Mt. Ka‘ala Bog

1.4 PROPERTY INFORMATION

The majority of the 6.64-acre Mt. Ka‘ala AFS is situated on a large parcel of land owned by the U.S. Army as part of their SBMR. This large Federal property is identified as Tax Map Key (TMK) (1) 7-07-001: 001, and consists of 10,064 acres. This facility is leased by the U.S. Army to the U.S. Air Force and FAA, and as previously discussed, the U.S. Air Force maintains tenant agreements with several other government agencies such as the FAA, HIANG, U.S. Coast Guard, U.S. Navy, and the State of Hawai‘i.

The western portion of the Mt. Ka‘ala AFS includes two parcels owned by the State of Hawai‘i that are identified as TMK (1) 6-07-003: portions of 023 and 025. These areas of the installation are leased to the U.S. Air Force by the State of Hawai‘i. Both of these State properties are designated as the Mt. Ka‘ala Natural Area Reserve (NAR), and are under the jurisdiction of the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW). Parcel 23 consists of two (2) acres and Parcel 25 consists of about 1,064 acres.

The State ICSD’s downhill antenna dish site is located within the State’s Parcel 25. The existing conduit route connecting this antenna site to the State building starts within the U.S. Army property (TMK 7-07-001: 001) and enters into the State property (Parcel 25). Figure 1.6 shows the project area in relation to the Tax Map parcel boundaries based upon State Geographic Information System (GIS) data.

A property boundary map prepared in December 2001 for the State’s facility within this installation reflects some refinements to the boundaries and locations of these parcels in relation to the Mt. Ka‘ala AFS. A recent topographic survey conducted for this radio station project, dated April 2011, reflects this boundary modification as shown on Figure 1.7. The change reflects a slight directional shift to the east in the point where the boundaries of both State properties and the Federal property meet.

Based upon this topographic survey map, the boundary line dividing the State’s Parcel 23 and U.S. Army’s Parcel 01 now cuts through the center of the existing State radio facility. Therefore, the State facility is now situated within both Federal and State property whereas this building was previously thought to be situated entirely within the Federal property under the Tax Map.

The existing State antenna tower next to their building continues to be located entirely within the Federal property. However, the conduit route from the State building to the downhill antenna site is now situated predominantly within the Federal property. The conduit route still continues to cross into the State’s property (Parcel 25) before reaching the antenna dish site. The total conduit route from the State radio facility to the dish site is about 220 feet in length, with about 60 feet of it estimated to be within the State’s property and associated Mt. Ka‘ala NAR.

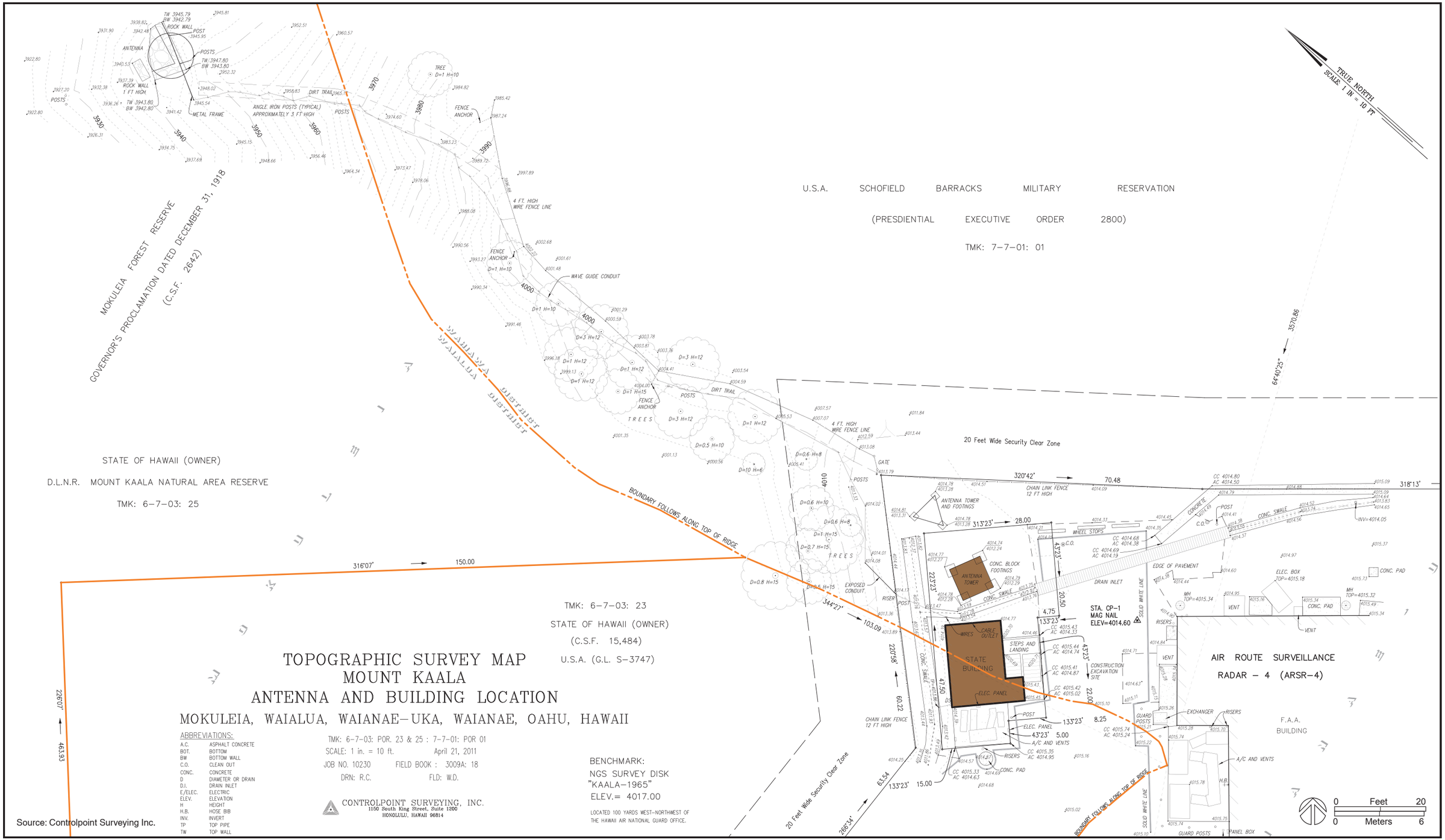
Tax Map Key Map Based Upon State GIS Data

Figure 1.6

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division



Topographic Survey Map

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Figure 1.7

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

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The reason for the modification of the boundaries of these parcels could be due to the development of the Mt. Ka‘ala AFS situated near the top of this ridge. The boundary lines dividing the Federal and State property were initially intended to follow along the top of the mountain ridge. Development of the Mt. Ka‘ala AFS modified the top of this ridge and thus existing Tax Maps and subsequent GIS data developed from these maps reflect a slightly modified boundary. The current topographic survey map shows the property lines prior to the installation’s construction.

The total project area, including likely area of disturbance, is estimated to encompass about 6,375 square feet, which is less than 0.15 acre. This includes the State building and existing antenna site, area within the installation having conduit improvements, and the conduit route down Kamaohanui Ridge (a 20-foot-wide corridor for planning purposes, as the actual disturbance area would likely be narrower) and the antenna dish site. A summary of the estimated area of the project within property parcels based upon the topographic survey map is provided.

Tax Map Key Parcels	Parcel Acreage	Project Area
(1) 6-07-003: 023	2 acres	475 square feet
(1) 6-07-003: 025	1,064 acres	1,935 square feet
(1) 7-01-001: 001	10,064 acres	3,965 square feet
Total		6,375 square feet

CHAPTER 2
PROJECT DESCRIPTION AND ALTERNATIVES

2.1 PROJECT NEED AND OBJECTIVES

The State DAGS ICSD is the central organization within the State carrying out the responsibilities for statewide data processing, information systems, and telecommunications. As a result, ICSD owns and operates the State's telecommunications systems and supporting infrastructure as part of its responsibilities, which includes microwave radios, land mobile radio systems, antenna systems, towers, and the building at the Mt. Ka‘ala AFS. With the tremendous advances in technology over the years and increased reliance on telecommunications and computers in the workplace, ICSD is responsible for leading the way in implementing cost-effective and efficient information and communication services. Therefore, proper application and installation of these technologies continues to be a key component affecting the accomplishment of agency missions relating to public safety, emergency services, disaster response, and essential government operations.

Exhibit 1.6 - Photo of Existing State Building

2.1.1 Project Need

To effectively meet ICSD's responsibilities, improvements are needed to the State's radio facility at Mt. Ka‘ala AFS to repair building deficiencies and increase reliability of the equipment. This building (see Exhibit 1.6 photo) is in need of various interior and exterior repairs: 1) roof repairs due to cracks and leaks; 2) spalling of building concrete walls; and 3) cracks occurring in the building walls. As a result, plastic tarps are needed to cover interior equipment to prevent them from being damaged. Some photos of these problems are included in Appendix B.

Replacement Tower Needed

The State's existing 25-foot-tall telecommunications tower needs to be replaced with a 50-foot-tall tower for two reasons. First, there has been a change to the State and Federal "Rainbow" analog microwave system to a new "Anuenue" communications system that is a digital microwave using a lower band (6 gigahertz (GHz) instead of 2 GHz). The replacement microwave links all operate in the lower 6 GHz microwave band that forces the use of heavy, large-diameter, high-performance, solid microwave dish antennas that are too large of a

structural load for the existing tower. This old tower was designed for the lighter grid dishes used on the original 2 GHz band frequencies.

Second, the FAA and U.S. Air Force installed a new 13-foot-tall perimeter security fence around the Mt. Ka‘ala AFS facility in response to changes in security procedures due to terrorist threats. Two sections of the fence blocked portions of the signal path of two existing State 6 GHz digital microwave radio antennas that were attached to the sides of the State building. As a result, these antennas needed to be temporarily relocated on top of the building’s roof. These include a 10-inch dish facing Mt. Kilohana on the island of Kaua‘i and an 8-inch dish facing Mt. Tantalus on the island of O‘ahu.

These two antennas mounted on the building’s roof cannot be raised on their existing mounts. The temporary roof antenna mounting structure is only rated at 80 mile-per-hour wind loading, and is therefore not strong enough to withstand even a Level 1 hurricane. It is also not of a design to be used for the permanent mounting of critical radio system infrastructure, and the mount structure cannot support all of the antennas required by the State.

The weight of these antennas also contributes to some of the damage to the roof. In order to achieve a permanent acceptable path clearance, these antennas must be permanently raised and relocated from the building’s roof requiring a taller tower. There is also a need for additional microwave capacity to the island of Kaua‘i, new links, and additional land mobile radio services. All of these factors support the requirements for a new antenna and a new tower.

Electrical services need to be upgraded to support these improvements at the State’s facility. The building’s existing air conditioning system is now operating without pre-heat resulting in unacceptable levels of humidity in the second floor equipment room. There is a need to air condition the first floor room of this building. The State’s present 90-amp panel is fed from a smaller 70-amp breaker and thus needs to be upgraded to ensure reliable electrical service. Installation of additional microwave equipment at this facility will also contribute to the need for increased electrical power.

Downhill Antenna Site Improvements

An existing microwave antenna site located downhill from the existing State building off Kamaohanui Ridge has two antenna mounting structures (refer to Exhibit 1.3). A very high frequency (VHF) corner reflector antenna needs to be relocated from its current location on the State’s facility building roof to the lower of the two antenna mounts. Relocation of this antenna is needed to lower the radio frequency energy emitted from its existing location on the building roof. This corner reflector antenna to be exchanged was inadvertently installed on the building years ago and thus needs to be relocated. The corner reflector is needed to provide State Civil Defense siren control. Additional conduit lines routed from the State building to this antenna site are also required to improve operations reliability.

2.1.2 Project Objectives

The overall objective for the proposed project is to support the State ICSD’s efforts to provide efficient and effective telecommunication services to all agencies in the State of Hawai‘i. Because the ICSD owns and operates the State’s telecommunications systems and supporting infrastructure, ensuring these facilities are adequate to support existing and future needs are important to achieve agency missions related to public safety, emergency services, disaster response, and essential government operations. Therefore, this project would address immediate repairs and other deficiencies associated with State facilities at the Mt. Ka‘ala AFS. Improvements would also increase the capacity of telecommunication infrastructure to support the future needs of the State.

The project includes needed repairs to the State’s building at the installation to address existing deficiencies and will help ensure the continued protection and operation of equipment. Replacement of their existing 25-foot tower with a 50-foot tower will allow relocation of existing antennas from the building’s roof and eliminate damages being caused to the roof. The taller tower will allow relocation of other existing antennas and placement of new antennas, increasing the capacity of telecommunication equipment to support the State’s future needs.

Electrical upgrades to the facility will ensure that power requirements for existing and future telecommunication equipment are efficiently accommodated. Additional conduit and improvements planned from the State building to the downhill dish site on Kamaohanui Ridge will increase the reliability and efficiency of antenna dishes there. These efforts would thus support the State ICSD’s long-term viability and effectiveness of telecommunication equipment used at the Mt. Ka‘ala AFS.

2.2 PROJECT DESCRIPTION

The project improvements consist predominantly of repair and renovation work to the State ICSD’s existing building and telecommunication antennas at the Mt. Ka‘ala AFS. Figure 2.1 includes a Site Plan showing the overall improvements planned, and detailed descriptions of the improvements are provided.

2.2.1 Building Repair and Renovation

Both interior and exterior repairs to the existing State building are planned to fix current deficiencies. Figure 2.2 includes section views of the building and exterior stairs showing the improvements. The existing antennas and cable connections on the roof would be removed, cracks on the concrete roof deck would be fixed, and reroofed. Gutters and downspouts would be replaced, and existing flashing replaced. The inside and outside of existing building concrete walls would be repaired and repainted. Existing doors and frames would be refurbished or

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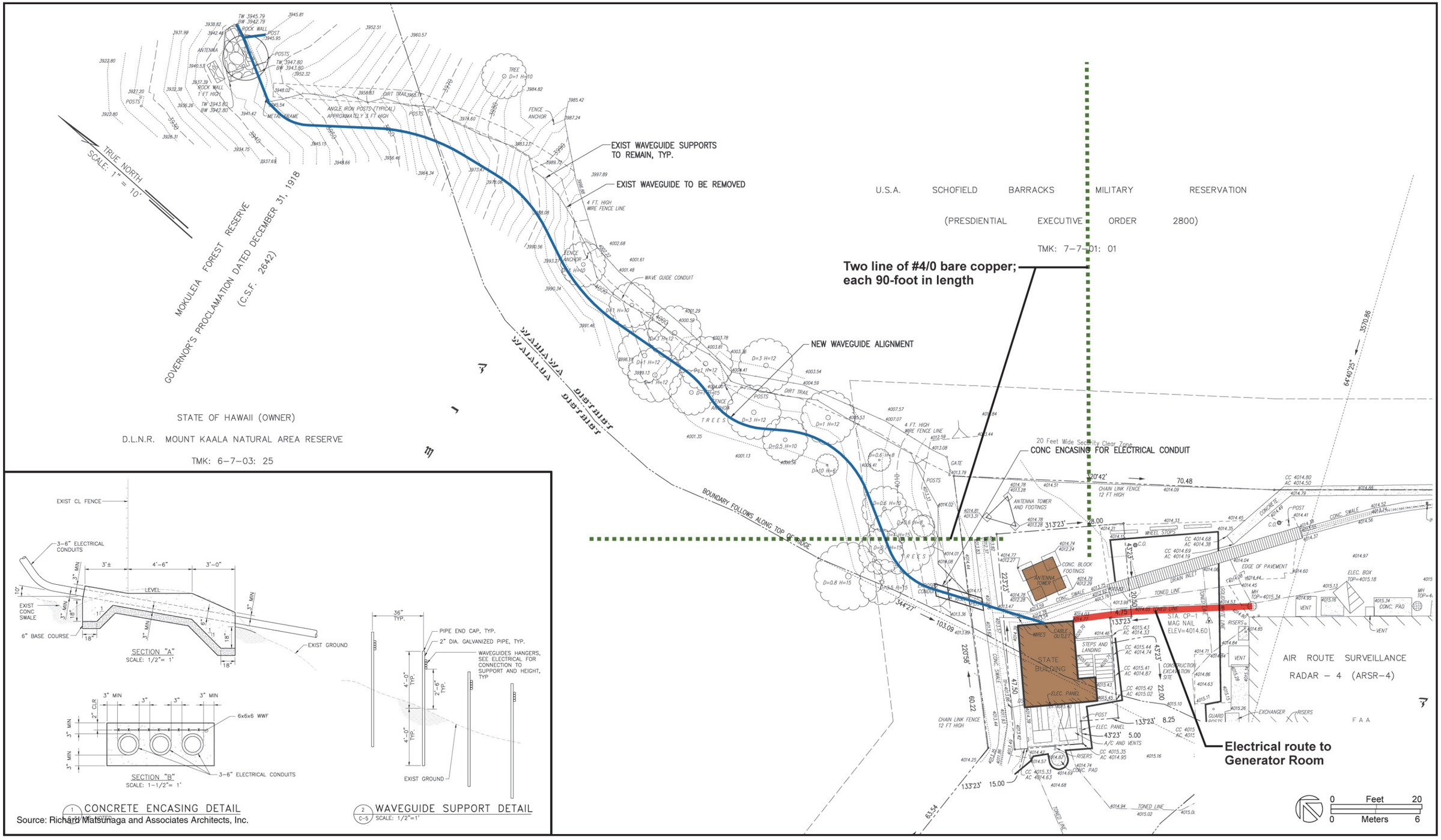


Source: Richard Matsunaga and Associates Architects, Inc.

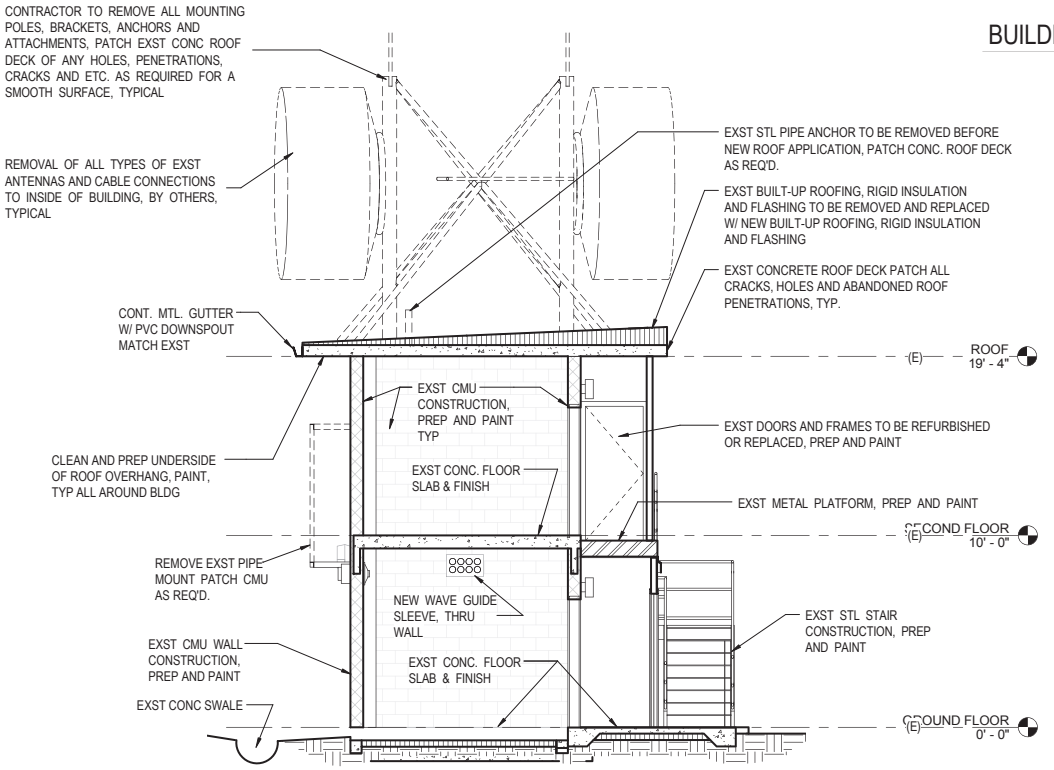
Mt. Ka'ala Radio Facility Site Plan

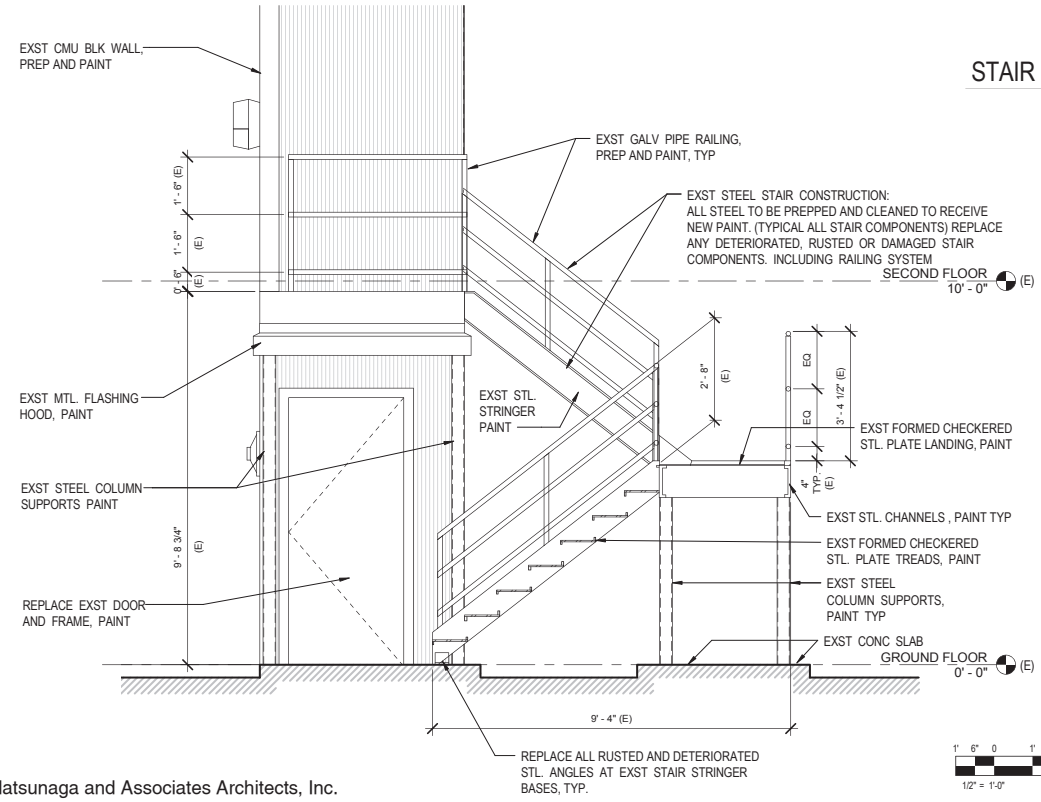
ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Figure 2.1

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division





Source: Richard Matsunaga and Associates Architects, Inc.

Section View of State Building Plans

Figure 2.2

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

replaced, and painted. The existing railing for the stairs outside the building would be repaired and painted. An existing waveguide sleeve would be relocated to another wall location within the ground floor of the building.

New conduits would be installed underground within the existing driveway of the installation to connect equipment within the State building with a nearby FAA generator building. The distance of this new conduit is about 25 feet. These conduits along with other electrical improvements will provide a needed upgrade to the State's electrical system serving their facility. Two bare copper lines about 90 feet each in length would also be placed above ground extending down different areas of the ridge from the State building to serve as a grounding mitigation in the event of a lightning strike on the State facility.

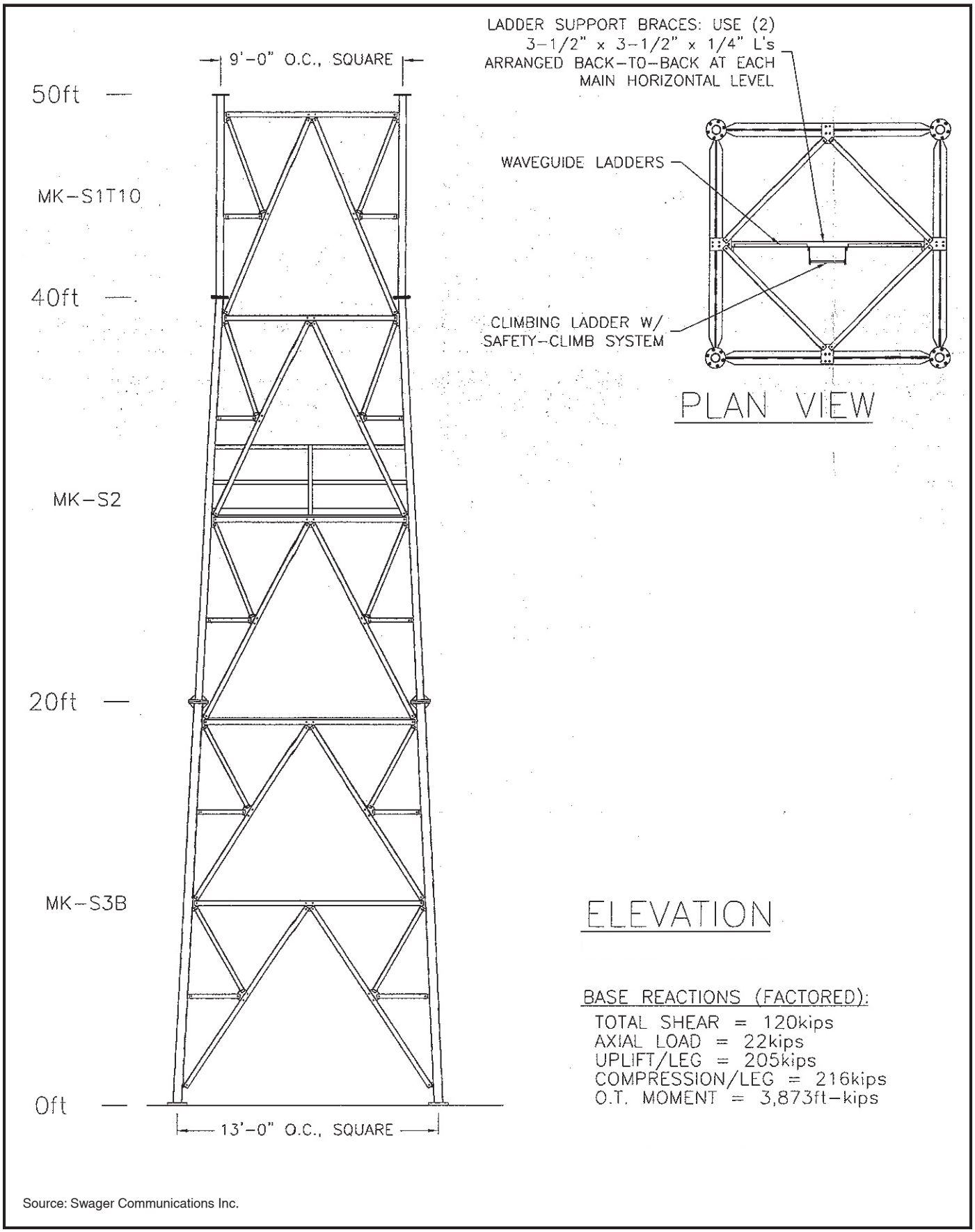
2.2.2 Replacement of Existing Tower

The State's existing 25-foot-tall tower will be replaced with a 50-foot-tall tower within the State's licensed area. The U.S. Coast Guard will be responsible for demolishing the existing radio tower, and designing and constructing the new taller replacement tower. Figure 2.3 shows the plans for this new tower.

The existing antennas from the roof of the State building will be relocated to this tower along with additional microwave and whip antennas. Whip antennas placed at the top of the 50-foot tower will extend the total height up to about 70-feet. The antenna dishes placed on this tower would be designed to withstand winds up to 130 mph. During a hurricane having excessive wind speeds, the dishes would peel away but the structure would remain. No guy wires are needed to secure the dishes. A micropile construction method is planned for the replacement tower that would minimize the spoils generated during construction activities.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai'i for its Hawai'i Interactive Television System (HITS) distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State's critical land mobile radio systems that support public safety and critical government operations.

The State may also expand their present FAA licensed area to correct deficiencies in the original property description that did not include portions of the actual area currently occupied by the ICSD building, the building's exterior stairway and supporting concrete pads, and the concrete pad mounted external air conditioners based upon the property boundary map prepared in December 2001. Additional space would also include area around the new replacement tower to support its construction and maintenance in the future. Additional rights-of-way would be established for conduit routes and other utilities as needed from the FAA.



Source: Swager Communications Inc.

Elevation Plan for Replacement Tower

Figure 2.3

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

If there are any damages occurring to the perimeter security fence during the project's construction activities, the State ICSD and U.S. Coast Guard (for replacement tower) will need to repair or replace the fence to the satisfaction of the FAA. Once the project is completed, FAA Security will be consulted to ensure applicable security standards are met. Any security deficiency will be corrected to the FAA's satisfaction. Additionally, the U.S. Air Force, through the HIANG, is responsible for the physical security of the site since the installation is classified as an air force station. The State, U.S. Navy, and their contractors will need to comply with the applicable physical security requirements.

2.2.3 Antenna Dish Site Improvements on Kamaohanui Ridge

Improvements are also planned to the State's existing antenna site downhill of Kamaohanui Ridge and associated conduits extending from the State's building. Figure 2.1 previously showed the plans for this conduit route, antenna site, and details of improvements.

A 48-inch-tall, 75-inch-wide corner reflector antenna will be relocated from the State building to the lower mount at this existing downhill antenna site. The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility.

There is one existing above ground microwave antenna feed line routed from the Mt. Ka'ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits are planned to be routed above ground from the State's radio facility to this antenna site. The route would cover a distance of about 220 feet in length starting at an elevation of about 4,020 feet at the building and ending at 3,950 feet above mean sea level. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) generally following the existing route. A section of these cables about 10 feet long would be located underground where they pass under the security fence from the radio facility building.

A conservative corridor disturbance width of 20-feet-wide was assumed for planning impact assessment purposes. Existing vegetation along the route would be cut to create workable areas for the installation of conduit supports. However, the clearing of trees or areas of vegetation is not planned or expected to be necessary. Thus, the actual area disturbed within this corridor for is expected to be narrower. The disturbance area would be dependent upon existing site conditions along the steep ridge leading to the antenna dish site. Efforts will be made by the contractor to minimize the width of corridor needed for work. Once completed, vegetation cut would grow back. If necessary, native plants would be used for restoring areas disturbed within the corridor. Coordination with the State NARS program would determine appropriate procedures and species.

2.2.4 Project Phasing and Estimated Costs

Proposed improvements can be implemented once this environmental review process is completed and applicable land use entitlements are obtained. Necessary ministerial permits would similarly be obtained as part of the design implementation phase. This environmental review and entitlement process is planned to be completed by the Fall of 2012. Therefore, construction is planned to start in the Fall of 2012 and be completed by the end of 2013.

The estimated probable construction cost for this project is $650,000.

2.2.5 Listing of Permits and Approvals

A listing of required discretionary land use approvals and ministerial permits for this project is provided.

Federal Permits and Approvals

U.S. Fish and Wildlife Service
- Section 7 Consultation, Endangered Species Act

U.S. Coast Guard
- Section 106 Consultation, National Historic Preservation Act

State of Hawai'i Permits

Department of Health
- National Pollutant Discharge Elimination System (NPDES) Individual Permit - Construction Activities (if applicable)
- Construction Noise Permit

Board of Land and Natural Resources
- Conservation District Use Permit

Department of Land and Natural Resources, Division of Forestry and Wildlife
- Special Use Permit, Natural Area Reserves

Department of Land and Natural Resources, Historic Preservation Division
- Chapter 6E, HRS, Historic Preservation Review

Department of Business, Economic Development and Tourism, Office of Planning
- Coastal Zone Management Act Consistency Determination

2.3 ALTERNATIVES CONSIDERED

This section discusses alternatives associated with the Mt. Ka‘ala Radio Facilities Improvements Project that were identified and considered. Alternatives discussed include: 1) not implementing the restoration project, otherwise referred to as the No-Action Alternative; 2) proceeding with the proposed project (Proposed Project); and 3) design alternatives eliminated from further consideration. The discussion of probable impacts in the remaining chapters of this document will address those associated with the No-Action Alternative and Proposed Project.

2.3.1 No Action Alternative

The No-Action Alternative would entail ICSD not proceeding with any repair and renovation improvements to their building and telecommunication facilities at the Mt. Ka‘ala AFS. As a result, the present problems and conditions associated with these facilities would continue and worsen while the immediate surrounding area would essentially remain unchanged.

The worsening of building deficiencies associated with the State’s radio facility would expose telecommunication equipment to potential damage resulting in loss of service. A particular concern is leaking on the building’s roof that could damage essential equipment inside, especially because equipment already has to be covered with plastic tarps. Antennas mounted on the roof were only intended as a temporary measure due to new fence installed by FAA requiring antennas to be raised in height for adequate clearance. The weight of these structures is contributing to the damages on the roof. The mounting structures also only have an 80 mile-per-hour rated wind loading. Thus, a Level 1 hurricane, or other storm event with strong winds, could severely damage this equipment. Equipment is also exposed to damage from a lightning strike, and the building’s electrical infrastructure does not have sufficient amperage.

Other antennas need to be properly relocated for use by the State, including a corner reflector antenna to the downhill site along with improved conduit connecting these antenna dishes to the State facility. Shortages in electrical services restrict allowing additional antennas to be added to this facility if they are not upgraded.

Under this scenario, ICSD would not effectively achieve their agency’s responsibilities for statewide data processing, information systems, and telecommunications services. The condition of their facility would continue to deteriorate and expose equipment to failure from water leaks, natural hazards, etc. Thus, their ability to accomplish their missions relating to public safety, emergency services, disaster response, and essential government operations would be put at risk, potentially exposing residents and visitors on the island of O‘ahu to safety concerns. ICSD’s ability to effectively accommodate future needs and responsibilities associated with the State’s telecommunication systems would also be compromised. This exposes the State to additional risks given the increased reliance on telecommunications and computers in the workplace due to the advances in technology over the years.

This alternative would not be pursued by ICSD for the various reasons described. It would therefore represent a future scenario "without the project." This "without the project" scenario provides a baseline of future environmental conditions to assess and evaluate probable impacts or changes resulting from the proposed project. A study year of 2013 was used for this No Action alternative to correspond to the projected completion date.

2.3.2 Proposed Project

Under this alternative, the repair and renovation improvements to the State's radio facility described in Section 2.2 would be implemented as the Proposed Project. Impacts from this action would be identified and evaluated based upon without project conditions under the No Action Alternative.

2.3.3 Alternatives Eliminated from Further Consideration

Design alternatives were considered for repair and renovation improvements to the State's existing telecommunications tower, but these alternatives were eliminated from further consideration because they would result in increased impacts on the environment than the design proposed for this tower. Telecommunication tower design alternatives considered but eliminated consisted of: 1) a 70-foot tall tower; and 2) construct footing foundations for the tower using typical construction methods instead of using micropiles.

70-Foot-Tall Telecommunication Tower Alternative

A 70-foot-tall telecommunication tower was initially considered to replace the State's existing 25-foot-tall tower. This taller tower would provide enough clearance for antennas over the perimeter security fence surrounding the Mt. Ka'ala AFS facility. A large tower foundation would be required to meet new tower loading and wind survivability requirements.

However, this telecommunication tower design alternative was eliminated after further evaluation because it would impact the FAA's Air Traffic Control Radar radio frequency (RF) beam located at Mt. Ka'ala AFS. This tower would also require more excavation work and generate associated material spoils to construct the foundation footings required to achieve necessary tower loading requirements. Therefore, the height of the State's proposed replacement telecommunication tower was reduced to 50 feet due to problems with the taller 70-foot tower affecting FAA's Air Traffic Control Radar RF beam.

Typical Foundation Footing Construction Alternative

Construction of the proposed 50-foot-tall replacement telecommunication tower was initially planned to utilize typical construction methods to create required concrete foundations. This type of design would typically utilize large underground spread foundations and deep piles. Such a foundation could be 5-feet deep, and be 8 to 12 feet wide in a reinforced concrete spread

footing to provide vertical and lateral support. Implementation of this design would result in subsurface excavation needing to be conducted in a relatively small area by the State building within an environmentally sensitive area. Excavation work would generate material spoils needing to be mitigated using best management practices.

Therefore, the alternative of implementing a micropile design for the tower was proposed, and was selected as the preferred method because it would be less environmentally intrusive than constructing a larger concrete foundation. A micropile is a small diameter (typically less than 12-inches), drilled and grouted pile that is typically reinforced. The advantages of micropiles are that their installation procedure causes minimal vibration and noise, they can be installed in difficult ground conditions, and they can be used in areas with restrictive access.

CHAPTER 3
DESCRIPTION OF AFFECTED ENVIRONMENT

Climate

The State of Hawai‘i climate is relatively moderate throughout the island chain, although some differences in these conditions may occur from one location to another due to the mountainous topography associated with each island. Annual and daily variation in temperature depends to a large degree on elevation above sea level, distance inland, and exposure to the trade winds. On O‘ahu, the Ko‘olau and Wai‘anae mountain ranges are oriented almost perpendicular to the trade winds, which account for much of the variation in local climatology. O‘ahu’s temperatures have small seasonal variation such that the temperature range averages only 7 degrees between the warmest months (August and September) and the coolest months (January and February) and about 12 degrees between day and night.

The Mt. Ka‘ala AFS is uniquely located in a tropical montane forest setting that may be typical of the higher windward elevations of O‘ahu. The closest climate station with long-term records is approximately 2 miles away from the installation, and climatic conditions can vary considerably over short distances in the Wai‘anae Range. As a result, accurate climate data for Mt. Ka‘ala AFS is not available. Available information does indicate that the mean annual rainfall at this site is in the range of 80 to 90 inches, and that the period from December to February is the wettest.

The annual average daily temperatures at the SBMR range from 69 degrees Fahrenheit in January and February to 77 degrees in August. The average minimum temperature recorded at an upper Wahiawā weather station (1,046 feet elevation) was 61 degrees and the maximum was 78.5 degrees CEMML, July 2010). Winds are predominantly “trade winds” from the east-northeast except for occasional periods when “Kona” storms generate strong winds from the south, or when the trade winds are weak and land breeze to sea breeze circulations develop. Wind speeds typically vary between 5 and 15 miles per hour providing relatively good ventilation much of the time.

3.1 GEOGRAPHY, TOPOGRAPHY AND SOILS

The Island Of O‘ahu is entirely volcanic in terms of geologic origin. Throughout time, the volcanic landscape of O‘ahu has been subject to the natural forces of erosion and sedimentation, resulting in such physiographic features as beaches, reefs, coastal plains, saddles, dunes, uplands, cliffs and valleys. The Island of O‘ahu is a volcanic doublet, formed of the Wai‘anae Range on the west and the younger Ko‘olau Range on the east. Both are the eroded remnants of great shield volcanoes that have lost most of their original shield outlines and are now long narrow ridges shaped largely by erosion.

Mt. Ka‘ala AFS is located at the summit of Mt. Ka‘ala situated at the northern end of the Wai‘anae Range. Mt. Ka‘ala is directly underlain by flows of basalt and andesite making up different segments of the Wai‘anae Volcanic Series. The lowest Wai‘anae Volcanic Series member is made up primarily of *pahoehoe* flows, and the middle member is made up of larger basalt. The upper member is composed of large basalts and andesite overlain by saprolite (15 CES/CEVR. February 2004).

3.1.1 Topography

The topography associated with this installation is generally flat in comparison to surrounding areas of the mountain range that have steep slopes. About half of the area surrounding the installation starting from the north, to east, to southeast has very steep slopes associated with Kamaohanui Ridge (see Exhibit 3.1). The surrounding area extending from the southwest to west also has steep slopes although not as severe as the other end. This western area is where the Mt. Ka‘ala Bog is situated.

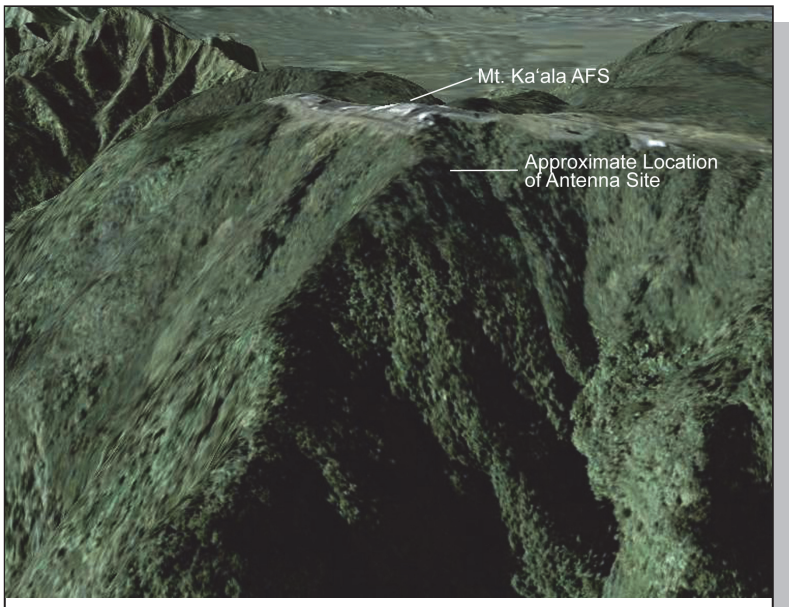
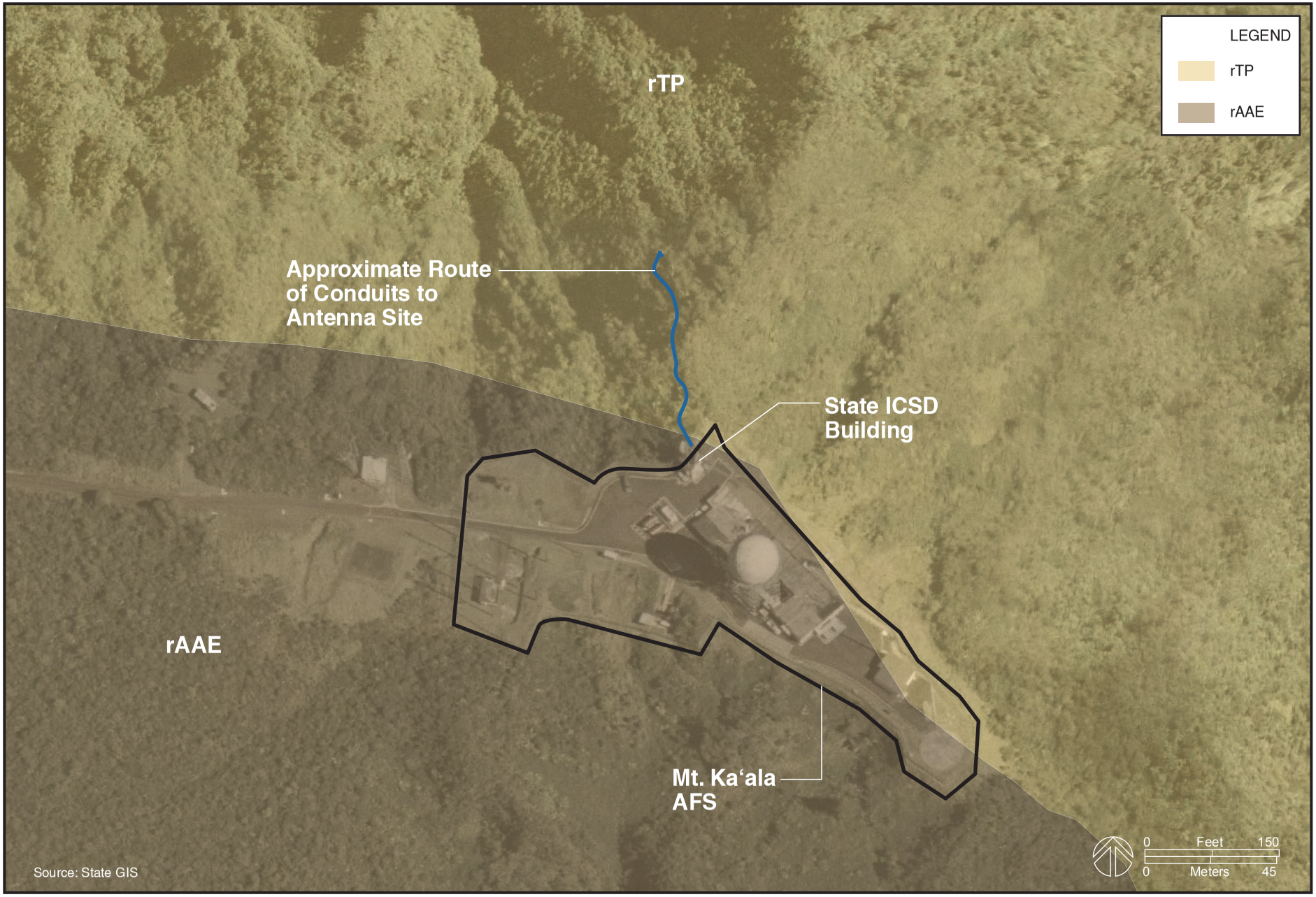


Exhibit 3.1 Southern Oblique Aerial View of Kamaohanui Ridge
Source: Google Earth

The existing State building and tower are situated at an elevation of about 4,015 feet above mean sea level (AMSL). The topography in the vicinity of this building is relatively flat because it is situated on paved area while the tower is situated at a slightly lower elevation on grassed area that slopes down to the existing FAA security fence. The new conduit extending down Kamaohanui Ridge from the State building starts at this elevation (4,015 feet) and ends at a lower elevation of about 3,950 feet AMSL about 220 feet away. The average slope for this conduit route is 34 percent, but the last 75 feet of the path travels down the steep ridge at a slope of 60 percent.

3.1.2 Soils

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service classifies soils within the project site. The soils of the project area are comprised of the Alakai series and Tropohumults-Dystrandepts association of soils. Figure 3.1 graphically shows the soils classification for this area based upon State Geographic Information System (GIS) data. A description of this soil type based upon the *Soil Survey of Islands of Kaua‘i, O‘ahu, Maui, Moloka‘i, and Lāna‘i, State of Hawai‘i* (SCS, 1972) study is provided below.



Soil Survey Map

Figure 3.1

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

The Alakai series consists of poorly drained soils on uplands on the island of O'ahu. These soils formed by the deposition and decomposition of organic matter over basalt, under wet conditions. They are level to moderately steep, and elevations range from 3,000 to 5,000 feet AMSL. Most of the Mt. Ka'ala AFS site and south-southwest area soils are identified as Alakai mucky peat (rAAE).

- Alakai Mucky Peat, 0 to 30 Percent Slopes, (rAAE). This soil occurs on the top of mountains and high ridges. In these areas, the water table is at or near the surface, and vegetation consists of mosses, scrub *'ōhi'a*, and *puakeawe*. The representative profile of this soil had a surface layer about 8-inches thick of very dusky red mucky peat. Below this was dark reddish-brown, reddish-black, and very dusky red mucky about 24-inches thick. The texture of the substratum was clay. Permeability was slow below the muck, runoff is slow, and the erosion hazard is slight.

The Tropohumults-Dystrandepts association (rTP) consists of mountainous areas in the Wai'anae mountain range on the island of O'ahu. These areas are dominated by deep, V-shaped drainageways and narrow ridges. The slope ranges from 30 to 90 percent, and elevations range from 1,000 to 4,000 feet AMSL. A small northeast area of the Mt. Ka'ala AFS site and the remaining surrounding areas to the north and east are situated within these soils.

The soils in this association consist mainly of Tropohumults and Dystrandepts with Histosols making up a smaller part. Areas of Rock land and Rock outcrop occur in the drainageways. Tropohumults occur on narrow ridge tops at the higher elevations. These soils are well-drained, strongly acidic to extremely acidic that are similar to those of the Halawa series. The surface layer consists of reddish-brown silty clay that has strong structure and high bulk density. The subsoil has strong subangular blocky structure, and is underlain by an ironstone pan or by saprolite.

Dystrandepts are dark-colored soils on steep side slopes and narrow ridge tops at the lower elevations. In most places, the surface layer is silty clay. The subsoil is generally massive, but some areas had fine textured subsoil. These soils formed mainly in volcanic ash, but partly in colluviums. They are well drained and medium to strongly acidic.

Histosols occupy small wet areas near mountain peaks. They are poorly drained and have accumulations of organic material as much as 3-feet thick. These soils are similar to those of the Alakai series (SCS, 1972).

Land Study Bureau Classification.

The University of Hawai'i, Land Study Bureau's (LSB) *Detailed Land Classification-Island of O'ahu* classifies land type for all lands other than those in the urban district, which are not considered to have the potential to produce crops. Land type classifications provide for an overall crop productivity rating, with and without irrigation, and for selected crop productivity

ratings for seven crops. Overall LSB ratings range from A to E, with A representing the class of highest productivity and E the lowest.

The project area including the Mt. Ka‘ala AFS, along with surrounding areas, are classified as very poorly suited for productivity with a rating of E. This classification also extends well beyond the project area including much of this Wai‘anae Mountain Range area.

3.2 NATURAL HAZARDS

This section addresses natural hazards applicable to the project and consists of earthquakes, hurricanes, and flood hazards (tsunami inundation would not be applicable).

3.2.1 Earthquake Hazards

Earthquakes in the State are mainly associated with volcanic eruptions resulting from the inflation or shrinkage of magma reservoirs beneath the surface which shift segments of the volcano. Earthquakes may occur before or during an eruption, or from the underground movement of magma toward the surface. However, earthquakes also occur due to the shifting of tectonic plates. Except for the Island of Hawai‘i, the Hawaiian Islands are generally not situated in a high seismic area subject to numerous large earthquakes (Macdonald, Abbott & Peterson, 1983).

The central region encompassing the islands of Maui and O‘ahu are subject to seismicity generally related to tectonic activity on the seafloor near the Hawaiian Islands. Tectonic activity capable of generating hazardous earthquakes is related to seafloor fractures and suspected faults around the islands. The largest seismic areas pertinent to O‘ahu are the Moloka‘i Seismic Zone and the Diamond Head Fault as shown on Exhibit 3.2.

The Diamond Head Fault passes through Koko Crater and extends along the seafloor northeast of O‘ahu. Several earthquakes of 4.0 to 5.0 magnitude have been detected along this fault since 1871. The Moloka‘i Fracture Zone is an extension of a transform fault from the East Pacific Rise that extends from Moloka‘i to the Gulf of California. This fracture is tectonic in origin and suspected to contribute to central region seismicity associated with an active seafloor. Because two known earthquakes (1871 and 1938) have occurred along the fracture, it is referred to as the Moloka‘i Seismic Zone (USGS 2002).

Most of the earthquakes that have occurred in the past have been volcanic earthquakes causing little or no damage to the other islands. Available historical data indicates that the number of major earthquakes occurring have generally been fewer and of lower magnitude than those on other islands such as Hawai‘i. Strong earthquakes of magnitude 5 or higher, based on the Richter Scale, can cause property damage and endanger lives. The exhibit identifies the recent (since 1950) significant earthquakes occurring in the Hawaiian Islands (USGS 2002).

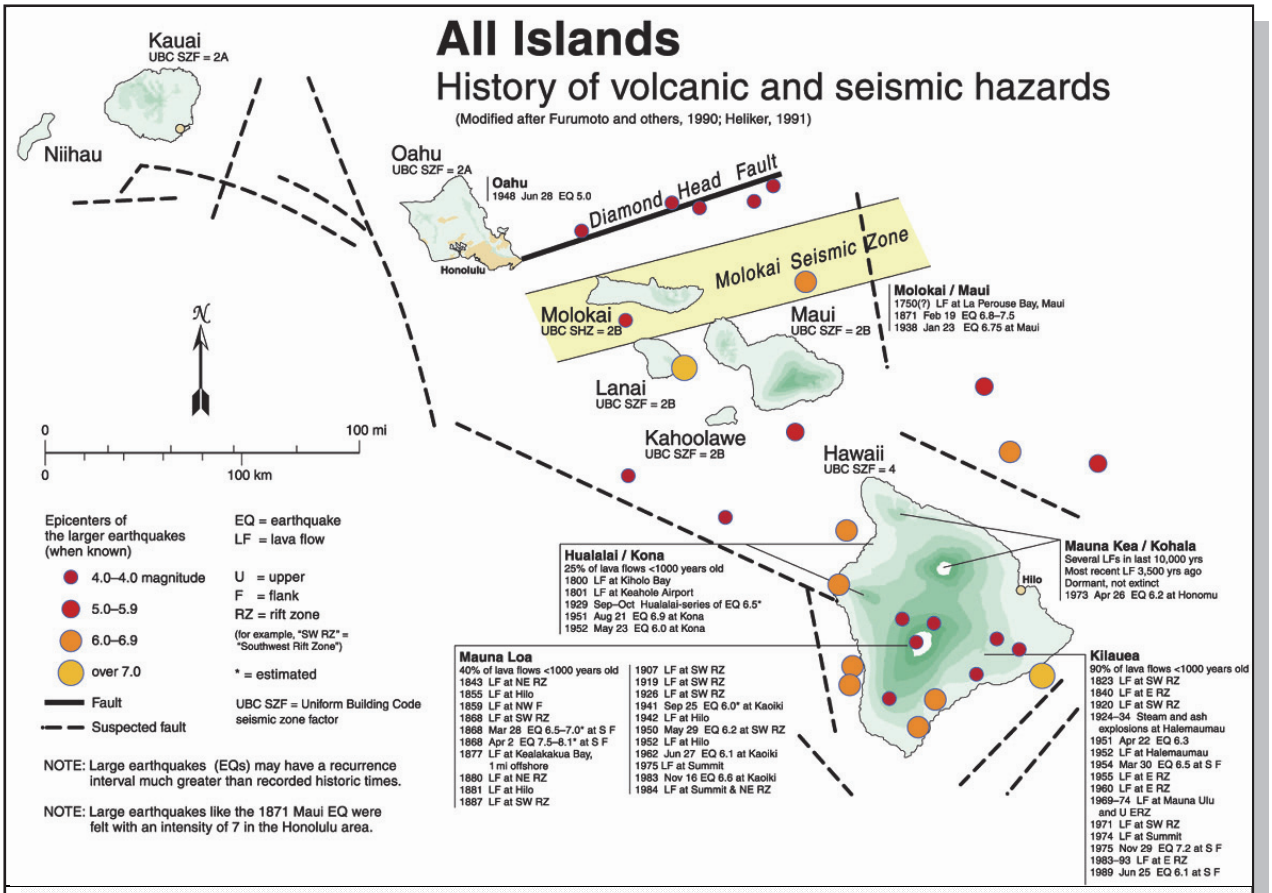


Exhibit 3.2 History of Volcanic and Seismic Hazards (USGS, 2002)

The U.S. Geological Survey's *Atlas of Natural Hazards in the Hawaiian Coastal Zone* (USGS, 2002) assigned seismic hazard intensity ratings for all islands on a scale from 1 to 5 with 1 representing lowest hazard and 5 the highest. The southern half of O‘ahu extending from Mākaha east around Diamond Head and Makapu‘u Head and north up to Kāne‘ohe Bay was assigned a volcanic/seismic risk ranking of 3 due to the proximity to the Moloka‘i Seismic Zone. The remainder of the island is ranked a 2 with respect to the volcanic/seismic hazard (USGS 2002). The ICSD Mt. Ka‘ala project area is therefore situated within this northern half of the island and has a lower risk ranking of 2.

3.2.2 Hurricane Hazards

Hurricanes are one type of tropical cyclones affecting the State that also include tropical storms and tropical depressions. Hurricanes are tropical storms with winds equal to or greater than 74 miles per hour. They have affected every island in the State and can cause major damage and injury usually resulting from high winds, marine over-wash, heavy rains, and other intense small-scale winds and high waves.

Between 1970 and 1992, 105 tropical cyclones were identified in the central Pacific region resulting in an average of 4.5 storms per year. Not all of these storms pass directly thru the State, and actual hurricane strikes on the Hawaiian Islands are relatively rare in the modern record. More commonly, near-misses that generate large swells and moderately high winds causing varying degrees of damage are the result of hurricanes passing close to the islands (USGS 2002). Exhibit 3.3 graphically shows the paths of hurricanes affecting the Hawaiian Islands.

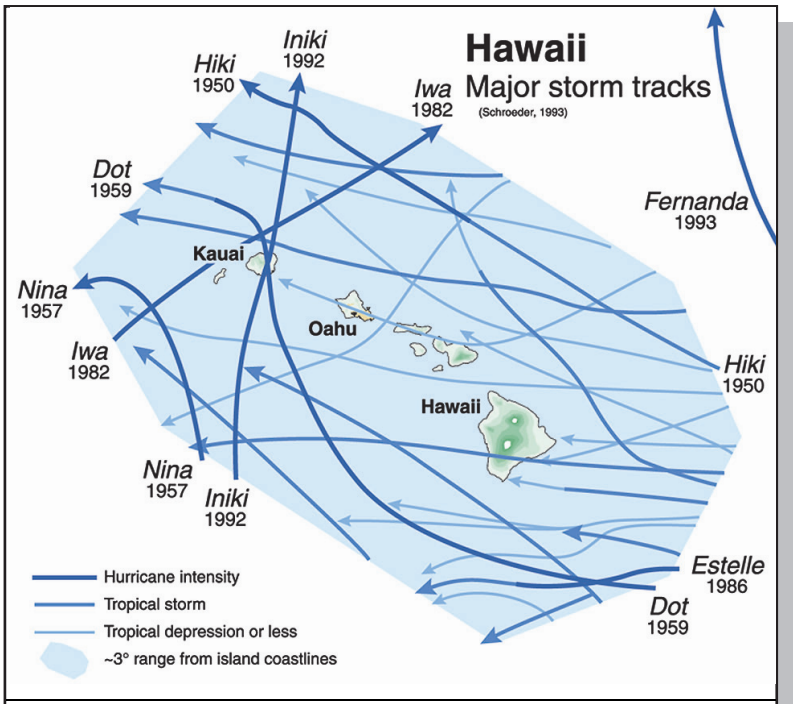


Exhibit 3.3 Major Storm Tracks (USGS, 2002)

A hazard mitigation report prepared by the Federal Emergency Management Agency (FEMA) determined that nine hurricanes approached within 300 nautical miles (about one day's travel time) of the Hawaiian Islands' coastlines between 1970 and 1992. Most hurricanes affecting the islands have focused on Kaua'i. Based upon a tracking of hurricanes since 1950, there appears to be no geographical or meteorological reasons to explain why hurricanes miss other islands and tend to steer toward Kaua'i (FEMA 1993).

3.2.3 Flood Hazards

Floods caused by heavy rainfall and strong winds normally occur during the winter months. However, accurate historic rainfall data for the Mt. Ka'ala AFS area is not available due to its unique location. Usually, most rainfall on the island generally occurs from November to April and these rainfall patterns should be similar on Mt. Ka'ala. Available information indicates that the mean annual rainfall at this site is in the range of 80 to 90 inches.

Heavy rainfall can also be associated with the tropical storm and hurricane season between the months of June and October. Areas subject to recurrent rainstorm floods are generally the coastal plains and flood plains (USGS 2002). The Flood Insurance Rate Map (FIRM) prepared by FEMA for this project area is FIRM No. 15003C0115G (effective January 19, 2011). The Mt. Ka'ala project area along with much of the surrounding area is classified as Zone D. This designation is for unstudied areas where flood hazards are undetermined, but flooding is possible.

Because the Mt. Ka'ala AFS is located at the summit of the mountain range, flooding is not expected to occur within this installation. Storm water would discharge from this site down the steep cliffs of Kamaohanui Ridge. There are streams that start down the cliffs of this summit, but no streams are present within the project area.

3.3 HAZARDOUS MATERIALS

A Management Action Plan was prepared for Mt. Ka'ala AFS by the 15th Airlift Wing Installation Restoration Program based at Hickam Air Force Base (15 CES/CEVR, February 2004). This plan summarized the status of the Mt. Ka'ala AFS environmental restoration effort and associated environmental compliance and environmental planning programs. It presented a comprehensive strategy for implementing cleanup response actions necessary to protect human health and the environment, and also integrated other environmental compliance programs to support restoration of this installation.

Environmental Condition Classification

The environmental condition of the installation was classified based upon seven categories to: 1) assess the progress of ongoing environmental restoration; 2) identify areas where further response may be required; and 3) facilitate reuse planning and property transfer. These categories consisted of the following:

- Type 1 - Areas Where No Storage, Release, or Disposal has Occurred. These are areas where no hazardous substances or petroleum products were stored, released into the environment, or disposed of on the property.
- Type 2 - Areas Where Only Storage has Occurred. These are areas where only the storage of hazardous substances or petroleum products has occurred.
- Type 3 - Areas Where Storage, Release, Disposal, and/or Migration has Occurred, but Require no Remedial Action. These are areas where evidence demonstrates that hazardous substances or petroleum products have been stored, released, or disposed of, but are present in quantities that require no response action to protect human health and the environment.
- Type 4 - Areas Where Storage, Release, Disposal, and/or Migration has Occurred and all Remedial Actions have been Taken. These are areas where all remedial or other response actions necessary have been taken and meet the provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).
- Type 5 - Areas Where Storage, Release, Disposal, and/or Migration has Occurred and Action is Underway but not Final. These are areas where the presence of hazardous or petroleum products has been confirmed. Remedial systems may be partially or entirely in place, but have not been demonstrated to regulatory agencies to be "operating properly and successfully" as defined in CERCLA.

- Type 6 - Areas Where Storage, Release, Disposal, and/or Migration has Occurred, but Required Response Actions have not been Taken. These are areas where the presence of hazardous substances or petroleum products has been confirmed and are at concentrations above action levels. Required remedial systems or other response actions have not yet been initiated.
- Type 7 - Unevaluated Areas of Areas Requiring Additional Evaluation. These are areas where the presence of hazardous substances or petroleum products is suspected, but not well characterized.

Environmental Condition of Mt. Ka'ala AFS

The study determined that a total of 10 sites at the Mt. Ka'ala AFS were identified under these classifications. Two sites were classified as Type 2; four sites classified as Type 3; three sites classified as Type 5; and one site classified as Type 6. Remedial work on the one remaining site (Type 6 classification) is scheduled to be conducted in 2012. The sites classified Type 5 and 6 are not located within or in the immediate vicinity of the State ICSD building, tower, or downhill antenna site.

The closest site identified to the State building was a diesel underground storage tank (UST), and was classified as Type 2. This site is located between the State building and nearby FAA building. This was the location of a 15,000-gallon steel UST that served an emergency generator. The tank had no history of leaks, and passed its annual tank tightness tests since the program was instigated in 1991. The tank was removed in 1997, and was replaced by an aboveground storage tank owned and operated by the FAA (15 CES/CEVR, February 2004).

3.4 HYDROLOGY

This section discusses the regional hydrology present in the project area which includes ground water and surface water resources.

3.4.1 Hydrogeological Resources

The most abundant form of groundwater on O'ahu is the basal aquifer which is a lens of fresh to brackish water that floats on seawater. The basal aquifer occurs principally in the thin, bedded lava layers of volcanic flanks. Another type of aquifer found on O'ahu is the caprock aquifer, which consists of various kinds of unconfined and semi-confined groundwater.

The State DLNR, Commission on Water Resource Management (CWRM) has established groundwater hydrologic units to provide a consistent basis for managing groundwater aquifers. Under the State's water resource protection plan, an aquifer coding system classifies the island's aquifers to identify and describe these aquifers. The system is comprised of Aquifer Sectors, and then Aquifer Systems located within these sectors (CWRM, June 2008).

Being situated on top of a ridge, the Mt. Ka‘ala AFS site is located on the border separating both the North (304) and Wai‘anae (303) Aquifer Sectors. Generally, the top of the Wai‘anae Mountain Range serves as the border dividing these two sectors. The Wai‘anae Aquifer Sector is divided into five aquifer systems that are Kea‘au, Mākaha, Wai‘anae, Lualualei, and Nānākuli. The North Sector is divided into three aquifer systems that are Mokulē‘ia, Waialua, and Kawailoa.

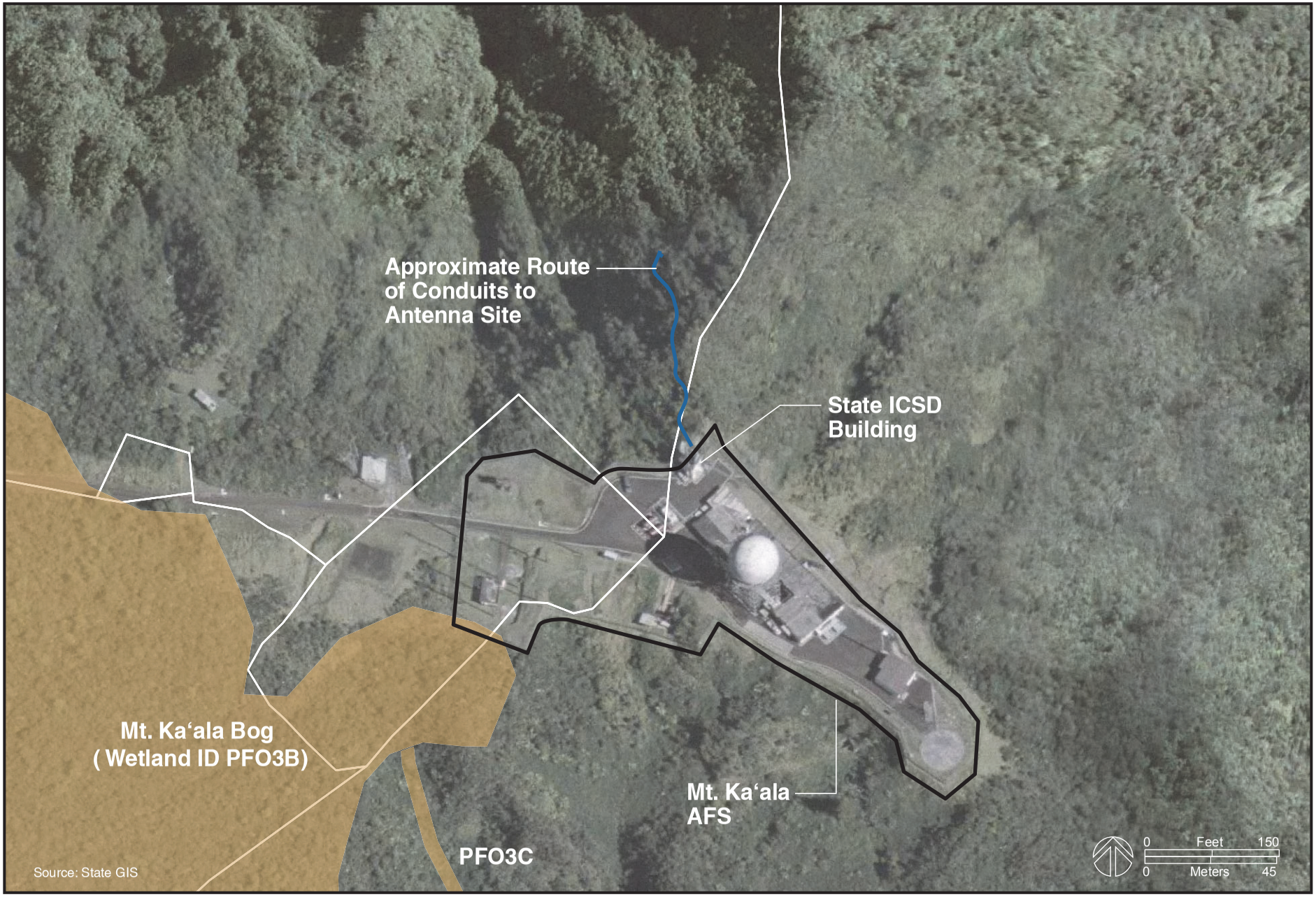
Mt. Ka‘ala AFS is divided by the Mākaha aquifer system that includes the southwest area of this installation and extends down the mountain range. The Mokulē‘ia aquifer system encompasses the remaining areas of the installation and extends down the mountain range. The State ICSD building and downhill antenna dish site are only situated within the Mokulē‘ia aquifer system. The Mokulē‘ia aquifer system has an estimated sustainable yield of 8 million gallons per day (mgd) and the Mākaha system has a sustainable yield of 3 mgd (CWRM 2008).

The Mokulē‘ia and Mākaha aquifers are both high-level, dike-impounded aquifers, approximately 2,200 feet beneath the summit of Mt. Ka‘ala and 1,800 feet AMSL. They are apparently continuous but highly heterogeneous, with local changes in permeability caused by variations in dike density and the number of dike intersections (CH2M Hill, July 2003). Basal groundwater is found predominantly in the middle and lower members of the Wai‘anae Volcanic series. The main groundwater body in the area of this installation is the Wai‘anae high level dike confined aquifer. Occurrences of groundwater vary, but are generally found at 1,800 feet above mean sea level or lower in elevation (15 CES/CEVR, February 2004)..

3.4.2 Wetlands

Permanent surface water exists on the summit plateau of Mt. Ka‘ala west of the installation in the form of a large bog, known as the Mt. Ka‘ala Bog, which is a type of wetland area that has a peat substrate. Given the presence of this bog, perched groundwater zones are thought to occur at Mt. Ka‘ala within the layer of saprolitic soil on the summit’s plateau. The bog generally occupies most of this plateau, except for the area of Mt. Ka‘ala AFS to the northeast situated at the top of the summit (CH2M Hill, July 2003).

Based upon State Geographic Information System (GIS) data of wetlands for the State, this bog encompasses an area of about 65 acres. The majority of the Mt. Ka‘ala Bog is located within the State’s Natural Area Reserve with remaining areas located within the SBMR. Figure 3.2 shows portions of the Mt. Ka‘ala Bog in relation the Mt. Ka‘ala AFS and project site.



Mt. Ka'ala Bog

Figure 3.2

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Wetland data from the Fish and Wildlife Service’s (FWS) National Wetlands Inventory classifies this bog as Freshwater Forested / Shrub Wetland. Forested wetlands, known as wooded swamps or bottomland forests, are characterized by large woody vegetation and trees over 6 meters (20 feet) tall. This wetland type occurs in a Palustrine system, and typically possess an over story of trees, understory of young trees or shrubs, and a herbaceous layer. Shrub wetlands, are characterized by large woody vegetation and trees less than 6 meters (20 feet) tall. This wetland type also occurs in a Palustrine system, and typically includes shrubs, young trees, and trees or shrubs that are stunted because of environmental conditions.

3.4.3 Streams

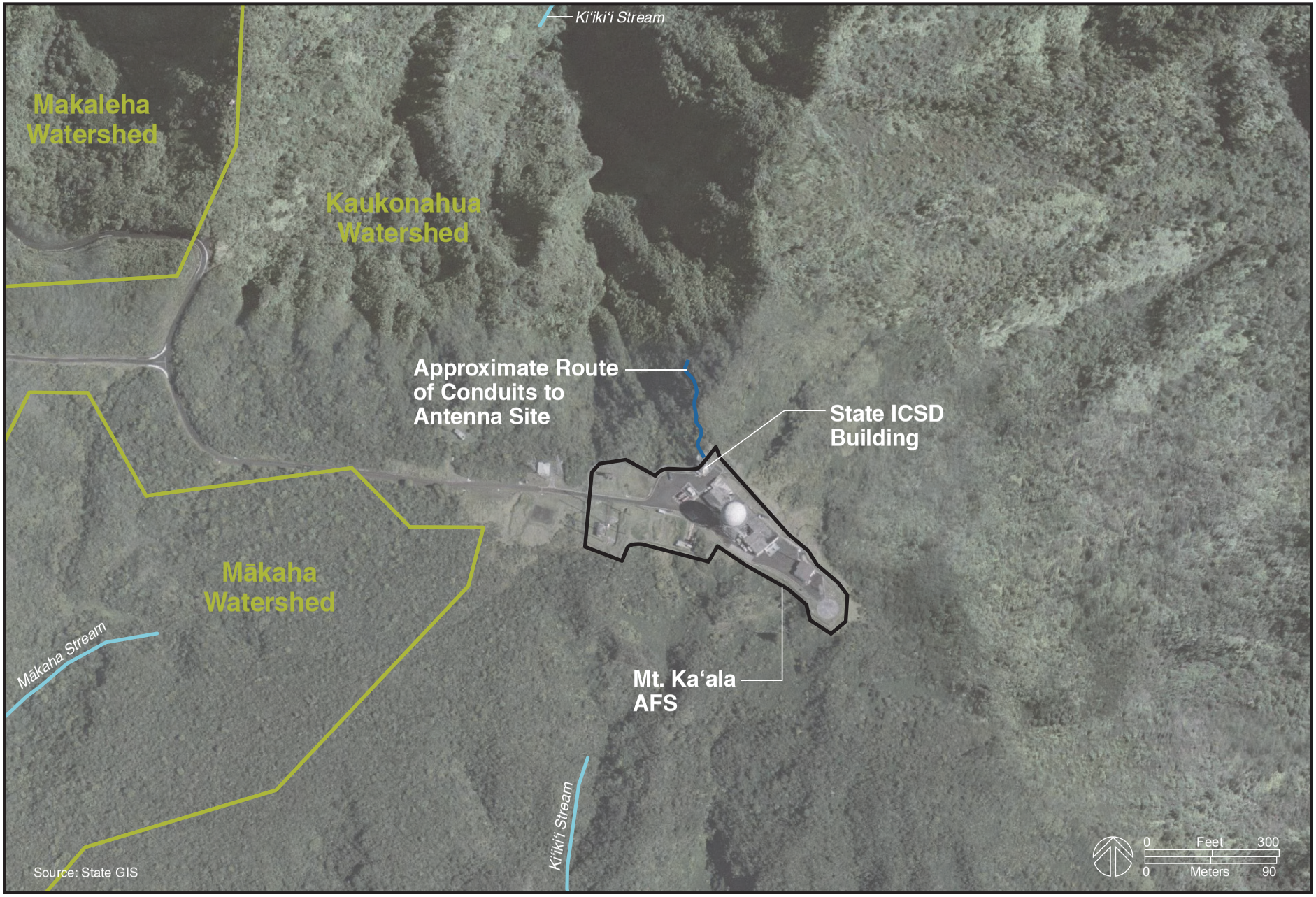
Storm water runoff from the Mt. Ka‘ala AFS and summit plateau drains radially down the flanks of the mountain into steep gulches. Shallow drainage ditches along the southern side of the installation channel surface water runoff toward the Mt. Ka‘ala Bog area. Runoff from this area eventually discharges into two major watersheds identified as the Mākaha and Kaukonahua watersheds that include several streams and drainageways. Figure 3.3 shows the streams starting below the summit of Mt. Ka‘ala and watershed boundaries based upon State GIS data.

The Kaukonahua watershed encompasses an area of about 25,160 acres or 39.3 square miles. The majority of the installation area drains from the summit into this watershed that generally extends to the north and east encompassing most of the Schofield area before travelling towards Waialua Bay. As shown on Figure 3.3, there are several tributaries associated with Ki‘iki‘i Stream starting below the summit.

The Mākaha watershed encompasses an area of less than 4,660 acres or 7.3 square miles. The southwestern area of the installation just outside the fence drains from the summit into this watershed. This watershed generally extends to the west from the summit encompassing most of the Mākaha valley area before discharging along the shoreline. As shown on Figure 3.3, there are a few tributaries associated with Mākaha Stream starting below the summit.

3.4.4 Water Quality

The Mt. Ka‘ala summit area, including the Mt. Ka‘ala Natural Area Reserve and Mt. Ka‘ala Bog, encompasses inland waters designated as “Class 1” based upon the State Department of Health’s Water Quality Standards Map for O‘ahu. The area can be further classified as both Class 1.a. or 1.b., Inland Waters, based upon Mt. Ka‘ala’s NAR designation as a regulated wildlife reserve and its State land use designation as “protective subzone” under the Conservation District (Chapter 11-54, HAR).



Watersheds and Streams Map

Figure 3.3

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

For this classification only, there are no specific water quality criteria that must be met, just the basic water quality criteria for all waters. The basic water quality criteria prescribed under Chapter 11-54-4, HAR are applicable to the Mt. Ka'ala Bog and surrounding stream tributaries. Under the State DOH's Water Quality Standards, the objective of Class 1 water use is to allow waters to remain in their natural state with minimum pollution from human caused sources. The wilderness character of these areas should be protected. Activities resulting in a demonstrable increase in levels of point or nonpoint source contamination are prohibited (State of Hawai'i, 2004). The inland water quality standards for streams under Chapter 11-54-5.2, HAR is applicable and shown on Table 3.1. The wet season occurs from November 1st through April 30th.

Table 3.1
State Water Quality Standards (Chapter 11-54-5.2, HAR)

Parameter	Geometric Mean Not to Exceed		Not to Exceed More Than 10%		Not to Exceed More Than 2%	
	Wet	Dry	Wet	Dry	Wet	Dry
Total Nitrogen (ug N/L)	250.0	180.0	520.0	380.0	800.0	600.0
Nitrate + Nitrate (ug [NO3+NO2] – N/L)	70.0	30.0	180.0	90.0	300.0	170.0
Total Phosphorus (ug P/L)	50.0	30.0	100.0	60.0	150.0	80.0
Total Suspended Solids (mg/L)	20.0	10.0	50.0	30.0	80.0	55.0
Turbidity (N.T.U.)	5.0	2.0	15.0	5.5	25.0	10.0
pH	5.5 – 8.0					

Water quality associated with this bog and stream tributaries should be good due to the lack of urbanized development in the surrounding area to discharge urban pollutants. The only urban uses in the project area are the Mt. Ka'ala AFS and a few other telecommunication antennas scattered on the mountain top operated by other utilities companies.

Wetlands protect water quality by trapping sediments and retaining excess nutrients and other pollutants such as heavy metals. Sediments, nutrients, and chemicals enter wetlands primarily by way of discharges from stormwater runoff. Wetlands protect surface waters by removing excess nutrients, some of which are taken up and used by wetland plants, and some of which are converted to less harmful chemical forms in the soil. Heavy metals are removed by wetlands in a similar manner as nutrients by trapping and burying these pollutants or even converting some of them to less harmful forms. In the project area, the Mt. Ka'ala Bog should similarly function in this same manner.

3.5 BOTANICAL RESOURCES

A botanical survey for this project, dated May 2011, was conducted by LeGrande Biological Surveys, Inc. (LeGrande). A copy of the report is included in Appendix C. A botanical field survey of the project area was conducted on February 2, 2011. The primary objectives of the field survey was to: 1) inventory flora; 2) provide a general description of the vegetation on the project site; 3) search for threatened and endangered species as well as species of concern; and 4) provide recommendations regarding potential impacts to biological resources in the area. Because the area within the Mt. Ka‘ala AFS is developed and mostly paved, the focus of the survey was along the Kamaohanui Ridge downhill conduit route.

Prior to undertaking the field survey, a search was made of the pertinent literature of other botanical studies conducted in the general area. Information from the Hawai‘i Natural Heritage Program database and the FWS Critical Habitat were reviewed, and communication conducted with the State DOFAW-NAR. A walk-through survey method was used. Transects included walking along the path of the downhill conduit cable along Kamaohanui Ridge, as well as the location of the existing microwave dish antenna site. An area approximately 50 to 100 feet in all directions from the antenna site was surveyed and a corridor of 20 to 35 feet in width along the conduit route.

3.5.1 Existing Vegetation

The vegetation along the ridgeline and at the downhill antenna site was characteristic of a Montane Wet Shrubland habitat on O‘ahu. These communities are found at elevations above 3,280 feet AMSL (1,000 meters) on cool, wet windward cliffs, and upper ridges. Soils are shallow peat and/or clay layered over weathered lava. A semi-open canopy of native trees with an understory dominated by various fern species characterizes the vegetation of the study area.

The study area was composed of a native Mixed Fern Shrubland, dominated by native plants species such as ‘ohi‘a lehua (*Metrosideros polymorpha*), alani (*Melicope clusiifolia*), kanawao (*Broussaisia arguta*) and various fern species including, uluhe (*Dicranopteris linearis* f. *linearis*), hapu‘u (*Cibotium* spp.), and ‘ama‘u (*Sadleria cyatheoides*).

The tree species tend to form a semi-open canopy in most areas providing for abundant understory plants in the moist environment. Most of the tree trunks were matted with several species of moss as well as epiphytic ferns such as wahine noho mauna (*Adenophorus tamariscinus* var. *tamariscinus*) and hoe a Maui (*Elaphoglossum alatum*).

The ground layer was dominated by native fern species as well as other natives such as ‘ala‘alawainui (*Peperomia membranacea*), ha‘iwale (*Cyrtandra lessoniana*), and makole (*Nertera granadensis*). Vine species growing in and amongst the shrubs include hoe kuahiwi (*Smilax melastomifolia*) and the native mint kapana (*Phyllostegia grandiflora*). The dominant

alien plant species present was blackberry (*Rubus argutus*). These prickly branches grow throughout the shrubland, climbing trees, and made traversing the understory difficult at times.

The majority of the introduced plant species either were found along the trail to the downhill antenna site or at the antenna site itself. Disturbance to the substrate and weed seeds on tools and/or clothing and boots are all vectors of dispersal of weed seeds. Weedy species observed at the antenna site include; Koster's curse (*Clidemia hirta*), narrow-leaved carpetgrass (*Axonopus fissifolius*), Maui pamakani (*Ageratina adenophora),* fuchsia begonia (*Begonia foliosa*), and fiddlewood (*Citharexylum caudatum*). A few trees of strawberry guava (*P. cattleianum*) were observed to the west of the antenna dish site in a small gulch. About half of the trees were cut down, but additional eradication efforts should be made to eradicate this rogue population.

Several individuals of ginger (*Hedychium* sp.) were observed growing along feral pig (*Sus scrofa*) trails in the project area. Disturbance of the understory by pigs also appears to be a factor in alien plant establishment.

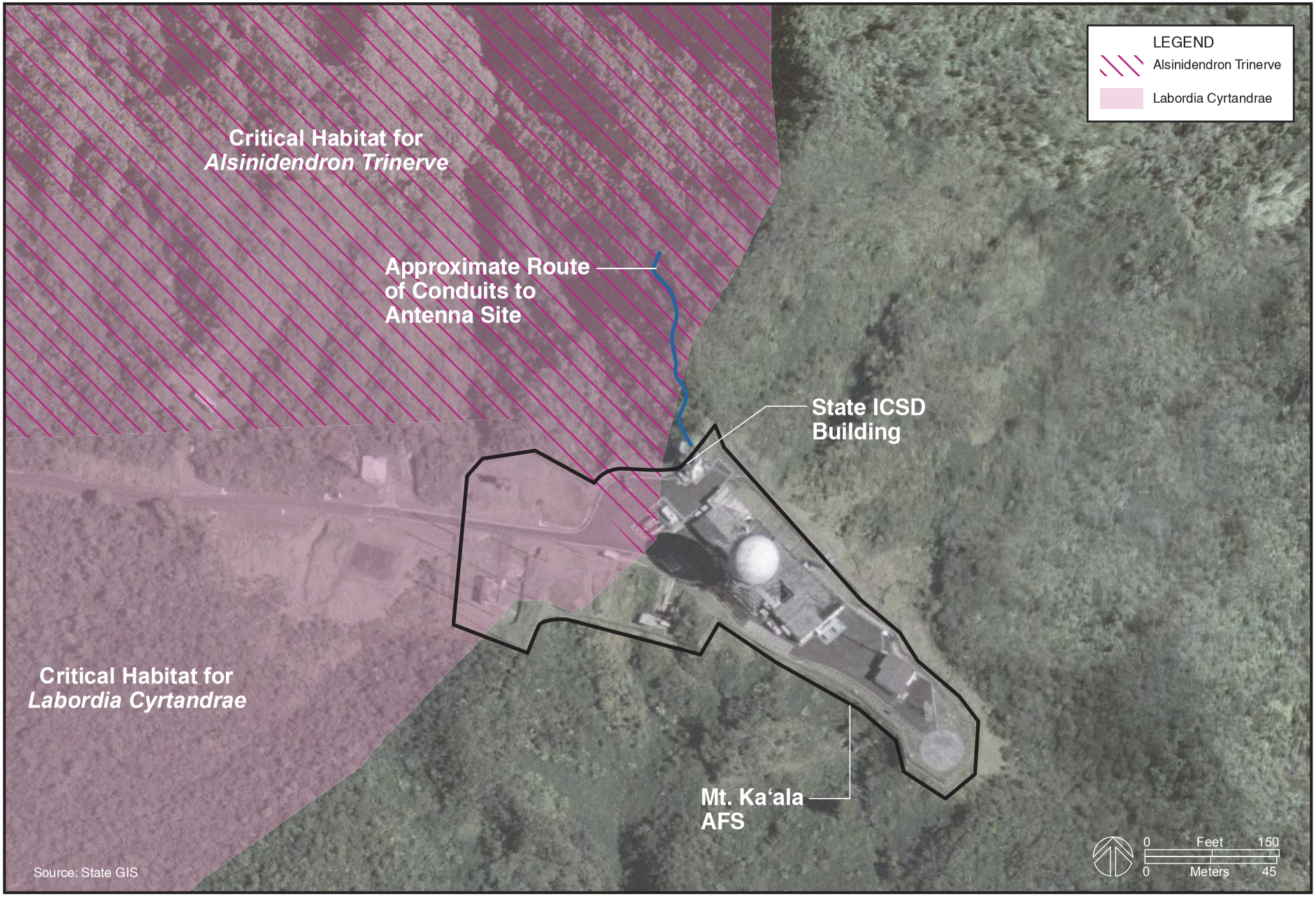
There were a total of 60 plant species documented within the survey area. Of this total, 46 species were native (76%) and 14 were introduced (23%). An inventory of all the plants observed within the study area is presented in a species list in Appendix C. None of the plants observed during the survey was a threatened or endangered species or a species of concern.

3.5.2 Critical Habitat for Botanical Resources

A portion of the study area falls within the Unit 4 Critical Habitat Area of O'ahu designated by the FWS. Critical Habitat is a term used to define a specific geographic area(s) that has features essential for the management or conservation of a threatened or endangered species. Not all listed Threatened or Endangered species have Critical Habitat designations. Designation of Critical Habitat for a particular species does not necessarily mean that individuals of the species are present in that unit, but that it has the potential to be there due to the optimum habitat requirements for that species within the particular unit.

There are two plant taxa that have critical habitat designation within Unit 4 that overlap the study area. These species are: *Alsinidendron trinerve* and *Labordia cyrtandrae*, and Figure 3.4 graphically shows these critical habitat areas.

No individuals of either of these species were observed within the study site during this survey. There are two known locations of *Alsinidendron trinerve* in the general area based upon information from the U.S. Army, Environmental Division. However, these species are located about 250 and 650 feet away from the project corridor. The study area within the Mt. Ka'ala NAR encompasses a small corridor for the existing conduit route down Kamaohanui Ridge and at the current antenna site. The main concerns for the native plant species within the study area are the presence of feral pigs and alteration to the substrate by humans that can cause open denuded areas of soil providing weeds space to invade and spread.



Critical Habitat Area for Botanical Resources

Figure 3.4

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

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Department of Accounting and General Services
Information and Communication Services Division

3.6 AVIFAUNA AND FAUNAL RESOURCES

An avian and mammalian survey for this project, dated February 2011, was conducted by Rana Biological Consulting, Inc., and a copy of the report is included in Appendix D. The primary purpose of the survey was to determine if there were any avian or mammalian species currently listed, or proposed for listing under either federal or State of Hawai'i endangered species statutes within or adjacent to the project area.

Fieldwork was conducted on February 2, 2011, and consisted of an avian count station sited approximately halfway between the State ICSD building and the downhill dish antenna. An avian point count was made at this station, and field observations were made searching the remainder of the project area for species and habitats not detected during the point count.

3.6.1 Results of Avian Survey

A total of 18 individual birds of six (6) different species, representing four (4) separate families, were recorded during the station count. No additional species were detected during the remainder of the time spent on the site. Table 3.2 identifies the various species detected.

Three of the species detected, Pacific Golden-Plover (*Pluvialis fulva*), O‘ahu ‘Amakihi (*Hemignathus flavus*), and ‘Apapane (*Himatione sanguinea*) are native species. The plover is an indigenous migratory shorebird species and the ‘Amakihi and ‘Apapane are endemic forest birds. The remaining three species detected as shown on Table 3.2 are alien to the Hawaiian Islands.

No avian species currently protected or proposed for protection under either the federal or State of Hawai‘i endangered species programs were detected during the course of this survey. The avian diversity and densities were in keeping with the relatively high altitude and the ridge top environment present on the site.

The findings of the avian survey were consistent with the location of the project area, and the type of habitat present. Although no seabirds were detected during the course of the survey, several seabird species may potentially overfly the project site on occasion.

3.6.2 Results of Mammalian Survey

With exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or ‘ōpe‘ape‘a as it is known locally, all terrestrial mammals currently found on the island are alien species, and most are ubiquitous. The survey of terrestrial mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all vertebrate mammalian species detected within the project area.

Table 3.2
Avian Species Detected Within the Project Area

Common Name	Scientific Name	Status	Number
	CHARADRIIFORMES		
	CHARADRIIDAE -Lapwings & Plovers		
Pacific Golden-Plover	*Pluvialis fulva*	IM	1
	PASSERIFORMES		
	CETTIIDAE -Cettia Warblers & Allies		
Japanese Bush-Warbler	*Cettia diphone*	A	6
	ZOSTEROPIDAE -White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	3
	FRINGILLIDAE - Fringilline and Carduline Finches & Allies		
	Carduelinae - Carduline Finches		
House Finch	*Carpodacus mexicanus*	A	2
	Drepanidinae -Hawaiian Honeycreepers		
O'ahu 'Amakihi	*Hemignathus j1avus*	EB	1
'Apapane	*Himatione sanguinea*	EB	5

KEY:
A Alien Species
IM Indigenous Migratory Species -Native migratory but not unique to the Hawaiian islands
EB Endemic Breeding Species -Native and unique to the Hawaiian Islands

Source: Rana Biological Consulting, Inc. (February 2011)

Three mammalian species were detected during the course of this survey. No mammalian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during the course of this survey.

The findings of the mammalian survey were consistent with the location of the project area and the habitat currently present. Although no rodents were detected during the course of the survey, it is likely that one or more of the four established alien *muridae* found on O'ahu use various resources found within the general project area on a seasonal basis. These rodent species include the roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), European house mouse (*Mus musculus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*). All of these introduced rodents are deleterious to native ecosystems and the native faunal species that are dependant on them for food, cover and other resources.

3.6.3 Critical Habitat for 'Elepaio

The Mt. Ka'ala AFS, which includes the State ICSD building, and the downhill antenna site are within the federally designated O'ahu 'Elepaio (*Chasiempis ibidis*) Critical Habitat Unit No. 1, Northern Wai'anae Mountains. This critical habitat area encompasses 5,657 acres of the total 11,005 acres of land designated as Critical Habitat for this species.

In their final rule, the FWS estimated that there was a resident 'Elepaio population of three birds within the Mt. Ka'ala Natural Area Reserve, but no known breeding pairs. O'ahu 'Elepaio are usually found in lower elevation and taller stature mixed forest than is found within the project area at the top of Mt. Ka'ala.

3.7 INVERTEBRATE RESOURCES

An invertebrate survey for this project, dated May 2011, was conducted by Steven L. Montgomery, Ph. D., and a copy of the report is included in Appendix E. A search was made for independent biological studies associated with this site or with nearby sites that included publicly available articles mounted on the web, the Pacific Basin Information Node (2011) database, and Bishop Museum's Arthropod and Mollusk checklists. Field surveys were also conducted on February 2 and 3, 2011 at various times of the day and night. The following survey methods for terrestrial invertebrates were used as appropriate to the terrain, botanical resources, and target species.

1. Baiting. Baits were used to attract insect species to specific tastes or smells. Any insects at the bait were then observed and censused.
2. Host plant searches. Potential host plants, both native and introduced, were searched for arthropods that feed or rest on plants.
3. Light survey. Light sampling used a bright light source in front of a white cloth sheet. In attempting to navigate by the collecting light, disoriented insects are drawn toward the light and land on the cloth in confusion. The location for the light survey was mandated by State DLNR NARS staff, and was close enough to the project area to offer a fair survey sample of the night active invertebrate fauna.
4. Sweep nets. Sweeping using a fine mesh net was swept across plants, leaf litter, rocks, etc., and is a common method of general collecting for most flying and perching insects.
5. Visual observation. At all times, visual observations, including turning over rocks, examining dead wood, and other debris, were made for any visual evidence of arthropod presence or activity.

3.7.1 General Survey Results

The Mt. Kaóala project area sampled in this survey yielded native and adventive terrestrial invertebrates. No invertebrate currently listed as endangered or threatened under either federal or state statutes was observed within the survey area. The habitat has little changed since the Dr. Montgomery's last visit in June 2001.

Having made a number of visits to the Mt. Ka'ala NARS over a 40-year period, Dr. Montgomery determined that the vegetation and native invertebrate species appeared to be in generally good condition similar to his last visit. It should be noted that pig trails were seen in the survey area, and pigs (*Sus scrofa scrofa*) were seen running on Mt. Ka'ala Road one mile below the project site.

3.7.2 Species Present or May be Present in Area

A listing of the various species seen during the survey is identified in a table in the technical report included in Appendix E. The following species of interest are discussed:

1. **Lepidoptera**: Geometridae.
   The Lehua pug moth (*Eupithecia*) was among the most abundant native invertebrates present.
2. **Diptera**: Cecidomyiidae. *Heteroconarinia spinosa*.
   Fly larvae was found in the half-unfolded terminal leaf of a *Melicope* species. The larvae did not respond to a variety of foods offered in the lab in an attempt to rear them to adult to allow a definite species identification. The circumstances of their discovery, however, mirror a report by entomologist P. H. Timberlake in March 1917 (1918). He reported capturing a female laying eggs in the same part on the same plant genus on Mt. Ka'ala, but the eggs did not hatch in his lab.

<u>Species Not Observed, May be Present on the Site</u>

The following species were not observed during the field survey, but they may be present in the general area.

1. **Diptera**: Drosophilidae: *Drosophila sp.* Picture-winged flies.
   None of the native *Drosophila* species recently listed as endangered or threatened were observed, and the host plants for this species was not present in the project area. The specific host plant associated with *D. substenoptera, Cheirodendron*, was seen on the project area, but only on the edge of the survey area and at a size and condition unsuitable to host *D. substenoptera*.

2. **Odonata**: Coenagrionidae *Megalagrion koelense.* Hawaiian damselfly.
   Megalagrion koelense, although not seen on this visit, this species does exist on Mt. Ka'ala. The larvae in axils of 'ie'ie (*Freycinetia arborea*) has been observed in past visits to the mountain and it has been taken by others previously. The adults are free flying, take smaller insects as prey, and should not be disturbed by the planned project activity. Eggs are laid and the young develop in phytotelmata, such as the small amounts of water in the 'ie'ie axils. As long as the project does not remove any of the host plants, the larvae will be undisturbed

Medically Important Species on the Site

Although not seen during the survey, the larger Mt. Ka'ala area may include habitat for centipedes, scorpions, and widow spiders. Both honey bees (*Apis mellifera*) and Western yellowjacket wasps (*Vespula pensylvanica*), a known alien predator on *Drosophila*, have been seen.

Western yellow jacket wasps are a ground-nesting species and can be very aggressive. Unlike honey bees, they do not die when they sting and individuals can sting repeatedly. Although it is unlikely a nest is in the project's downhill conduit route, extreme caution should be used if a nest is found.

3.7.3 Species Believed Not Present on the Site

The following species discussed are not believed to be present in the project area.

Invertebrates

Alien predatory ants are a major cause of low numbers of native arthropods. The absence of ants, such as the bigheaded ant (*Pheidole megacephala*) and longlegged ant (*Anoplolepis gracilipes*) which prey on other insects, is a major factor in the diversity of native species at Mt. Ka'ala. Ants are well documented as a primary cause of low levels of native arthropods. Ant populations often do not overlap. Rather, the species have separate territories, effectively apportioning the hunting grounds between themselves, offering few, if any, ant-free zones where native arthropods can thrive.

Insects

A discussion is provided of the following insects not present in the project area.

1. **Hymenoptera**: Colletidae: *Hylaeus sp.* Yellow-faced bee.
   The yellow-faced bee was not observed in this survey. A search of the specimen database from Bishop Museum's extensive collections did not retrieve any *Hylaeus* records from the summit of Mt. Ka'ala. Similarly, a thorough study of the species by

others did not list any collections from Ka'ala in the Recent Collections table. The only *Hylaeus* record found in a survey of records was from 1906, and at an elevation of 1,500 feet AMSL which is far below the current project area's location.

2. **Lepidoptera**: Sphingidae: *Manduca blackburni.* Blackburn's sphinx moth
   Blackburn's sphinx moth (*Manduca blackburni*) is an endangered species which favors leeward slopes, and was not found in this survey. The moth's solanaceous native host plant, 'aiea (*Nothocestrum sp.*), and best alien host, tree tobacco (*Nicotiana glauca*), were not observed on the property or the botanical survey conducted by LeGrande for this project. Neither *Capparis sandwichiana*, nor other known nectar plants favored by the adult moth, were encountered in the survey or the project's botanical survey. The moth has not been seen on O'ahu for many decades. The FWS Recovery Plan for this large sphinx moth proposes only one Management Unit on O'ahu, located at the Nature Conservancy's Honouliuli Preserve.
3. **Odonata**: Coenagrionidae: *Megalagrion pacificum.* Hawaiian damselfly.
   Megalagrion pacificum proposed as an endangered species by the FWS was not seen during this survey, and is unlikely to be found on site. The project area does not provide the habitat associated with the species.

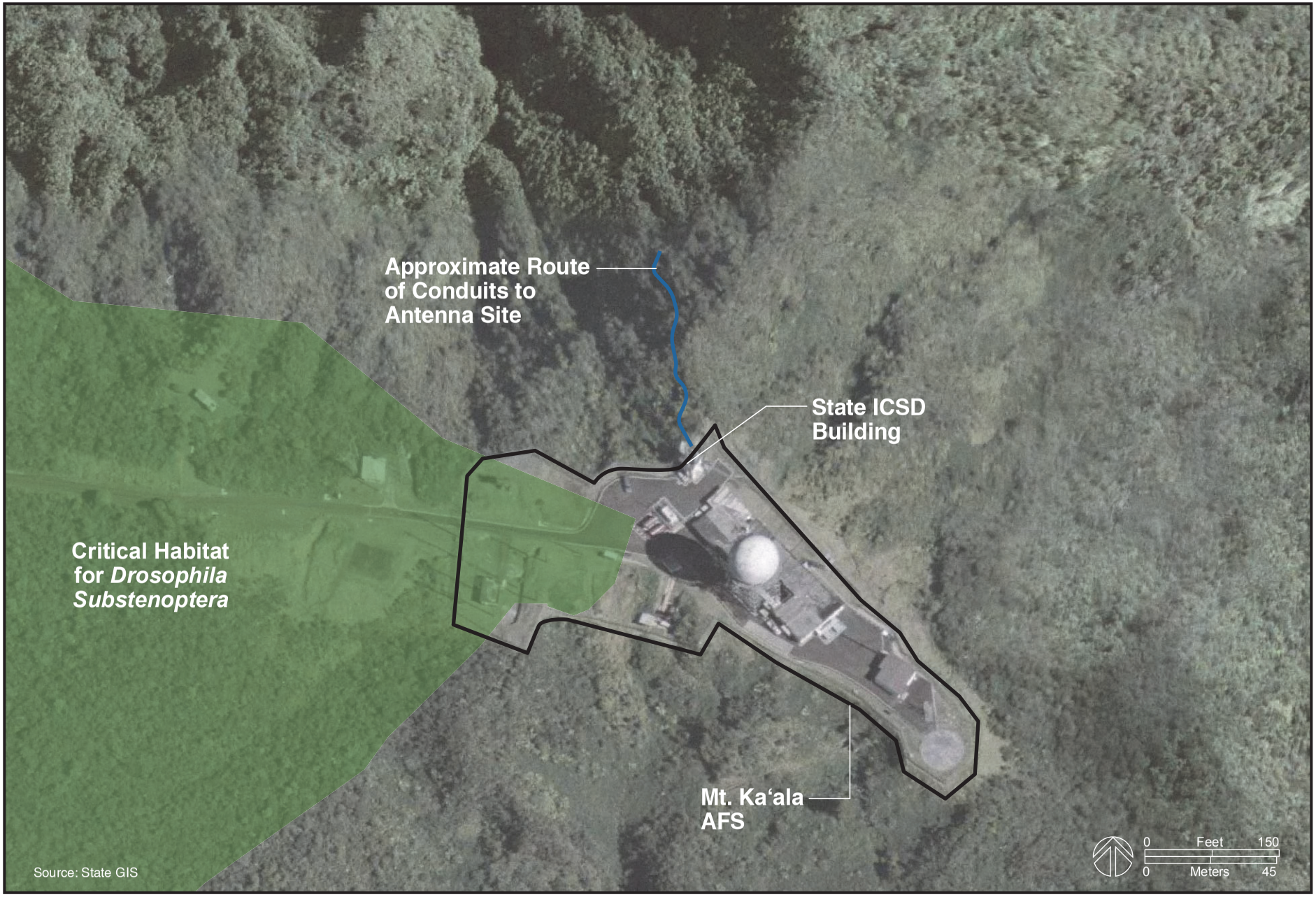
3.7.4 Critical Habitat for Invertebrate Resources

One area of critical habitat that has been established for *Drosophila substenoptera* was designated for an area of Mt. Ka'ala. Figure 3.5 shows this critical habitat in relation to the Mt. Ka'ala AFS and project area.

The conduit route down Kamaohanui Ridge and repair work to State ICSD facilities within the installation are well outside the actual boundaries of this critical habitat. Although the specific areas covered by this survey were not conducive to their presence, *Drosophila* of several species do thrive in the near vicinity based on other surveys by Dr. Montgomery.

3.8 AIR QUALITY

Federal ambient air quality standards (AAQS) have been established by the U.S. Environmental Protection Agency (EPA) for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), lead (Pb), ozone (O3), and concentrations of particulate matter less than 10 microns (PM10) and 2.5 microns (PM2.5). For selected criteria pollutants, the State of Hawai'i has established ambient air quality standards that are somewhat more stringent than the federal standards under Title 11, Chapter 59, HAR. Table 3.3 presents a summary of federal and State ambient air quality standards that apply to the proposed project area.



Critical Habitat Area for *Drosophila Substenoptera*

Figure 3.5

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Table 3.3
State and Federal Ambient Air Quality Standards

Air Pollutant	Averaging Time	Hawai‘i AAQS	Federal (NAAQS)	
			Primary	Secondary
Carbon Monoxide (CO)	1-hour	9 ppm	35 ppm	--
	8-hour	4.4 ppm	9 ppm	--
Lead (Pb)	Quarterly	1.5 μg/m^3	1.5 μg/m^3	1.5 μg/m^3
Nitrogen Dioxide (NO_2)	Annual	0.04 ppm	0.053 ppm	0.053 ppm
Ozone (O_3)	8-hour	0.08 ppm	0.075 ppm	0.075 ppm
Particulate Matter ≤10 micrometers in diameter (PM_{10})	Annual	50 μg/m^3	--	--
	24-hour	150 μg/m^3	150 μg/m^3	150 μg/m^3
Particulate Matter ≤2.5 micrometers in diameter ($PM_{2.5}$)	Annual	--	15 μg/m^3	15 μg/m^3
	24-hour	--	35 μg/m^3	35 μg/m^3
Hydrogen Sulfide (H_2S)	1-hour	0.025 ppm	--	--
Sulfur Oxides (SO_2)	Annual	0.03 ppm	0.03 ppm	--
	24-hour	0.14 ppm	0.14 ppm	--
	3-hour	0.50 ppm	--	0.50 ppm

Source: State Department of Health, 2008

Air quality in the State can be generally characterized as relatively clean and low in pollution. Excluding exceedances of pollutants due to the continuing volcanic eruption on the Island of Hawai‘i , the State was in attainment of all National ambient air quality standards in 2008 (DOH, 2009). Tradewinds that are predominant throughout the year typically carry emissions and other air pollutants from inland areas out toward the ocean.

Much of the particulate emissions on O‘ahu originate from area sources such as the mineral products industry and agriculture. Sulfur oxides are emitted almost exclusively from point sources such as power plants and refineries. Nitrogen oxides emissions emanate predominantly from industrial point sources. Carbon monoxide (CO) is generated from vehicular-related emissions. Therefore, present air quality at the summit of Mt. Ka‘ala can be characterized as being good because there are no industrial sources, agricultural uses, or urban activities (vehicle congestion) occurring in the area generating air pollutants. Any pollutants occurring in the area would be from natural sources.

3.9 NOISE

Existing dominant noise sources within the project area would consist of the wind, avifauna, infrequent vehicular traffic entering and exiting the installation, and human voices. The only existing urban use in this project area is the Mt. Ka‘ala AFS. There are no noise sensitive uses in the surrounding area being situated at the summit of this mountain.

Noise generated from activities occurring at the installation should be minimal due to the small number of personnel working there, and activities occur within the buildings. Mt. Ka‘ala Access Road is a government controlled road leading to the installation, and thus has few vehicles using it on a daily basis.

3.10 VISUAL RESOURCES

This section identifies existing visual resources that are associated with the Mt. Ka‘ala project area. Various references were used to assist in identifying visual resources associated with area along with public viewing locations. Sources identified consisted of the City's *Coastal View Study* (Chu and Jones 1987), *North Shore Sustainable Communities Plan* (DPP, May 2011), *Central O‘ahu Sustainable Communities Plan* (DPP, December 2002), and *Wai‘anae Sustainable Communities Plan* (DPP, July 2000).

3.10.1 Visual Resources References

Coastal View Study

A *Coastal View Study* (DLU, 1987) was completed for the City's Department of Land Utilization (now known as the Department of Planning and Permitting) that inventoried significant coastal views and coastal land forms which together make up the scenic shoreline resources on O‘ahu. The study identified views from public viewing points and coastal roadways within the City's Special Management Area. Because of Mt. Ka‘ala's unique location at the summit of the Wai‘anae Mountain Range, important views from the North Shore and Wai‘anae districts were reviewed.

The Wai‘anae Mountain Range, which includes Mt. Ka‘ala, was identified as a dominant scenic resource in viewsheds from both the North Shore and Wai‘anae districts. In the North Shore district, *mauka* views of this mountain range in the distance are available from coastal roadways across open agricultural land such as Farrington Highway and Crozier Drive in Mokulē‘ia. In the Haleiwa section, views of the mountain range are also available from stretches of Kamehameha Highway although most important views are of the shoreline and manmade environment (e.g. bridges and buildings). Two coastal roadway views identified are below.

1. NS-1. *Continuous makai views of the coastline and mauka views of the Wai‘anae Mountains as seen from Farrington Highway*.
2. NS-3. *Continuous mauka views from Crozier Drive.*

In the Wai‘anae district, *mauka* views of this mountain range in the distance are available from Farrington Highway which is the primary coastal roadway serving this coastline. Two coastal roadway views identified are below.

1. WN-1. *Farrington Highway provides one continuous roadway view, capturing coastal and mauka views of high visual quality.*

2. WN-6. *This stretch of Farrington Highway provides significant mauka and makai views as well as significant lateral views siting down the highway and focusing on the land forms at either end of the viewshed.*

North Shore Sustainable Communities Plan

The City's *North Shore Sustainable Communities Plan*, recently adopted under Ordinance 11-3, presents guidelines, polices, and conceptual schemes that serve as a policy guide for more detailed zoning, maps, and regulations. Panoramic views of natural features and landmarks identified under this plan depict the vantage points and orientation of major panoramic views of resources within this district. The Open Space Map identified continuous panoramic views of the Wai‘anae Mountain Range and Mt. Ka‘ala area from Farrington Highway and Kaukonahua Road. Pertinent policies addressing open space views consist of the following.

1. Protect and preserve views of scenic resources, including the Wai‘anae and Ko‘olau Mountain Ranges, coastal *pali*, the coastline, and the Pacific Ocean.
2. Limit visual impacts from utility installations. Ensure that permitted utility installations are developed and/or managed in ways that maintain or enhance the natural, cultural, and scenic resource qualities of the surrounding landscape.

Central O‘ahu Sustainable Communities Plan

The City's *Central O‘ahu Sustainable Communities Plan*, adopted under Ordinance 02-62, identifies major panoramic views of natural features and other resources within this district. The Open Space Map identified continuous panoramic views of the Wai‘anae Mountain Range and Mt. Ka‘ala area from Kunia Road. A general policy addressing open space consists of the following.

1. Protect scenic views and provide recreation.
2. Views of the Waianae and Ko‘olau Mountains from Kunia Road, Kamehameha Highway, and H-2 Freeway.

Wai‘anae Sustainable Communities Plan

The City's *Wai‘anae Sustainable Communities Plan*, adopted under Ordinance 00-14, identifies major panoramic views of natural features and other resources within this district. The Plan's Open Space Map did not identify any continuous panoramic views of the Wai‘anae Mountain Range and Mt. Ka‘ala area.

However, the mountain range comprised of rugged ridges and deep valleys are important elements of the scenic resource. Mt. Ka‘ala is the tallest peak of this mountain range. Farrington Highway is the main coastal roadway in this district, but residential and commercial

developments block most *mauka* views. Thus, other roadways leading into the valleys provide clearer views of the mountain range.

3.10.2 Existing Views

Views of the Mt. Ka‘ala summit area are visible from various segments of highways and major coastal roads within the North Shore, Wai‘anae, and Central O‘ahu districts. However, the distant view of this mountain summit, usually miles away from normal viewing locations, is frequently obscured by clouds. On a clear day, the mountain summit can be visible, but the installation is difficult to see under a normal view. The only feature somewhat noticeable is the large sphere-shaped radome housing the radar antenna operated by the FAA for air traffic control. The State ICSD building and other buildings within the installation along with associated antennas are not visible. Exhibit 3.4 includes photos taken of Mt. Ka‘ala from the start of Mt. Ka‘ala Access Road in Waialua on both a partly cloudy and clear day.

Photo on Partly Cloudy Day | Photo on Clear Day

Exhibit 3.4 – Photos of Mt. Ka‘ala from Start of Mt. Ka‘ala Access Road

3.11 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

An archaeological inventory survey investigation was conducted for this project by Cultural Surveys Hawai‘i, Inc. A copy of the report is included in Appendix F. The study was conducted to identify, document, and make Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the survey area’s historic properties per the requirements of Chapter 13-13-276, HAR. Because no historic properties were identified in the survey area, this investigation is termed an archaeological assessment per Chapter 13-13-275-5, HAR.

The scope of work for the archaeological assessment consisted of the following methods: 1) historical research of archival sources, historic maps, Land Commission Awards and previous archaeological reports; and 2) field inspection of the project area to identify any surface

archaeological features and to investigate and assess the potential for impact to such sites. This assessment was to identify any sensitive areas that may require further investigation or mitigation before the project proceeds.

3.11.1 Historical Research Results

The project area lies primarily within the traditional Hawaiian land division of Kamananui *Ahupua‘a* in the Waialua District. The name “Kamananui” has been translated as “the large branch” which is presumably a reference to Ki‘iki‘i Stream (also known as Kaukonahua Stream) that joins Paukauila Stream at the head of Kaiaka Bay. Kaiaka Bay is more commonly called Waialua Bay in historic accounts because it is within Kamananui that was the political center of the district of Waialua.

Summary of Traditions Associated with Mt. Ka‘ala

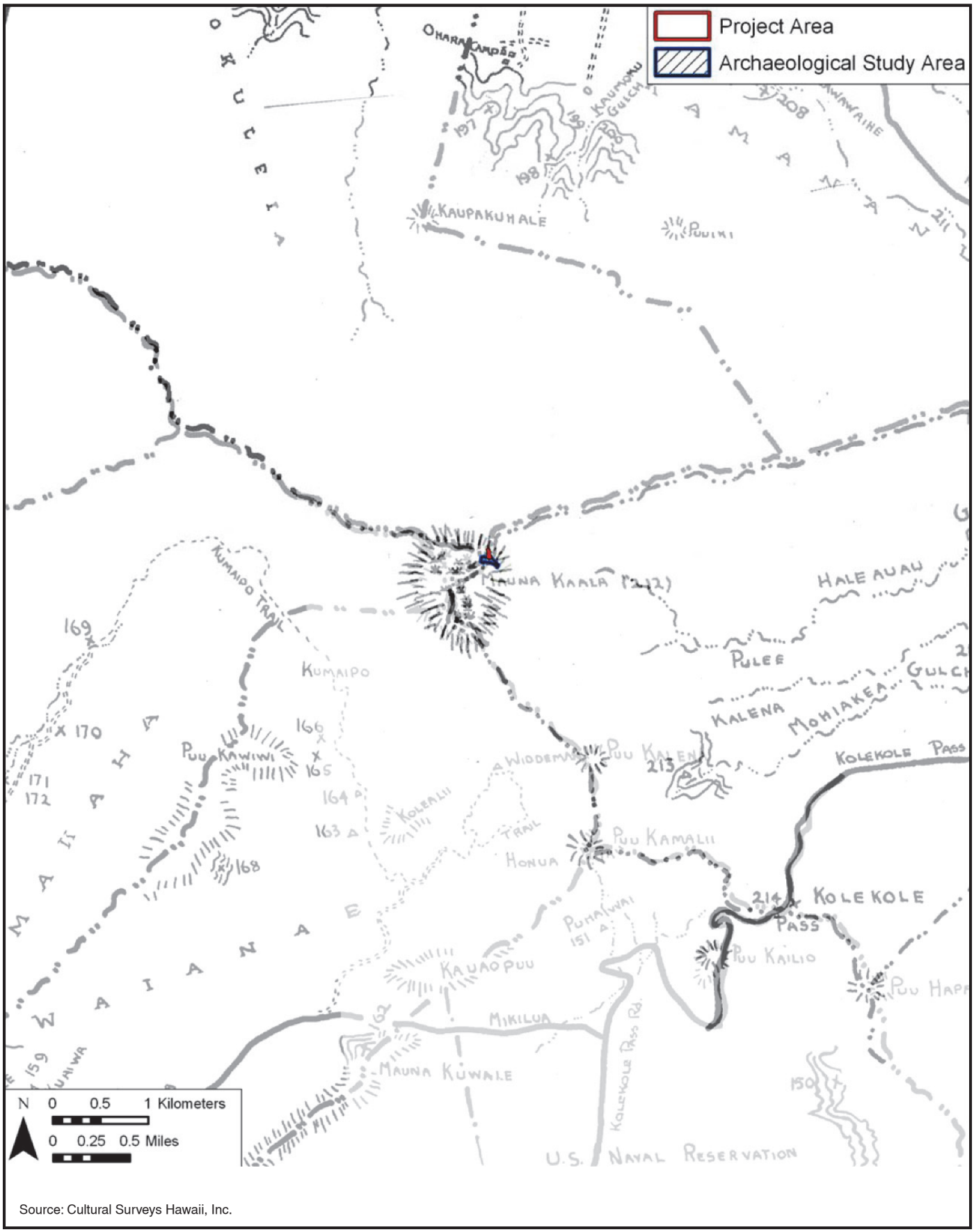
Mt. Ka‘ala is the subject of Native Hawaiian cultural expression, owing to being the highest point on the island of O‘ahu. As with other tall summits within the Hawaiian Islands, Mt. Ka‘ala is symbolic of that which is beyond compared or unequaled. As the highest point of the Wai‘anae Range and island, Mt. Ka‘ala becomes symbolic of the Wai‘anae Range and of the Island of O‘ahu.

The associations with a *mo‘o* goddess emphasizes the wetness of the summit, and at least to some extent the general wildness of the area and potential for danger. The account of Ka‘ala as the abode of a monstrous bird and evil step-mother also emphasizes danger. While Ka‘ala is also associated with forest resources, specifically poles for fishing, the nuance is that it was a tiring matter and laborious endeavor on foot to obtain things from way up on Ka‘ala.

Previous Archaeological Studies

The State Historic Preservation Division (SHPD) and the National Register of Historic Places (NRHP) do not list Mt. Ka‘ala as a registered historic property. The first systematic archaeological study of Kamananui was conducted by J. Gilbert McAllister of the Bernice P. Bishop Museum in the 1930s. McAllister consulted with knowledgeable informants about both physical and legendary sites of each district during his island-wide survey of O‘ahu. Thirteen (13) sites were identified within the Kamananui *Ahupua‘a* (Sites 197-200, 202, 203 and 205-211), and Figure 3.6 shows the location of these sites in relation to the project site. The nearest is Site 198 located north-northeast about 2.5 miles (4 kilometers) away.

There were no archaeological studies conducted in the project area vicinity, and Figure 3.7 shows other archaeological studies performed. The closest studies are more than 1.5 miles (2.5 kilometers) away from the project site. In the Kamananui Ahupua‘a, the pattern of residences and burials appear to have been nearer to the coastline.



Source: Cultural Surveys Hawaii, Inc.

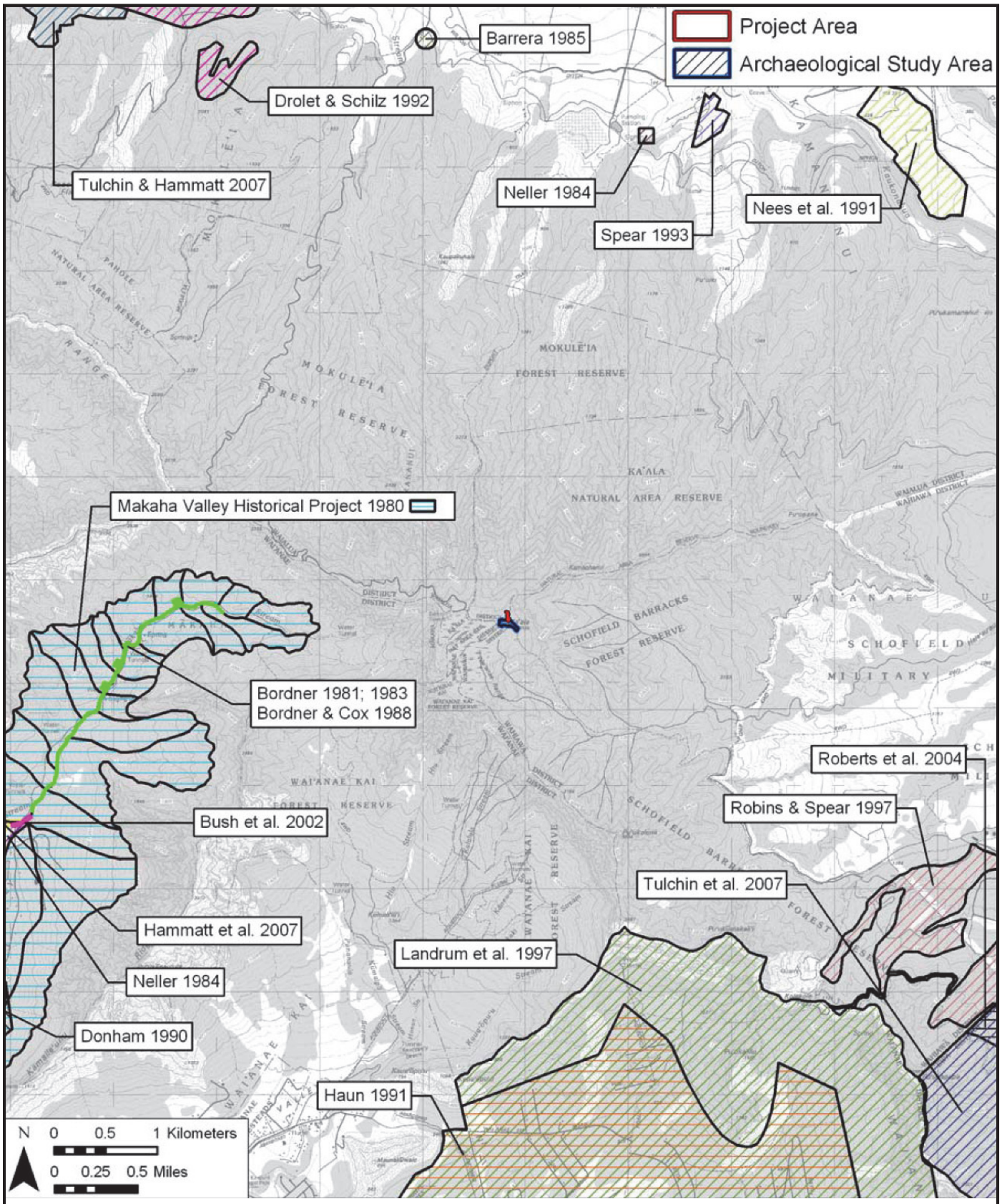
Map Showing McAllister Sites

Figure 3.6

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division



Source: Cultural Surveys Hawaii, Inc.

Previous Archaeological Studies In The Project Vicinity

Figure 3.7

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

McAllister identified 13 sites within Kamananui, but all are located some distance away from the project site. Inland studies have reported no finds other than irregular rock structures. The majority of documented burials within Kamananui seem to be specific to coastal Jaucas sand deposits. Therefore, it seems unlikely any traditional Hawaiian archaeological finds will be present anywhere in the vicinity of the Mt. Ka'ala AFS and project site with the possible exception of trail alignments traversing the cliffs.

Previous Consultation with SHPD

Consultation with the SHPD was previously conducted in 2002 as part of a previous project for the proposed State tower replacement at this facility. However, that project did not move forward at that time due to funding issues. A SHPD comment letter (dated April 5, 2002) from consultation efforts with that project determined that a review of their records showed there were no known historic properties at this project location. A cultural resource management plan prepared by the U.S. Air Force also reported that there were no previously identified archaeological or historic buildings within the fenced portion of this installation. SHPD also noted that they believed the tower replacement project would have "no effect" on archaeological sites or historic buildings because the action was located within the existing fenced portion of the installation.

The SHPD letter also noted that consultation with the native Hawaiian community should occur on the cultural importance of Mt. Ka'ala. SHPD would then review the results of that consultation before confirming a "no effect" on historic properties determination. The current archaeological work conducted by CSH for this present project included consultation with several members of native Hawaiian organizations.

A recent letter from SHPD, dated April 8, 2011 (included in Attachment A) as part of consultation efforts for this project, provided additional comments. One comment was related to the Mt. Ka'ala AFS having buildings possibly being eligible for the NRHP as a Cold War facility. However, the facility is not yet 50 years old because it became operational in 1965, and the existing Federal buildings are located outside the project's area of potential effect. The State building within this facility received approval of its construction plans in November 1988, and is thus not 50 years old as well.

3.11.2 Results of Fieldwork

Most of the summit telecommunication facilities were enclosed within a high chain link and barbed wire topped fence. Mt. Ka'ala is proverbial for good views, but few signs of human endeavor in the vicinity were seen other than the government facilities within the installation. The area planned for improvements within the installation is clearly visible and was graded for the contemporary construction of existing facilities. Nothing of archaeological interest is believed to be present within the installation.

A focus of the fieldwork was the short stretch of ridge extending down to where the replacement antennae and additional conduit are proposed. The ridge was steep, narrow and heavily vegetated. The proposed downhill antenna site has been previously modified for the existing dish antenna. It seems unlikely there ever was any modification of this heavily vegetated ridge until modern times. Other major trails to the summit follow other more suitable ridges. The pedestrian inspection of the project area confirmed the findings of the background research. No pre-contact features were located during the field inspection. No historic properties, cultural deposits, or cultural material were found within the proposed project area.

3.11.3 Cultural Resources

Consultation was conducted with several individuals or representatives of Native Hawaiian organizations to solicit their input and comments on the project relative to cultural issues associated with Mt. Ka‘ala. A draft of this CSH report was provided to seven representatives of organizations in June 2011 with a request for comment. Follow-up efforts were also made with these representatives to solicit their comments. A listing of the organizations contacted is provided below and further information is provided in the CSH report in Appendix F.

1. Hui Mālama I Na Kupuna ‘O Hawai‘i Nei;
2. President, Waialua Hawaiian Civic Club;
3. Individual knowledgeable about historic sites, wahi pana, and Heiau;
4. Individual on the O‘ahu Island Burial Council, Nā Koa ‘O Pālehua, and Association of Hawaiian Civic Club’s Historic Preservation Committee;
5. President, Hawaiian Civic Club of Wahiawā;
6. Individual with Hawaiian Civic Club of Wahiawā;
7. Individual with OHA-Native Hawaiian Historic Preservation Council, past member of O‘ahu Island Burial Council, lineal descendant, and cultural and historical traditions of Waialua.

Substantive comments were received from three of these individuals, and are summarized below.

1. Generally supportive of the necessary upgrade.
2. Comments which raise the issue of the jurisdiction of United States law on Hawaiian Kingdom national lands, and requested confirmation of lawful ownership of the subject land.
3. Comments that Mt. Ka‘ala was the receptacle of Kane‘s water, “Wai ‘O Kane,” and it resides on a natural elevated platform that would make it have an enormous amount of cultural significance anciently. The project seemed to be one of renovation with minimal impact and within the previous footprint. Improvements can be supported provided efforts are implemented to protect its ecosystem, the native plants, and wetlands.

3.12 SOCIAL AND ECONOMIC FACTORS

Information on the existing social characteristics of the project area was obtained from the U.S. Census Bureau's Census 2010 data. Employment and income data was compiled from the 2000 Census because 2010 data has not been published yet.

Census Information

The Mt. Kaʻala AFS project area is divided within three separate census tracts due to its unique location at the summit of the mountain range. These census tracts are: 1) Schofield Forest Reserve (9806); 2) Kaʻena Point (99.04); and 3) Mākua Valley (98.01). The majority of the installation is situated within the Schofield Forest Reserve tract. The State ICSD building and route of the conduit to the downhill antenna location are situated within the Kaʻena Point census tract. Figure 3.8 shows the project location within these census tracts.

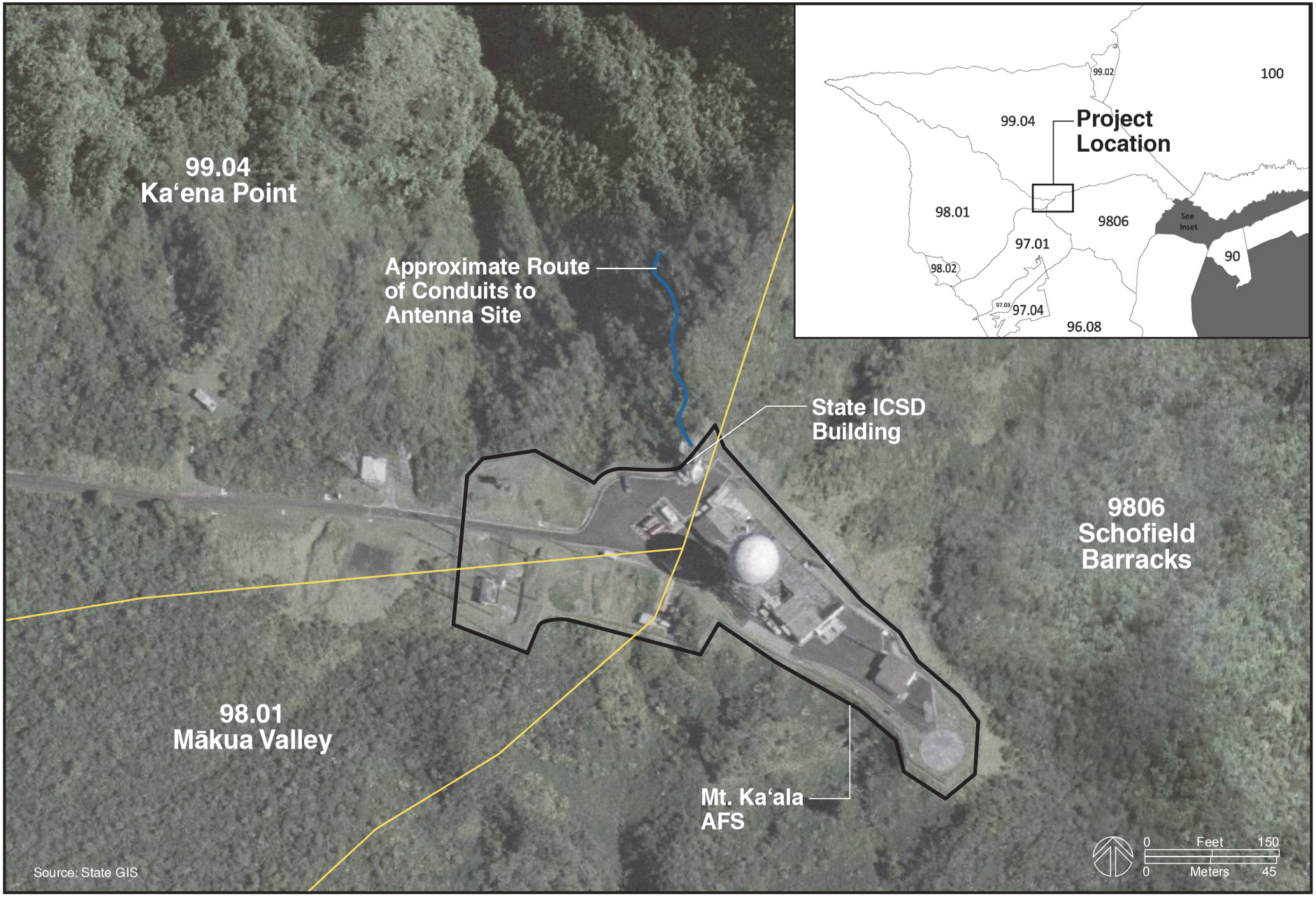
Because the area associated with the Schofield Forest Reserve tract is undeveloped (forest area), there is no demographic information established from the 2010 census. The Kaʻena Point census tract is situated within the Waialua Census Designated Place (CDP) in the North Shore district, and the Mākua Valley tract is within the Waiʻanae CDP of the Waiʻanae district of the island.

3.12.1 Population and Housing

Demographic characteristics from the 2010 Census assembled for the Kaʻena Point and Mākua Valley census tracts in comparison with Honolulu County is shown on Table 3.4. The majority of the household and population numbers shown for the Kaʻena Point census tract are associated with the communities of Mokulēʻia and Waialua. Demographic information for the Mākua Valley tract is associated with residential areas along the shoreline and residences situated within Mākaha Valley above (*mauka*) the Mākaha Resort area.

The census data shows that the Mākua Valley tract has a population of 2,834 persons comprised of a slightly higher percentage of adults, and subsequently a slightly older median age than Honolulu County (island of Oʻahu). The resident population is comprised of a higher percentage of White, Native Hawaiian, and those of two or more races compared to the island. The percentage of Asian is far lower than the island.

The census data shows that the Kaʻena Point tract has a population of 5,986 persons, slightly higher percentage of adults, and a similar median age compared with Honolulu County. The resident population is comprised of a higher percentage of White, lower percentage of Native Hawaiian, and higher percentage of two or more races compared to the island. The percentage of Asian is about half of that compared with the island.



Census Tracts In Relation to Project Site

Figure 3.8

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Table 3.4
Summary of U.S. Census Demographic Data (2010 and 2000)

Description of Demographic Data	Mākua Valley Census Tract		Ka‘ena Point Census Tract		Honolulu County	
	Number	Percent	Number	Percent	Number	Percent
POPULATION (2010)	**2,834**		**5,986**		**953,207**	
AGE						
Under 18 years	623	22.0	1,149	19.2	210,500	22.1
18 to 64 years	1,843	65.0	4,023	67.2	604,217	63.4
65 years and older	368	13.0	814	13.6	138,490	14.5
Median age	40.4		37.5		37.8	
RACE						
White	950	33.5	2,281	44.0	198,732	20.8
Black or African American	79	2.8	60	0.6	19,256	2.0
American Indian and Alaska Native	11	0.4	24	0.2	2,438	0.3
Asian	224	7.9	1,868	20.3	418,410	43.9
Native Hawaiian or Other Pacific Islander	664	23.4	275	6.7	90,878	9.5
Some other race	27	0.9	84	0.9	10,457	1.1
Two or more races	880	31.0	1,401	27.3	213,036	22.3
HOUSEHOLDS	**1,127**		**1,917**		**311,047**	
Family households	602	53.4	1,307	68.2	217,842	70.0
Non-family households	525	46.6	610	31.8	93,205	30.0
Average household size	2.26		2.95		2.95	
Average family size	2.92		3.43		3.48	
EMPLOYMENT STATUS (2000 Census)						
Population 16 years and older	1,767		4,573		691,015	
In labor force	1,079	61.1	2,841	62.2	447,320	64.7
Not in labor force	688	38.9	1,732	37.8	243,695	35.3
INCOME (in 1999) (2000 Census)						
Median household income	$36,429		$47,423		$51,914	
Median family income	$37,276		$53,938		$60,118	

Source: U.S. Census Bureau, Census 2010 and Census 2000

3.12.2 Employment and Household Income

Based upon the 2000 census, both the Mākua Valley and Ka‘ena Point tracts had slightly higher unemployment in comparison to the island average. Both these tracts also had notably lower median household income compared to the island of O‘ahu median. Ka‘ena Point’s median household income ($47,423) was about 30 percent higher than Mākua Valley ($36,429). Similarly the median family income for both tracts were lower than the island median, and

Kaʻena Point had a 45 percent higher median income than Mākua Valley. This trend is not expected to be significantly different when the results of the 2010 Census data become available.

3.12.3 Character of Communities

Mt. Kaʻala is situated at the summit of the Waiʻanae Mountain Range where the boundaries of three Oʻahu sustainable community plan districts converge. These communities are the North Shore, Waiʻanae, and Central Oʻahu districts as described under the City's *General Plan*. There are no urban development or large-scale activities occurring in the immediate vicinity of the Mt. Kaʻala AFS because the surrounding area is associated with the steep ridges and cliffs of the mountain range which are generally intended for conservation or preservation use with the exception of specialized uses such as the telecommunications installation. Thus, a brief summary of the three larger regional communities located below this summit is provided.

North Shore District

The North Shore district extends from Kaʻena Point in the west to Waialeʻe Gulch near Kawela Bay in the east, with Oʻahu's shoreline defining the northern edge and the slopes of the Waiʻanae and Koʻolau Mountain Ranges to the south. The region consists mostly of agricultural lands and open space, which surround the country towns of Haleʻiwa and Waialua and the rural residential communities of Mokulēʻia, Kawailoa, and Sunset/Pūpūkea.

The North Shore is known for its colorful scenery, natural beauty, world-famous surf, scenic shoreline and beaches. Open expanses of agricultural lands are set against the mountain range background. The North Shore represents "the country," where people find a laid-back island setting reminiscent of Oʻahu's plantation days. The Native Hawaiian heritage, cultural diversity, and plantation past are reflected in its small rural communities, and its agricultural landscapes and open space resources. Haleʻiwa and Waialua are the region's two rural towns, and still feature a country atmosphere with low-density residential structures and low-rise buildings housing retail establishments, restaurants, and surf shops (HHF, August 2010).

The Kaʻena Point census tract includes the rural towns of Mokulēʻia and Waialua. After the close of the Waialua Sugar Mill in 1996, Waialua Town experienced an 8-year decline in business. However, with new interest in the area from small business and the reuse of the buildings from the former sugar mill, the business community is getting stronger. The town of Mokulēʻia is a small family community where travelers visit for winter time surfing and summertime swimming. Known for not being crowded, there are miles of white beaches, and not many things in the town have changed over the past 40 to 50 years. The Dillingham Military Reservation is located further west of Mokulēʻia near Kaʻena Point where Farrington Highway ends. The facility has a 9,000-foot runway used by the U.S. Army for small unit maneuvers and training. Helicopters also use the site for training, and the runways are jointly used for general aviation by civilian planes and commercial gliders.

Wai‘anae District

The Wai‘anae district extends from Ka‘ena Point at the northwest point south to the Nānākuli community with O‘ahu’s shoreline defining the western edge and the slopes of the Wai‘anae Mountain Ranges to the northeast. The region consists of agricultural lands and open space within valleys, and several smaller communities strung along the coastline such as Mākaha, Wai‘anae, Mā‘ili, and Nānākuli. The Wai‘anae district has a rural character built upon a Hawaiian cultural foundation and added to by various immigrant cultures.

Farrington Highway is the main coastal highway providing vehicular access into and out from the various towns in this district. The developed coastal area is about 8 miles long with land uses on the *mauka* side of the highway typically consisting of suburban uses such as single and multi-family residential developments, shopping centers, commercial and industrial businesses, and various governmental uses (e.g. schools, police/fire stations). The *makai* side of the highway is dominated by beaches and beach parks, with some small subdivisions and apartment buildings (Townscape, Inc., October 2010).

The Mākua Valley census tract includes the area from Ka‘ena Point to Mākaha Valley. This area includes less developed areas of the Wai‘anae district such as Ohikilolo, Kea‘au, a portion of Mākaha Valley, and Mākua. Mākua Valley is used as a military base for training activities on about 4,200 acres of land by the U.S. Army, and does not have residential or commercial developments along the coastal corridor. The Ohikilolo-Kea‘au area is also essentially undeveloped with the exception of a few scattered buildings and structures. The Mākaha Valley area is well urbanized with both single- and multi-family developments used for residents and visitors. The Mākaha Resort is a major use in this valley with 173 hotel rooms, golf course, and other resort amenities.

Central O‘ahu District

The Central O‘ahu district includes much of the urbanized central area of the island extending from Schofield Barracks and Wahiawā to the north down to Waipahu and the coastline area of West Loch. The region consists of agricultural lands and open space over the large central plains, and both older and more recent and developing communities. The major communities making up this district include Mililani Town, Mililani Mauka, Royal Kunia, Wahiawā, Schofield Barracks, Waipio, and Waipahu.

A majority of the Mt. Ka‘ala AFS is situated within the Schofield Forest Reserve census tract that is undeveloped. Located below this are the Schofield Barracks and Wheeler Army Airfield military installations and the rural (former plantation) town of Wahiawā. Schofield Barracks is a large U.S. Army post located on about 18,000 acres. This military installation includes the Schofield Training Area totaling 4,695 acres for training activities, and the Schofield Barracks Cantonment Area containing another 2,187 acres used for residential and other urban activities. Wheeler Army Airfield is another U.S. Army post located below Schofield Barracks. This

military installation comprises about 1,390 acres, and has an airfield, residential, and other urban land uses. Wahiawā is surrounded on three sides by Lake Wilson along with the military bases and agricultural land.

3.13 INFRASTRUCTURE AND PUBLIC FACILITIES

3.13.1 Infrastructure Facilities

Water Facilities

The City Board of Water Supply (BWS) provides potable water service to the island via a network of water transmission mains and booster pumps connected to water sources supplied by water reservoirs and other sources. However, due to the project's location at the summit of Mt. Ka‘ala, there are no City BWS potable water facilities providing service to users at the Mt. Ka‘ala AFS.

A rain water catchment system is used to collect non-potable water for use (e.g. toilets) by personnel working at facilities at the installation. This catchment system utilizes a southern drainage ditch, building roofs, and a paved area to collect storm water runoff. The collected storm water is then treated in a water treatment plant on site, and used for domestic use at the installation (e.g. toilets, showers. etc.). Personnel at the various facilities use bottled water for drinking purposes that are delivered to the installation by truck.

The State ICSD building is not occupied by staff on a daily basis. Therefore, no potable water facilities or toilets are provided for this building.

Wastewater Facilities

The City Department of Environmental Services (DES) generally provides municipal wastewater collection and treatment for most of the island of O‘ahu. However, there are no City wastewater collection or treatment facilities serving the Mt. Ka‘ala AFS.

Wastewater generated at the installation from activities consists of discharge from sinks, showers, and toilets. Wastewater is discharged to an on-site cesspool system located north of the FAA building. The State ICSD building has no utilities generating wastewater.

Drainage Facilities

Drainage facilities present at Mt. Ka‘ala AFS consist of a few drainage ditches (concrete swale) to transport storm water to the rain catchment system or discharge storm water away from the installation. Storm water runoff from the installation and summit plateau then drain radially down the flanks of the mountain into steep gulches. Shallow drainage ditches along the southern side of the installation channel surface water runoff toward the Mt. Ka‘ala Bog area. Runoff

from this area eventually discharges into two major watersheds identified as the Mākaha and Kaukonahua watersheds that include several streams and drainageways.

At the State ICSD building, a concrete swale used for drainage runs between the building and existing State antenna tower toward the adjacent FAA building. Another concrete swale runs along the western side of the building.

Solid Waste Facilities

The City Department of Environmental Services' Refuse Division provides municipal solid waste curbside collection for all single-family residences and a limited number of multi-family properties, non-residential customers, and City agencies on the island. Bulky items are collected on a monthly basis and either recycled or delivered to the Waimanalo Gulch Landfill.

A solid waste dumpster is located on the Mt. Ka‘ala AFS site for the storage of all waste. This waste is then collected and disposed of regularly by the Hawai‘i Air National Guard at Wheeler Army Airfield.

Transportation Facilities

Mt. Ka‘ala Access Road is the only roadway providing vehicular access to the Mt. Ka‘ala AFS. This is a gated government controlled access road by the FAA. Only vehicles permitted by authorized government agencies are allowed to access and travel on this roadway to the installation. This roadway is generally wide enough for only one-way travel by vehicles, thus, the need for management by government agencies. Therefore, minimal traffic occurs on this road on a daily basis.

3.13.2 Public Facilities and Utilities

The Mt. Ka‘ala AFS and State ICSD building and downhill antenna site are located at the summit of this mountain range. Therefore, there are no major public facilities or activities located in the vicinity that would be affected by the proposed repair and renovation improvements. No educational and medical facilities are located in this area that would be affected. Similarly, there are no police or fire protection facilities located in this area. Therefore, just those public facilities and utilities pertinent to the project are discussed.

Recreational Facilities

There are no recreational facilities or activities permitted within the Mt. Ka‘ala AFS since it is a secure and fence protected installation. No City recreational facilities are located within the area as well because the project area is located at the summit of Mt. Ka‘ala. The steep cliffs and natural landscape surrounding the summit along with ownership of much of the eastern area by the U.S. Army also prevent the area's use for many other recreational activities. The O‘ahu

Army Natural Resource Program and State NARS program do conduct regular service projects on Mt. Kaʻala. The only other recreational activities occurring in the general vicinity are hiking and hunting.

There are a few hiking trails leading to the summit of Mt. Kaʻala one of which starts on the Waiʻanae side at the end of Waiʻanae Valley Road and another on the Waialua side near Waialua High School. The trail from Waialua is known as the Dupont Trail. Near the summit, a hiking trail is routed through the Mt. Kaʻala Bog where there is a boardwalk for hikers to use to minimize impact on the native plants and vegetation. Hikers using the hiking trail are prohibited from using the Mt. Kaʻala Access Road because this road is for official use only.

Game hunting for both mammals and birds is permitted within the Mokulēʻia Forest Reserve which encompasses about 4,600 acres of including the Mt. Kaʻala NAR. The hunting of game mammals is regulated under the Title 13, Chapter 123, HAR, and this allows for hunting wild pigs and goats. The large forest reserve hunting area is identified as Unit E, and the Mt. Kaʻala NAR as Unit N2 under these regulation. Certain restrictions apply that include a required entry permit from the DOFAW, NAR manager, and hunters must be accompanied by a staff member of the DOFAW. Access is through the Mt. Kaʻala AFS subject to availability based upon military activities occurring at that time (State of Hawaiʻi, October 1999). Hunting for various types of game birds (e.g. pheasant, quail, etc.) is also permitted within the Mokulēʻia Forest Reserve. Regulations identify the area as Unit 2 under Title 13, Chapter 122, HAR (State of Hawaiʻi, December 2002).

Police and Fire Protection

The Honolulu Police Department provides police protection services for most of the island of Oʻahu. However, the HIANG is responsible for such services for the Mt. Kaʻala AFS because it is a Federally protected installation. Areas outside this installation located to the west are State property under the jurisdiction of the State DLNR, DOFAW. Areas to the east are owned by and under the jurisdiction of the U.S. Army.

The Honolulu Fire Department (HFD) provides fire protection services for most of the island of Oʻahu. The island is divided into zones that designate the primary response area for either the HFD or DOFAW. Three types of responses are: 1) HFD primary response area; 2) DOFAW primary response area; and shared primary response by both HFD and DOFAW.

At Mt. Kaʻala, this primary response jurisdiction generally falls according to the State property line. Therefore, the area including a portion of the Mt. Kaʻala AFS and areas to the west are designated for State DLNR DOFAW as the primary response. The area to the east is designated for the HFD as primary response area. HFD access to the site will need to be coordinated with the FAA and escorted.

Electrical and Communication Facilities

Electrical services are provided to the project area via Hawaiian Electric Company's (HECO) distribution lines. Electrical lines serving the project area are brought in via overhead sub-transmission lines located on utility poles.

Electrical power at the Mt. Ka'ala AFS is 12.5 kilowatts (kW) and is supplied through a 500-kilovolt amperes (kVA) transformer. A rotating uninterruptible power supply (64 kW - 80 kVA) is used to maintain a constant power supply and to prevent any power outages. The site has two engine/generator (E/G) sets connected in series. The sets normally operate once a month, and are intended for emergency power (Waller, May 2002). Any request for emergency power needs to be approved by the FAA.

The Mt. Ka'ala AFS is an existing installation providing telecommunication services to a range of Federal and State government agencies. Such services are communicated using the various types of antennas present at the various buildings used by agencies.

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

This chapter discusses the environmental consequences associated with implementing the improvements proposed for the State ICSD’s Mt. Ka‘ala radio facilities. Because the type of improvements proposed consist of repair and renovation work, the impacts on the environment would primarily be of a temporary nature and associated with construction related activities. No significant long-term effects are anticipated because no major changes to existing State facilities or level of activity operating this building will occur with the project.

Discussion of probable impacts addresses the No Action Alternative and the Proposed Project. The No Action Alternative represents a future scenario “without the project” providing a baseline of future environmental conditions to assess and evaluate probable impacts or changes resulting from the proposed project.

4.1 GEOGRAPHY, TOPOGRAPHY AND SOILS

4.1.1 Geography

No Action Alternative

Under the No Action Alternative, the existing geography associated with the ICSD building and downhill antenna site would remain the same because no improvements would be made.

Proposed Action

The Proposed Action should result in no changes to the existing geography of the project area. Most of the repair and renovation improvements will occur within the existing Mt. Ka‘ala AFS that has already been graded and altered as part of its initial establishment. Necessary trenches within the paved area for electrical improvements would be restored to existing conditions after utilities installation. Conduits that will be added to the downhill antenna site would be placed above ground on improved cable supports extending down the ridge. These improvements would have negligible affect on the existing geography of the ridge leading to the antenna site.

4.1.2 Topography

No Action Alternative

Under this scenario, there would be no changes to existing topographic conditions within the Mt. Ka‘ala AFS and downhill conduit cable route to the antenna dish site.

Proposed Action

Proposed improvements would not significantly alter the existing topography of the project area. Repair and renovation improvements to the ICSD building will not affect the existing topography, and trenches created within the paved parking area for electrical improvements would be restored to existing conditions.

The foundation for the replacement tower located next to the State building may require slight modifications to the ground conditions. However, the replacement tower would be sited in the same location as the existing tower after it is removed, and foundation improvements to this area would be minor. There are no unique or significant geological land formations present within this existing tower area that could be affected. No major cut or fill activities are anticipated that would significantly alter present topographic conditions. The contractor would implement best management practices during construction to minimize short-term effects such as storm water runoff.

The conduits added to the downhill antenna site would be placed above ground on improved cable supports extending down the ridge. These improvements would have minimal if any change to the existing topography associated with the steep conditions leading to the antenna site.

4.1.3 Soils

No Action Alternative

No changes to the existing soil conditions will occur under this alternative because no improvements would be implemented.

Proposed Action

Proposed improvements should have minimal impact on the existing soils associated with the project area. Repair and renovation improvements to the ICSD building will not affect soil conditions, and trenches created within the paved parking area for electrical improvements would be restored to existing conditions by back filling the material removed to create trenches.

The improved foundation created for the replacement tower should have minimal affect on soils because no major cut or fill activities are anticipated. The conduits that will be added to the downhill antenna site would be placed above ground on improved cable supports and similarly have minimal affect on existing soils. Existing vegetation (e.g. bushes) would only be cut to create workable areas for installing the cable supports, further reducing soil disturbance.

Pertinent best management practices will be incorporated into the project's design as mitigative measures to minimize potential short-term erosion impacts during construction activities. These measures will be instituted following site-specific assessments, incorporating structural and non-structural Best Management Practices (BMPs), as deemed appropriate to address storm water runoff. Erosion control measures considered may include: use of temporary silt fencing, sand bags, or screens; or thorough watering of disturbed areas after construction activity has ceased for the day. Actual measures implemented will be developed during the final design of project improvements. Design plans will be submitted to jurisdictional State and Federal agencies for ministerial review and approval.

4.2 NATURAL HAZARDS

The Proposed Action will not significantly increase the risk to human health or property due to existing exposures to natural hazards. The project will improve the State's telecommunication system that is essential for effective coordination among government agencies during natural hazards.

4.2.1 Earthquakes

No Action Alternative

Under the No Action Alternative, no improvements would be made to the ISCD's existing facilities on Mt. Ka'ala. In the event of an earthquake of sufficient magnitude, the State building could receive damage that further worsens the existing condition of the building and roof. For example, existing leaks in the roof may worsen and cause permanent damage to telecommunication equipment inside. Large antennas presently on top of the roof, planned only as a temporary measure, may become damaged or further damage the building's roof. Therefore, the State's facilities at Mt. Ka'ala would remain unnecessarily exposed to potential damage in the event of an earthquake under this alternative that could result in a significant impact on the State's telecommunication operations.

Proposed Action

Although difficult to predict, an earthquake of sufficient magnitude may result in damages to the ICSD building and associated telecommunication facilities at Mt. Ka'ala. However, most of the earthquakes that have occurred in the State were volcanic earthquakes causing little or no damage on the Island of O'ahu. The susceptibility of damage from an earthquake would be no different from other structures or buildings present in the region. The Mt. Ka'ala project area is also situated within the northern half of the island that has a lower risk ranking compared to other areas.

Building repair and renovation improvements under the Proposed Action will address the existing deficiencies making the building and roof more structurally sound to withstand the

effects of an earthquake. Existing antennas on the roof would be relocated to the new tower that will eliminate existing damages being caused to the roof and associated leaks. Other building repairs and renovations will improve the building and electrical system to support continued operations. Therefore, important telecommunication equipment within the building would be better protected in the event of an earthquake. The new tower will be properly designed to withstand earthquakes of sufficient magnitude improving its long-term reliability. The additional conduits routed down Kamaohanui Ridge should not be significantly affected by earthquakes. Building and other structural improvements would be designed and constructed in accordance with applicable State or City building code requirements.

4.2.2 Hurricanes

The three major elements making a hurricane hazardous are: 1) strong winds and gusts, 2) large waves and storm surge, and 3) heavy rainfall (FEMA 1993). Impacts from hurricanes can be severe and lead to beach erosion, large waves, high winds, and marine over-wash despite the fact that the hurricane may not directly hit a particular island (USGS 2002). Study of the aftermath of Hurricane Iniki (1992) found that a significant threat related to hurricane overwash along the coastline in the Hawaiian Islands is due to water-level rise from wave forces rather than wind forces.

Given the project's location at the summit of Mt. Ka'ala, the only major element of a hurricane threatening the project is strong winds and gusts. Heavy rainfall is another concern, however, flooding from such events is not as critical because of the site's location at the summit above lower areas, streams, and drainageways.

No Action Alternative

A hurricane of significant strength and high winds passing directly over or close to the Island of O'ahu could damage the existing ISCD facilities on Mt. Ka'ala under the No Action Alternative because antennas on the building roof are not properly secured to withstand winds of hurricane strength. Damages to these antennas may cause further damage to the building roof and increase leaks, damaging equipment inside. As a result, State telecommunication operations are unnecessarily exposed to disruptions and impacts.

Proposed Action

A hurricane of significant strength and high winds passing directly over or close to the island could still damage the existing ISCD facilities on Mt. Ka'ala even with the proposed improvements. However, the facilities would be greatly improved to withstand higher winds and receive less damage than under current conditions. The two temporary antennas mounted on the building's roof have a mounting structure rated at only 80 miles-per-hour wind loading, and is not strong enough to withstand even a Level 1 hurricane. When relocated to the new tower, the antenna dishes would be designed to withstand winds up to 130 mph (Level 3).

With repair and renovation improvements, the concrete building and roof would be more structurally sound to withstand a hurricane. The conduits routed down Kamaohanui Ridge on improved cable supports should also be less affected by a hurricane as they will be only two feet above ground and surrounded by dense and taller vegetation. The project will also allow for additional antennas to support the increasing demand and need for telecommunication services by the various statewide agencies that will enhance preparation and operations for natural hazards. To minimize potential hurricane damages, repair and renovation improvements would be designed and constructed in conformance to applicable building codes and product specifications.

4.2.3 Flooding

No Action Alternative

Under the No Action Alternative, flooding is not expected to occur within Mt. Ka'ala AFS because the site is located at the summit of the mountain range. Storm water would continue to discharge from this site down the steep cliffs of Kamaohanui Ridge where there are streams that begin their way down the cliffs of this summit.

Proposed Action

Flooding is also not expected to occur at Mt. Ka'ala AFS associated with proposed improvements because the site is located at the summit of the mountain range. Much of the repair and renovation improvements would be within the existing State building, underground, or involve structural or roof repairs to the building. There will be no increase of impervious surface to the area.

The new tower with foundation would be appropriately designed, and should not be affected by storm water discharging from the installation site. The conduits routed down Kamaohanui Ridge should similarly not be affected by storm water discharged from the summit. Storm water would continue to discharge from this site down the steep cliffs of Kamaohanui Ridge into streams that flow down the mountain. To minimize potential damages from flooding, improvements would be designed and constructed in conformance to applicable building codes and product requirements.

4.3 HAZARDOUS MATERIALS

No Action Alternative

There would be no change to the potential exposure to hazardous materials for the State's facilities within the installation and downhill antenna site under this alternative.

Proposed Action

Project improvements would not create a significant impact on the installation or surrounding area associated with hazardous materials. Improvements consist of repair and renovation work that does not involve installing new potential sources of hazardous materials such as a diesel underground storage tank. Improvements outside of the fenced installation area consist of conduits routed to the existing downhill antenna site and two copper wires laid above-ground for protection in the event of a lighting strike. These materials don't involve sources of potential hazardous material.

The closest site identified to the State building was a diesel underground storage tank (UST) that has since been replaced by an aboveground storage tank. Therefore, project improvements within the installation should not impact other equipment or areas of concern related to hazardous materials. At this time, no special construction best management practices associated with hazardous materials need to be incorporated in design plans.

4.4 HYDROLOGY

4.4.1 Hydrogeological Resources

No Action Alternative

Under the No Action Alternative, there would be no change to the underlying aquifer system because project improvements would not occur.

Proposed Action

The Proposed Action should have minimal if any effect on the underlying aquifer because improvements consist of repair and renovation improvements to existing State facilities. Most of the improvements would be within the existing State building, or involve structural and roof repairs to the building. Subsurface work within the installation would be trenching for electrical improvements. Construction of these improvements would not affect the aquifer. The new replacement tower with foundation would be appropriately designed, and should not impact the aquifer especially since groundwater generally occurs at about 1,800 feet AMSL which is 2,200 feet below the site. Conduits routed down the ridge would also occur above ground and thus not affect the underlying aquifer.

Therefore, project improvements are expected to have negligible effects to the overall function of the area's natural hydrological system, and would not have long-term impacts affecting the sustainable yield of the underlying aquifer system nor contaminate potable water sources.

4.4.2 Wetlands

No Action Alternative

Under this alternative, there would be no change to the Mt. Ka'ala Bog situated downhill of the installation because project improvements would not occur.

Proposed Action

Project improvements are not expected to have a significant impact on the Mt. Ka'ala Bog due to the limited nature of repair and restoration work. The bog area is situated to the south of the installation site, and the State building is situated on the northern end of the installation (refer to Figure 3.2). Construction activities would occur within the existing State building, or involve structural and roof repairs to the building. No activities are planned within the wetland area, and storm water runoff discharged from these activities would predominantly flow away from the wetland to the north down the steep cliffs of Kamaohanui Ridge.

Subsurface work within the installation would be for trenching a short distance for electrical improvements between the State building and adjacent FAA building. Construction work for the replacement tower is located north of the State building and any storm water discharge subsequently flows away from the bog. The downhill antenna site and conduit route are also situated further north and would not affect the wetland.

Therefore, short-term construction activities should have negligible impact on the wetland. In addition, the long-term operations of the State facilities would not have an effect on this wetland because the building is unmanned and essentially consists of telecommunication equipment and antennas. Best management practices will be incorporated into the project's design plans to address storm water runoff and identify other necessary requirements for workers to minimize effects in this area.

4.4.3 Streams

No Action Alternative

Under this alternative, there would be no change to the existing streams that begin downhill of the installation because project improvements would not occur.

Proposed Action

Project improvements should not have a significant impact on existing streams beginning downhill of the installation due to the limited nature of repair and restoration work. Once completed, no long-term operational activities conducted at the State facility are expected to

impact streams since the building is un-manned. Construction activities would not occur within any identified streams.

Most of the improvements would be within the existing State building, or involve structural and roof repairs to the building. Subsurface work within the installation involves creating a short trenching for electrical improvements between the State building and adjacent FAA building. Trenches created would be restored to existing conditions by back filling the material removed to create trenches. Construction work for the replacement tower is located within the fenced area of the installation, and work would not require significant cut or filling of the area for the tower's foundation. Conduits for the downhill antenna site will be placed above ground on improved cable supports, and thus have minimal effect on existing soils and ground conditions.

Pertinent best management practices will be incorporated into the project's design as mitigative measures to minimize potential short-term erosion and storm water runoff impacts during construction activities. These measures will be instituted following site-specific assessments, incorporating structural and non-structural Best Management Practices (BMPs), as deemed appropriate. Erosion control measures considered may include: use of temporary silt fencing, sand bags, or screens; or thorough watering of disturbed areas after construction activity has ceased for the day. However, the actual measures implemented will be developed during the final design of project improvements. Design plans will be submitted to pertinent State and Federal agencies for ministerial review and approval as applicable.

4.4.4 Water Quality

No Action Alternative

Water quality under this alternative would likely continue as under present conditions because project improvements would not occur.

Proposed Action

Project improvements should not have a significant impact on the existing water quality of streams beginning downhill of the installation or the Mt. Ka'ala Bog due to the limited nature of repair and restoration work. Once completed, no long-term operational activities conducted at the State facility are expected to generate discharges of pollutants negatively impacting streams or the wetland because the building is un-manned. Construction activities would also not occur within any identified streams or the bog and subsequently not affect water quality. Existing vegetation (e.g. bushes) along the downhill conduit route would only be cut to create workable areas for installing the cable supports. This should reduce soil disturbance and potential runoff during storm events.

The project must comply with the State's antidegradation policy specified under §11-54-1.1, HAR which requires maintaining and protecting existing uses and the level of water quality

necessary to protect existing uses. The contractor will minimize storm water runoff during construction by implementing best management practices in accordance with project design plans and applicable regulations. Possible types of best management practices and erosion control measures were previously discussed. Plans developed would be reviewed and approved by pertinent agencies prior to construction. Therefore, the project should be consistent with the antidegradation policy and existing uses protected.

4.5 BOTANICAL RESOURCES

No Action Alternative

Under this alternative, there should be no significant change to the existing botanical resources present outside of the installation because project improvements would not occur.

Proposed Action

Project improvements should not have a significant impact on existing botanical resources. None of the plants observed during the botanical survey conducted for this project was a threatened or endangered species or a species of concern. Two plant taxa that have critical habitat designations overlapping the study area were *Alsinidendron trinerve* and *Labordia crytandrae.* No individuals of either of these species were observed within the study area during this survey. Once improvements are completed, there should be no effect on botanical resources outside of the installation.

Most of the improvements would be within the existing State building, or involve structural and roof repairs to the building. Subsurface work within the paved area of the installation involves creating a short trench for electrical improvements between the State building and adjacent FAA building. Trenches would be restored to existing conditions by back filling the material removed to create trenches. Construction work for the replacement tower is also located within the grassed fenced area of the installation, and work would not require significant cut or filling of the area for the tower's foundation.

Conduits for the downhill antenna site will be placed above ground on improved cable supports, and thus have minimal to minor effect on existing vegetation along the route. Some cutting of vegetation would be required for installing these cable supports. However, these activities should not have a significant impact on resources.

Although no endangered or threatened plant species were found during the botanical survey, the native habitat is primarily intact and care should be taken while accessing and cutting vegetation within the installation and along the conduit route to limit ground disturbance. Several non-native plant species were only located at the base of the existing antenna where the ground had been disturbed during previous work in the area. Uprooting native plants and disturbing the soil provides extant weed species with more opportunity to become established. Any future

disturbance in the area can also have the possibility of introducing new invasive plant species to the area that have the potential to spread into adjacent native forest areas.

The proposed radio tower and antenna project could have significant negative impacts on the botanical resources of the site and the general region if care is not taken to limit ground disturbance and unintentional weed introductions. Therefore, the following mitigative measures are proposed to be implemented.

1. All gear including boots, clothing, tools, etc. should be cleaned off-site before starting work on a daily basis during the construction phase and only used at the Mt. Ka‘ala location for the duration of the project.
2. Removal and/or cutting back of native plants should be limited to the minimum amount of clearance needed to execute the project.
3. Installing semi-permanent level steps and or hand holds along the ridge and at the antenna site may help in preventing erosion during the construction phase of the project.
4. A follow up survey to monitor for any new introduced weed species post construction is recommended. An initial observation followed by subsequent visits at several month intervals may aid in catching any new introduced weed species and exterminating them before they can spread.

4.6 AVIFAUNA AND FAUNAL RESOURCES

No Action Alternative

Under this alternative, there should be no significant change to the existing avifauna and faunal resources present within or outside of the installation because improvements would not occur.

Proposed Action

Project improvements should not have a significant impact on existing avian or mammalian resources. No avian species currently protected or proposed for protection under either the federal or State of Hawai‘i endangered species programs were detected during the biological survey conducted. The findings of the avian survey were consistent with the location of the project area and the type of habitat present. Once improvements are completed, installation operations should have no effect on avian and mammalian resources.

Most of the improvements would be within the existing State building, or involve structural and roof repairs to the building. Subsurface work within the paved area of the installation involves creating a short trench for electrical improvements between the State building and adjacent FAA building. Construction work for the replacement tower is also located within the grassed fenced area of the installation. Conduits for the downhill antenna site will be placed above ground on

improved cable supports, and thus have minimal to minor effect on existing vegetation and conditions along the route.

Effects on Avian Resources

No seabirds were detected during the survey, however, several seabird species may potentially overfly the project site on occasion. There are no known nesting colonies of any of the resident seabird species present on O'ahu on or immediately adjacent to the Mt. Ka'ala AFS project site. Collision with man-made structures is considered to be the second most significant cause of mortality in locally nesting seabird species in Hawaiõ. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals.

The principal potential impact that the project poses to seabirds, is the increased threat that birds potentially could be downed after becoming disoriented by outdoor lighting associated with possible nighttime construction activity, and following build-out by any exterior lighting which may be installed as part of this project. Nighttime construction work is not planned for this project. However, if nighttime work were required, lights would be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures. All exterior lighting that may be associated with the operation of the State building should also be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures.

Effects on Critical Habitat

The project site is within the federally designated O'ahu 'Elepaio (*Chasiempis ibidis*) Critical Habitat Unit G, Northern Wai'anae Mountains. This critical habitat area encompasses 5,657 acres of the total 11,005 acres of land designated as Critical Habitat for this species. The Proposed Action will modify 0.093 acres (4,051 square feet) of 'Elepaio Critical Habitat, which represents 0.002 percent (two-thousands of a percent) of the 5,657acres of Unit G.

O'ahu 'Elepaio are usually found at lower elevation and taller stature mixed forest than the type of conditions found within the project area at the summit of Mt. Ka'ala. Further, the habitat that will be marginally modified for project improvements has already been modified by the construction and on-going maintenance of the existing installation facilities in the same location. Therefore, the project improvements are not expected to have a significant impact on this critical habitat area.

Effects on Mammalian Resources

The FWS, in a letter dated March 31, 2011 (included in Appendix A), raised the issue of the potential effects from clearing vegetation within the project site on roosting Hawaiian hoary bats.

As the bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of suitable roosting vegetation is likely to be minimal. However, during the pupping season (June to September), female bats carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they themselves forage. Thus, very small pups may be unable to flee a tree that is being felled.

Potential adverse effect from such disturbance is proposed to be avoided or minimized by not clearing woody vegetation taller than 15-feet tall (4.6 meters) between June 15th and September 15th. Bats are potentially at risk from this type of vegetation clearing during this period. There is no suitable roosting vegetation on the site for this species, and woody vegetation taller than 15 feet will not be cleared during the bat pupping season noted. Therefore, these measures will mitigate impacts.

4.7 INVERTEBRATE RESOURCES

No Action Alternative

Under this alternative, there should be no significant change to the existing invertebrate resources present within or outside of the installation because project improvements would not occur.

Proposed Action

Project improvements should not have a significant impact on existing invertebrate species in the project area. No federally or State-listed endangered or threatened invertebrate species were identified in the survey conducted for this project. Once completed, operations conducted at the site should have no effect on invertebrate species because the State building is un-manned.

Most of the improvements would be within the existing State building, or involve structural and roof repairs to the building. Subsurface work within paved areas of the installation involves creating a short trench for electrical improvements between the State building and adjacent FAA building. Construction work for the replacement tower is also located within the grassed fenced area of the installation, and work would not require significant cut or filling of the area for the tower's foundation. Conduits for the downhill antenna site will be placed above ground on improved cable supports, and thus have minimal to minor effect on existing vegetation along the route.

To minimize short-term construction-related effects on potential habitat, a construction best practices management plan would be developed and implemented specifying methods and controls for the entire construction zone to prevent runoff, spills, and impact on the habitat. In addition, the construction staging area and storage of material should be established within the paved areas of the installation.

To prevent establishment of alien species, the following measures will be implemented:

1. Inspect construction materials for hitchhiking seeds or animals. Soil packed in tires, on helicopter runners, or workers' boots can transport seeds and insect or snail eggs. Ants, snails, slugs, and other invertebrates can hide in boxes or equipment resting at one location, and these insects can later be carried to Mt. Ka‘ala.
2. If replanting after construction, care should be taken to prevent alien plant or animal species from being introduced on the plantings, associated soil, or pots.
3. Clean tools, boots, and equipment used at other projects before reaching Mt. Ka‘ala to minimize the chance of transporting new pest plants or animals to the area.
4. Remove trash regularly. Predatory invertebrate species such as ants easily establish in areas where food trash is consistently available. Food trash can attract mongoose, cat, and rat populations as well, resulting in predation on birds and native seeds.
   - Provide trash cans at construction areas where food is consumed, and keep cans covered. Importantly, construction supervisors need to establish a culture of using the receptacles. Carry out trash at the end of each work day.
   - No mosquitoes were seen during the survey, hence, it will be important not to provide habitat for them to begin breeding. Mosquitoes are known to be vectors of disease for humans (e.g. dengue fever) and birds (bird malaria). Care should be taken during construction to not create areas that will collect and hold standing water.

Outdoor lighting should be shielded during construction and when completed. Artificial lighting is attractive and confusing to many arthropods, concentrating them as easy prey for feeding bats at night. Insects attracted to lights at night often remain in place at dawn and are easily seen and consumed by birds. The lowest practical level of lighting should be used.

If revegetation of disturbed areas is required, native plants from the Mt. Ka‘ala environment should be used. Native plants would provide habitat for native arthropods, and native invertebrates will find this refuge over time. Native birds will obtain food from fruits, seeds, and the native invertebrates. State DOFAW, Natural Area Reserve staff can provide an appropriate species list, and assist with growers of native Hawaiian plants.

Worker education is important for protecting the ecosystem, therefore, construction crews should be provided information and guidance about working on Mt. Ka‘ala to help ensure preservation of the habitat. Providing defined pathways to and from work sites will reduce trampling of plants and disturbance of wildlife.

4.8 AIR QUALITY

No Action Alternative

Under this alternative, there would be no long- or short-term impacts on air quality because project improvements would not occur.

Proposed Action

Project improvements should have negligible impact on air quality at the summit of Mt. Ka'ala. Once completed, operations conducted at the site should have no effect on air quality because the State building is un-manned.

Minor short-term impacts on air quality from construction activities and other construction related activities would predominantly be associated with fugitive dust emissions and to a lesser extent exhaust emissions from on-site construction equipment. Minimal fugitive dust emissions are expected because most of the improvements would be within the existing State building, or involve structural and roof repairs to the building.

Other areas affected by construction activities are relatively limited in size. This includes the foundation area for the replacement tower, trenching within the paved parking area for electrical improvements, and conduits placed above ground on improved cable supports down Kamaohanui Ridge. There are also no existing sensitive land uses (e.g. homes) in the immediate vicinity of the project area that may be affected.

State air pollution controls prescribed under the DOH's rules (Chapter 11-59, HAR "Ambient Air Quality Standards" and Chapter 11-60.1, HAR "Air Pollution Control") prohibit visible emissions of fugitive dust from construction activities at the property line. If required, a dust control plan will be prepared and implemented by the contractor for compliance with these regulations. Dust control measures could include implementing a watering program or using wind screens. Other measures include good construction management practices at the job site (e.g. road cleaning or tire washing program). Exhaust emissions from construction vehicles and equipment would be minimized via the proper operation and maintenance of all equipment.

4.9 NOISE

Noise from construction activities is regulated under Title 11, Chapter 46 (Community Noise Control) of the State DOH's Administrative Rules (State of Hawai'i, 1996). The zoning district classification and maximum permissible sound levels are summarized in Table 4.1 below. The project falls under the Class A zoning district category that applies to properties zoned for preservation and conservation types of land uses. The maximum permissible noise level for this site under Class A is 55 dBA at the property line during daytime and 45 dBA during nighttime.

Table 4.1
State DOH Community Noise Level
Classification of Zoning Districts and Maximum Permissible Sound Levels

Zoning District	Maximum Permissible Sound Levels (dBA)	
	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Class A: Includes all areas equivalent to lands zoned residential, conservation, preservation, public space, open space, or similar type.	55	45
Class B: Includes all areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type.	60	50
Class C: Includes all areas equivalent to lands zoned agriculture, country, industrial, or similar type.	70	70

No Action Alternative

Under this alternative, there would be no long- or short-term impacts on ambient noise levels because project improvements would not occur.

Proposed Action

The project would not generate significant long-term impacts on noise levels because the State building is un-manned, and associated facilities involve telecommunication equipment and antennas. Therefore, only short-term noise generated from construction activities would apply.

The project would have some minor short-term noise generated from construction activities, and such activities are not planned to be scheduled at night. Construction activities will temporarily increase ambient noise levels within the vicinity of the work area. The project would generate some noise primarily from construction equipment along with human voices. However, noise generated would not have a significant impact because there are no noise sensitive uses in the project vicinity because the area is surrounded by undeveloped conservation area.

Actual noise levels produced would depend on the methods and type of equipment employed throughout construction activities. Earthmoving equipment such as bulldozers and diesel-powered trucks are generally the loudest equipment used during construction with typical noise ranges varying between 70 and 95 dBA. However, these types of larger earthmoving equipment are not anticipated to be necessary for this project. Measures to control construction noise include the use of mufflers on power equipment and vehicles.

Construction activities are expected to be limited to regular workday hours (7:30 a.m. to 4:30 p.m., Monday through Friday). If necessary, a community noise permit for construction activities would be obtained from the State DOH to allow these activities. This permit includes restrictions to help mitigate the potential noise impacts resulting from short-term construction activities.

4.10 VISUAL RESOURCES

No Action Alternative

Under this alternative, there would be no long- or short-term impacts on significant views because project improvements would not occur.

Proposed Action

The concepts established in characterizing visual quality from the City's *Coastal View Study* (Chu 1987) were used to assess the visual impacts resulting from this project. Visual qualities associated with scenic resources were evaluated using three factors that were: 1) visual vividness, 2) unity, and 3) intactness. Using these criteria, the visual impact of the project was evaluated based upon the degree of change to an existing view or alteration of a scenic resource. These criteria are briefly described below:

1. Visual Vividness. The memorability of a landscape is derived from contrasting landscape components as they combine to create striking and distinctive visual patterns, taking into account form, line, texture and color.
2. Visual Unity. The degree to which the visual resources of a landscape scene join together to form a coherent, harmonious and visual pattern; a balanced composition between manmade and natural elements.
3. Visual Intactness. The extent to which the landscape is free from visually encroaching features (Chu 1987).

Based upon the *Coastal View Study* and pertinent policies from the City's sustainable communities plans discussed in Chapter 3, the Wai'anae Mountain Range which includes Mt. Ka'ala was identified as a dominant scenic resource in several viewsheds. Views of Mt. Ka'ala were identified from major coastal roads or highways. This mountain range generally has high visual vividness due to its contrast as a distinctive visual backdrop in the distance across open agricultural lands or urbanized areas along the coastline. Mt. Ka'ala also has high visual unity because of its harmonious visual pattern as a natural resource in relation to the mountain range, and its place as the highest point of the mountain range. It also has high visual intactness because the summit is essentially free from visually encroaching features.

The only feature somewhat noticeable is the large sphere-shaped radome housing the radar antenna operated by the FAA on Mt. Ka‘ala. Distant views of this mountain summit from the coastline and major roadways are frequently obscured by clouds. On a clear day, the mountain summit is easily visible, but the sphere-shaped antenna is difficult to see under a normal view. The State ICSD building, other buildings, and antennas within the installation along are not visible due to the distance from the site and the relative small size of the building.

Proposed improvements should have minimal effect on long-range views. The existing visual vividness, unity, and intactness of the summit and mountain range would be retained. Most of the improvements would be within or associated with the existing State building’s structure that is already not visible. Subsurface work within paved areas of the installation for electrical improvements would be underground and not visible. Conduits added for the downhill antenna site will be placed above ground on improved cable supports only about two feet above the ground. These conduits would not be visible and shielded by existing surrounding vegetation. The antenna dishes at the State’s downhill site are situated on the Waialua side of the mountain range and are not visible from that coastline due to distance, size, and surrounding vegetation.

The State’s replacement tower would be 50 feet tall as compared to the existing 25-foot-tall tower. This tower will continue to be situated on the northeastern end of the Mt. Ka‘ala AFS which is on the Waialua side of the Mt. Ka‘ala summit. Views of this tower should not be visible from the North Shore’s coastline and major highways due to this site’s distance away from viewing areas.

4.11 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

No Action Alternative

Under this alternative, there would be no impacts on historic or cultural resources because project improvements would not occur.

Proposed Action

No historic properties, cultural deposits, or cultural material were identified within the proposed project area. Land clearing for the existing installation facilities likely removed any possible surface or subsurface historic properties that may have existed within the project area. The State ICSD’s radio facility at Mt. Ka‘ala AFS was constructed after 1988, and thus is not a historic building. Repair and renovation improvements should not have a significant impact on the ecosystem associated with this area based upon the assessment results discussed in this document. Furthermore, best management practices will be incorporated into the design of the project to minimize effects from short-term construction activities. Therefore, the repair and renovation improvements would have no impact on historic sites within the project area.

Although no historic sites were identified within the project area, the summit of Mt. Ka‘ala is probably eligible as a traditional cultural property for inclusion on the National Register of Historic Places due to the prominence of legendary and cultural associations, Hawaiian deities, and was the location of a Luakini Fishpond. The Office of Hawaiian Affairs assigns cultural and religious significance to the summit of Mt. Ka‘ala, as would other native Hawaiian organizations. The SHPD has also indicated that the summit is probably eligible for inclusion as a traditional cultural property. Therefore, an assessment was conducted to evaluate the project’s effects on the summit of Mt. Ka‘ala.

The assessment focused primarily on the visual impact associated with the replacement tower because other repair and renovation improvements involve existing facilities within the installation. Most of the improvements would occur within the existing State building or within paved areas of the installation. Other improvements would occur along an existing conduit route to an existing downhill antenna site. These improvements would thus not adversely affect the summit of Mt. Ka‘ala or have significant visual impacts.

From a distance of about one-half mile from the tower site, the replacement tower would be difficult to see from many areas due to the existing rugged and steep terrain and cliffs of the mountain range. Most areas are not easily accessible to the public. The most likely individuals from the public to visit the area would mainly consist of hikers to the summit using established accessible trails. The use of the Mt. Ka‘ala Access Road by hikers is prohibited because it is for official use only.

The replacement tower would be 50 feet tall and the existing tower is 25-feet tall. This tower would be situated within the existing installation that already has several other telecommunication towers and antennas which would be similar in height (50 feet tall). Therefore, the replacement tower should not have a significant visual impact to the summit because views are difficult from a half-mile or several miles away along public roadways and highways along the coastline.

The replacement tower would not introduce visual or audible elements that are out of character with the existing Mt. Ka‘ala AFS or alter the setting of the telecommunications installation at the summit of Mt. Ka‘ala. The tower would not isolate views of the summit of Mt. Ka‘ala from its surrounding character or significantly alter the character of the summit’s setting. The Luakini Fishpond is no longer present, and the proposed tower would not be located within the nearby bog and would not have significant impacts to it, as discussed in other sections of this document.

The prominence of legendary, symbolic, and cultural associations with the summit (the highest point of the Wai‘anae Range and the island) would not be changed by the proposed tower. Other legendary associations emphasizing the wetness of the summit and the general wildness of the area would not be affected by the replacement tower because it is located within the existing developed installation.

The replacement tower should not have an adverse effect on the property, character, or setting of the summit of Mt. Ka'ala. The proposed effect recommendation under State regulations is "effect with proposed mitigation commitments" for the proposed project. Best management practices discussed in other sections of this document will be implemented during construction activities to minimize temporary effects at the project site. These measures will be reviewed and approved by appropriate agencies as part of ministerial permits obtained during review of construction plans.

4.12 SOCIAL AND ECONOMIC FACTORS

4.12.1 Economic and Fiscal Factors

No Action Alternative

Under this alternative, repair and renovation improvements would not be constructed. There would be no effect on the City and the State of Hawai'i's finances in terms of tax revenue. No new jobs or income would be created.

Proposed Action

This section discusses the effects of project improvements on both the City and State's economic and fiscal factors. Construction of this project will have different effects in relation to the City and the State of Hawai'i's finances. This project would not generate any new permanent full-time jobs. Therefore, the primary economic and fiscal effects would be associated with short-term construction jobs that will generate a small minor positive economic impact.

The project's estimated construction cost of $650,000 would create construction jobs during the duration of restoration and construction activities, as well as support industries that service construction activities directly and indirectly. Three broad types of jobs are distinguished below:

- Direct jobs are immediately involved with construction of a project or with its operations.
- Indirect jobs are created as businesses directly involved with a project purchase goods and services in the local economy.
- Induced jobs are created as workers spend their income for goods and services.

Direct construction jobs would typically consist of on-site laborers, landscapers, tradesmen, mechanical operators, supervisors, etc. These new jobs created would generate additional personal income for construction workers that are the wages paid directly to them or operational employees associated with project improvements. Direct construction jobs created would also stimulate indirect and induced employment and spending of wages within other industries on the island such as retail, restaurants, material distributors, and other related businesses supporting the construction industry. These construction jobs would likely be filled by residents from the Island of O'ahu employed within the construction industry.

The project is estimated to create a relatively small number of direct new jobs (less than 10) over the approximately one-year construction period due to the limited scope of the repair and renovation work planned. It is not likely that new permanent indirect or induced jobs would be created due to the small number of direct jobs created by this project. However, this project would support existing jobs involved with purchases of goods and services in the local economy. These jobs would consequently create a relatively small, but nevertheless, positive impact in employment for the island.

Fiscal impacts would primarily involve additional tax revenue generated to the State from construction of this project. Tax revenue sources for State government are composed primarily of general excise taxes (GET) on development costs and construction materials, along with corporate income tax, and personal income tax from construction workers. These construction related tax revenues would have a minor positive effect on the State’s fiscal condition because of the short-term increase in revenue associated with construction activities.

City revenues generated are primarily limited to tax revenues on privately-owned property and improvements, and to a lesser extent fees charged for various activities such as water, sewer, permits, etc. The parcels associated with the project site are owned by the State or Federal government, therefore, no property tax is presently paid by the State. Therefore, this project should have no effect on the current or future levels of City tax revenues being generated.

4.12.2 Social Factors

No Action Alternative

The existing character of the Mt. Ka‘ala AFS would remain essentially the same under this alternative as it will continue to be used for telecommunication operations by various government agencies. The number of housing and visitor units in the surrounding districts of the North Shore, Wai‘anae, and Central O‘ahu would not be affected. There would be no change to the resident population or the characteristics of these existing populations in the surrounding districts.

Proposed Action

Proposed repair and renovation improvements will not impact the number of housing or visitor units in the surrounding districts because the project only involves improvements to the State’s existing telecommunication facilities. There are also no new visitor units included with this project, and no in-migration of individuals to O‘ahu would result due to the project. Therefore, this project will not impact the existing resident population or the existing characteristics of the surrounding districts.

There should be no impact on environmental justice target populations because improvements involve repair and renovation work on the State ICSD's facilities. There are no urbanized areas in the vicinity of this installation being situated at the summit of Mt. Ka'ala surrounded by conservation land. Construction related nuisance effects from improvements would not cause any disproportionately adverse human health or environmental impacts on environmental justice populations. No one segment of the population or geographic area would be disproportionately burdened by environmental impacts caused by proposed improvements. The public involvement process implemented with this environmental review process provides opportunities for all persons to have meaningful involvement and input into the development of plans and decisions.

4.13 INFRASTRUCTURE AND PUBLIC FACILITIES

4.13.1 Infrastructure Facilities

Water Facilities

No Action Alternative

There would be no long- or short-term impacts on municipal water facilities because project improvements would not occur.

Proposed Action

The project does not include facilities or structures generating potable water demands such as residential units or restroom facilities because it involves repair and renovation work. The project will not have any structures needing fire protection from municipal water sources. There are no City BWS potable water facilities providing service to users at the Mt. Ka'ala AFS, and no City facilities are required. Therefore, the project would have no impact on the City's municipal water facilities.

Wastewater Facilities

No Action Alternative

Under this alternative, there would be no long- or short-term impacts on municipal wastewater facilities because project improvements would not occur.

Proposed Action

No wastewater will be generated from the project site in the long-term because the State building is un-manned. An on-site existing cesspool system is used for wastewater treatment within the installation. Consequently, the project should have no impact on the City's existing municipal wastewater facilities or sewer lines. During construction activities, portable toilets may be used for workers if access to existing restrooms within the installation is not available.

Drainage Facilities

No Action Alternative

Under this alternative, there would be no long- or short-term impacts on existing drainage facilities because project improvements would not occur.

Proposed Action

No new or modification of existing drainage facilities are planned under this project and no increase in impervious surfaces would be created. Existing facilities consist of a few drainage ditches (concrete swale) to transport storm water to the rain catchment system or discharge storm water away from the installation. Consequently, the project should have no impact on existing drainage facilities serving this installation.

Most of the improvements would be within or involve the existing State building's structure. Subsurface work within paved area of the installation for electrical improvements would be underground and returned to existing conditions when completed. Conduits added for the downhill antenna site will be placed above ground on improved cable supports about two feet above the ground. The replacement tower will utilize the same location as the current tower, and its foundation should not result in a significant change to the area over current conditions.

Solid Waste Facilities

No Action Alternative

Under this alternative, there would be no long- or short-term impacts on the City's solid waste facilities because project improvements would not occur.

Proposed Action

Typical municipal solid waste, such as residential waste consisting of organics (food), paper, and plastics, would not be generated by State operation of the ICSD facility when the project is completed because it is un-manned. A solid waste dumpster is also located on the Mt. Ka'ala AFS site for the storage of all waste. This waste is collected and disposed of regularly by the Hawai'i Air National Guard at Wheeler Army Airfield. Therefore, the project should not have minimal impact on the City's solid waste facilities, operations, and landfill from the long-term operation of this ICSD facility.

Solid waste generated by this project would primarily be associated with short-term construction activities. Construction waste generated should likely consist primarily of vegetation cut or removed, rocks, pavement, concrete, and other debris created from building repair and

renovation activities. Construction waste generated would be disposed of by the contractor in conformance with agency regulations, and should not have a significant impact on City facilities.

Transportation Facilities

No Action Alternative

Under this alternative, there would be no long- or short-term impacts on the State's highway facilities or City roadways because project improvements would not occur.

Proposed Action

The project should not have long-term impacts on the State's highway facilities or City roadways because the State building is un-manned. The only traffic generated by State ICSD staff would be for periodic maintenance of this building.

Construction related traffic may occur as a result of the movement of slow-moving heavy construction vehicles and equipment. Additional traffic would occur from construction workers traveling to and from the job site. However, Mt. Ka'ala Access Road is a gated government controlled roadway, and is the only road providing vehicular access to the Mt. Ka'ala AFS. Access along this roadway by construction workers and equipment would be regulated by the FAA.

Temporary construction related traffic will not affect commuter traffic patterns in the Waialua area or on the Mt. Ka'ala Access Road. The small number of construction workers expected would have minimal impact on the State's Farrington Highway serving this Waialua community.

Construction workers would generally leave the area before the weekday afternoon commuter peak hour, which typically starts between 4:00 and 4:30 p.m. There should be no lane closures required for construction activities. If necessary, a permit from the State highway's division will be obtained if any oversized and overweight equipment need to be transported on highway facilities.

4.13.2 Public Facilities and Utilities

The State ICSD building and downhill antenna site are located at the summit of Mt. Ka'ala, and there are no major public facilities or activities located in the vicinity that would be affected by the proposed repair and renovation improvements. Therefore, no educational and medical facilities are located in the area that would be affected by the project.

Recreational Facilities

No Action Alternative

There would be no long- or short-term impacts on existing recreational facilities in the surrounding area under this alternative because project improvements would not occur

Proposed Action

The project should not have long-term impacts on hiking trails leading to the summit of Mt. Kaʻala or game hunting for either mammals or birds permitted within the Mokulēʻia Forest Reserve because the State building is un-manned. The State building is situated within the secured fence area of the installation which does not permit these types of activities. Only the downhill antenna dishes, with appurtenant utility conduit are present outside this area, and they are not located along hiking trails or areas likely to be used for hunting due to the steep terrain.

Short-term construction activities should similarly not impact hiking and hunting activities that may be occurring in the surrounding area. Most of the work will occur within the fenced area of the installation. The steep terrain and location of the State's downhill antenna and conduit route on the ridge are not likely used for these activities.

Volunteer service projects by the Oʻahu Army Natural Resource Program and State NARS program may create additional vehicular traffic and reduced parking area at the Mt. Kaʻala AFS if occurring during construction activities. However, such effects would only be short-term (during construction) and not have a significant impact on service projects. The contractor will need to coordinate their construction schedule with FAA and other pertinent agencies for access approval that should minimize such conflicts and increase congestion at the installation.

Police and Fire Protection

No Action Alternative

There would be no long- or short-term impacts on police and fire facilities or the ability of these agencies to provide protection services within the project site and surrounding area under this alternative because project improvements would not occur.

Proposed Action

Operations at the State building would not change with implementation of the project because the building will remain un-manned. Other facilities consist of telecommunication antennas both within the installation and at the downhill site. Therefore, the project would not impact the Honolulu Police Department's facilities or their ability to provide police protection services to communities below this mountain range. The FAA and U.S. Army are responsible for police

protection services for the Mt. Ka'ala AFS because it is a protected installation. Areas outside this installation fall under the jurisdiction of the State DLNR, DOFAW and U.S. Army.

When repair and renovation improvements are completed, operation of the State building and associated antennas are not expected to have a significant impact on fire protection services provided by the HFD and State DLNR DOFAW. Use of the State building will be the same as currently conducted, and thus not increase the potential for fires. Electrical improvements would improve the reliability and operation of telecommunication equipment inside the building.

Electrical and Communication Facilities

No Action Alternative

There would be no long- or short-term impacts on existing electrical or communications facilities in the project area under this alternative because project improvements would not occur.

Proposed Action

Project improvements would not have a significant impact on HECO's distribution lines in the area, or the utility company's capacity to provide service to the installation. Electrical upgrades to the facility will benefit ICSD operations by ensuring that power requirements for existing and future telecommunication equipment are efficiently accommodated. This supports the State ICSD's long-term effectiveness for the telecommunication equipment used at the Mt. Ka'ala AFS, and supports their mission and agency objectives.

4.14 SECONDARY AND CUMULATIVE IMPACTS

4.14.1 Secondary and Cumulative Effects Under No Action Alternative

Under the No Action Alternative, the project would not contribute to secondary or cumulative effects on the surrounding environment.

4.14.2 Secondary Effects with Proposed Action

Secondary effects, also referred to as indirect effects, are effects caused by a project, but which occur later in time or farther removed in distance from the project site than direct impacts, but are still reasonably foreseeable. Such effects may include impacts on environmental resources or public facilities that occur from a project's influence on land use. For example, a new housing development would have a secondary impact on the State's consumption of fossil fuels as a result of the increase in solid waste removal routes necessary to serve the new homes. Secondary impact assessments are concerned with impacts that are sufficiently "likely" to occur and not with the speculation of any impact that can be conceived of or imagined.

The proposed project is not expected to have any secondary impacts on the resident population, land use patterns, public facilities, infrastructure, or the natural environment in the immediate area and surrounding area. Improvements consist of repair and renovation work to the State's existing building at the installation and their downhill antenna site.

Thus, improvements do not include additional residential housing or visitor units that will increase the resident or visitor population in the area. The project would not subsequently affect public facilities such as schools, parks, etc. due to new residents in a community. No other infrastructure facilities serving this area would be adversely impacted by the project. No improvements to increase the capacity or expand existing infrastructure systems would be required due to this project, as discussed in previous sections of this document. The project would not influence changes to the existing land use pattern of the immediate area at Mt. Ka‘ala. The surrounding area is undeveloped and designated as State Conservation District Land being situated at the top of the Wai‘anae Mountain Range.

Construction of this project will generate a few short-term construction jobs that are not expected to result in any permanent in-migration of workers to O‘ahu to fill these jobs. It is anticipated that qualified local contractors on O‘ahu would be used for the project's construction. Therefore, construction of the project should not contribute to significant secondary impacts associated with in-migration of workers.

4.14.3 Cumulative Impacts with Proposed Action

Cumulative impacts are typically defined as the effects on the environment which result from the incremental impact of a project when added to past, present, and reasonably foreseeable future actions within the study year. The estimation of future impacts is important for cumulative impact analysis. However, the focus must be on "reasonably foreseeable" actions that are those likely to occur or probable rather than those that are merely possible or subject to speculation. The prediction of reasonably foreseeable impacts thus requires judgment based on information obtained from reliable sources such as approved development or construction plans, entitlements, and similar documents.

The discussion of impacts presented within this document has provided information to assist in addressing the applicable cumulative effects associated with the project and other reasonably foreseeable future actions being implemented. There are no other known public or private developments or major projects planned to occur in the vicinity of the State ICSD project site before the construction timeframe or completion date for this project. Therefore, the discussion of impacts presented within this document has addressed the cumulative impacts associated with the project and other reasonably foreseeable future actions being implemented. This indicates that there are no major cumulative impacts associated with this project.

CHAPTER 5
CONFORMANCE WITH EXISTING STATE AND COUNTY PLANS, POLICIES, AND CONTROLS

This chapter discusses the project's conformance with the State Land Use District regulations, State Environmental Policy (Chapter 344, HRS), and the regulations, policies, and goals set forth by the City's Sustainable Communities Plans, Special Management Area (Chapter 205A, HRS), and Land Use Ordinance.

5.1 STATE LAND USE DISTRICT

Pursuant to Title 13, Chapter 205 (Land Use Commission), HRS, all lands in the State of Hawai‘i are classified by the State Land Use Commission (LUC) into four major districts which are referred to as State Land Use Districts. These four land use districts are Urban, Rural, Agricultural, and Conservation. Permitted uses within the State Land Use Districts are prescribed under Title 13, Chapter 205, HRS, and the State LUC's Administrative Rules prescribed under Title 15, Subtitle 3, Chapter 15, HAR.

The State Geographic Information System (GIS) data showing the LUC's Land Use Districts for the Mt. Ka‘ala area indicates that the proposed project area, the Mt. Ka‘ala AFS, and surrounding areas are classified as being within the State's Conservation District. This Conservation District area encompasses the Wai‘anae Mountain Range.

5.1.1 State Conservation District

Conservation District designated lands fall under the jurisdiction of the State Board of Land and Natural Resources (BLNR). The BLNR has the authority to establish zones (also known as subzones) within the Conservation District. Permitted uses within subzones are delineated in the BLNR's Administrative Rules, Section 13-5-23 of Title 13, Chapter 5, HAR.

The Conservation District area encompassing the project area is classified as the "Protective" subzone. The objective of the "Protective" subzone is to protect valuable resources in designated areas such as restricted watersheds, marine, plant and wildlife sanctuaries, and other designated unique areas. Land uses permitted in this subzone most pertinent to this project include "public purpose" uses that are identified below.

- Public Purpose Uses. Land uses undertaken by the State of Hawai‘i or the counties to fulfill a mandated government function, activity, or service for public benefit and in accordance with public policy and the purpose of the conservation district. Such land uses may include transportation systems, water systems, communications systems, and recreational facilities.

5.1.2 Conservation District Use Permits for State Facilities at Mt. Ka‘ala

A Conservation District Use Permit (CDUP) OA-1794 was approved by the BLNR in December 1985 to permit the State DAGS, Division of Public Works to establish a microwave system facility at Mt. Ka‘ala that was only used as a military installation at the time. Improvements constructed included: 1) the current 25-foot-tall State antenna tower; 2) renovation of the existing FAA building to provide an electrical equipment room; and 3) installation of a microwave antenna with connection cable on a site down Kamaohanui Ridge. The State obtained a license from the Air Force to operate and maintain a microwave system at the military's Mt. Ka‘ala AFS. The approval represents the initial establishment of the State's telecommunication facilities at Mt. Ka‘ala.

CDUP OA-1794A was also approved by the BLNR in December 1988 to permit the State Department of Budget and Finance Telecommunications Division (now the Information and Communication Services Division) to expand the microwave system facility at Mt. Ka‘ala. The facility's expansion involved: 1) constructing the present two-story State building within the Mt. Ka‘ala AFS; 2) installing several antennas on the building's wall; and 3) installing another microwave antenna at the State's downhill site on Kamaohanui Ridge.

5.1.3 CDUP Applicability to Project

The proposed project involves repair and renovation improvements to existing State facilities within the Conservation District boundary as described in Chapter 2. Most of the improvements would be within or associated with the existing State building. Electrical conduits installed underground are a type of accessory improvement needed for telecommunication equipment. The State's new tower would replace the existing 25-foot-tall tower to provide vertical clearance for antennas due to the height of the existing security fence around the installation. The tower would also support additional antennas to meet the State's future demand for telecommunication services. The additional conduit routed down Kamaohanui Ridge to their existing antenna site is also a type of accessory improvement needed to ensure operational reliability of the microwave dish antennas.

These improvements meet the definition of "communication systems" under the Conservation District regulations (Title 13, Chapter 5, HAR) that are defined to mean "towers, antennas, buildings, cables and other accessory structures for electronic, radio frequency or microwave transmissions or receptions." These communication system improvements are being initiated by the State ICSD to allow them to efficiently fulfill their agency mission and objectives which are important to the health and safety of the residents of the State. Therefore, this communication systems project is a public purpose use permitted within this Protective Subzone.

The project improvements would also be consistent with prior approvals (CDUP OA-1794 and OA-1794A) given by the BLNR in permitting the establishment of the State's telecommunication facilities at Mt. Ka‘ala. The proposed action consists of repair and

renovation work to these existing State facilities. A CDUP application will be prepared for this project, and submitted to the State DLNR, Office of Conservation and Coastal Lands for their reviewing and processing. However, the 50-foot replacement tower may not be included in the request for a CDUP because of federal supremacy associated with this Federally-owned property.

5.2 MT. KA‘ALA NATURAL AREA RESERVE SYSTEM

The State’s Natural Area Reserve System established under Chapter 195 (Natural Area Reserve System), HRS creates areas within the State that possess unique natural resources that may be vulnerable to loss by growth and are thus managed to protect and preserve them for enjoyment of future generations. Title 13, Subtitle 9 (Natural Area Reserves System), Chapter 209, HRS, establishes rules regulating activities within the natural area reserves. Management of NARS are under the DLNR, Division of Forestry and Wildlife (DOFAW), and the NARS Commission acts in an advisory capacity for the BLNR.

5.2.1 Mt. Ka‘ala NAR Relation to Project Area

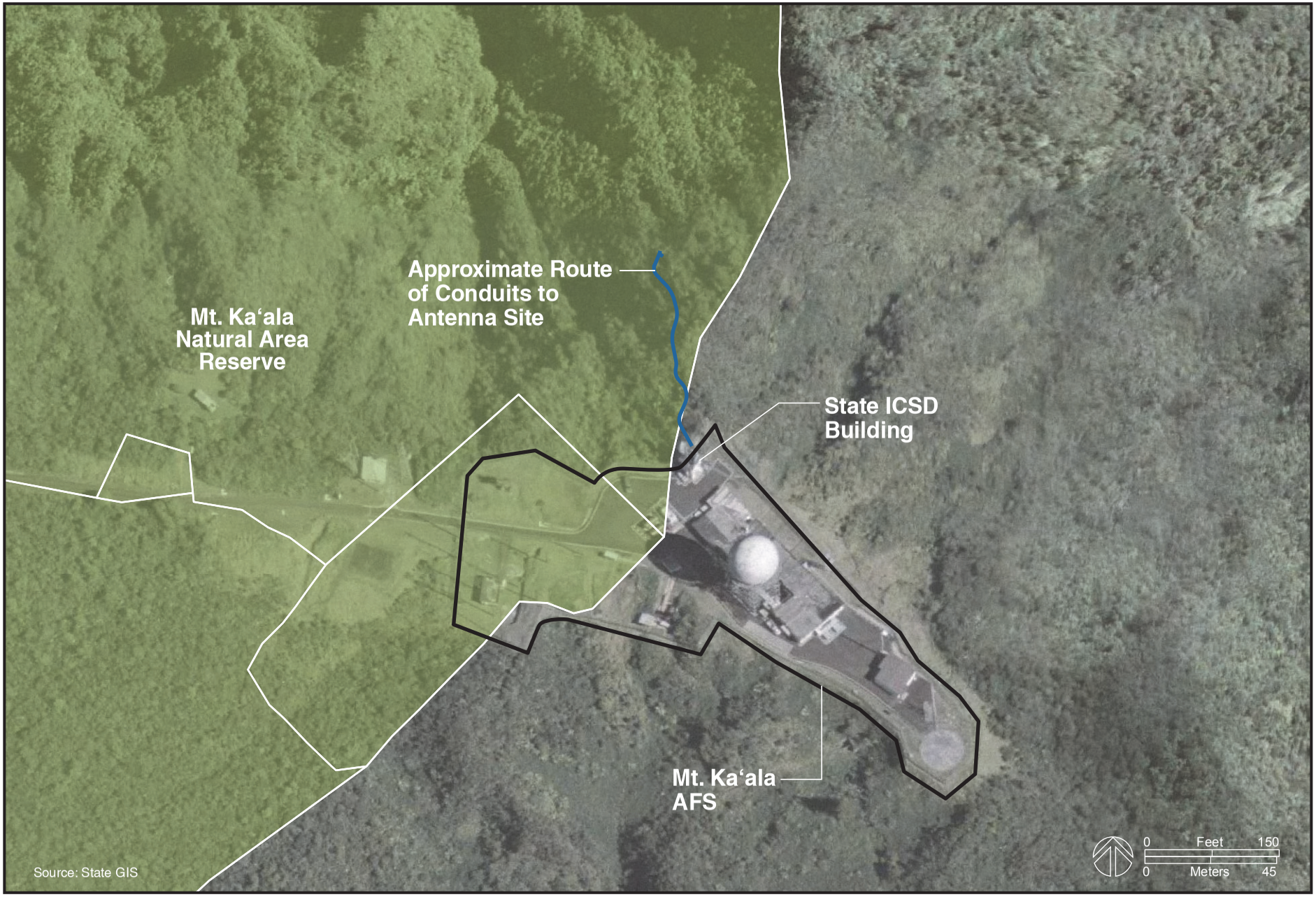
The Mt. Ka‘ala NAR is part of this State system. It was established in 1981 by Executive Order 3099. A portion of the project area falls under this Mt. Ka‘ala NAR, and Figure 5.1 shows the improvements in relation to the area based upon State GIS data. As shown on this map, a portion of the conduit route down Kamaohanui Ridge is located within this NAR. The State building, replacement tower, and electrical work within the parking area are outside of the NAR.

However, based upon the State’s December 2001 property boundary map, there was a slight shift where the boundaries of both State and Federal properties meet. The boundary line dividing the properties now cuts through the center of the existing State radio facility. Therefore, a portion of the State building would be located within the NAR boundary which is intended to include the State properties. The replacement antenna tower will still be outside the NAR, and most of the conduit route would now be outside the NAR.

5.2.2 NAR Applicability to Project

A Special Use Permit under the NARS regulations was issued by the BLNR in November 1985 to the State DAGS, Division of Public Works to allow the establishment of a microwave system facility at Mt. Ka‘ala. This permitted the installation of the dish antenna site downhill of Kamaohanui Ridge and transmission line to the installation.

Based upon consultation with DLNR, DOFAW, NARS staff, a Special Use Permit from the BLNR will be required for this project. Therefore, an application will be prepared for this project, and submitted to the State DLNR, DOFAW for their review and processing.



Mt. Ka'ala Natural Area Reserve in Relation to Project Site

Figure 5.1

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

5.3 CHAPTER 344, HRS, STATE ENVIRONMENTAL POLICY

This section discusses the project's conformance and consistency with the pertinent goals, policies, and guidelines described under Chapter 344, HRS, State Environmental Policy.

Section 344-3(1). Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaii.

Discussion: The project will be consistent with this policy as discussed throughout the various sections of this document. Proposed activities consist of repair and renovation work to existing State facilities at Mt. Ka'ala that are needed to address pressing deficiencies. Improvements would ensure these facilities are adequate to support current and future ICSD needs to accomplish their various missions related to public safety, emergency services, disaster response, and essential government operations. Project impacts are primarily associated with temporary construction-related activities, and various best management practices will be incorporated into design plans for implementation by contractors. These measures will minimize effects on the natural environment of Mt. Ka'ala.

Section 344-3(2). Enhance the quality of life by:

A. Setting population limits so that the interaction between the natural and manmade environments and the population is mutually beneficial.

B. Creating opportunities for the residents of Hawaii to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments.

C. Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian.

D. Establishing a commitment on the part of each person to protect and enhance Hawaii's environment and reduce the drain on nonrenewable resources

Discussion: The proposed project would be consistent with these environmental policies regarding the quality of life. Project improvements would not affect the future resident population in the surrounding districts. The project would not generate noticeable long-term economic activities for residents, but construction activities would create a few short-term job opportunities to improve the quality of life for residents employed in the construction industry. Improvements consist of repair and renovation work that would not negatively impact surrounding communities, and supports continued use of the unique location of Mt. Ka'ala for important telecommunication operations. Best

management practices will be incorporated into design plans for implementation by contractors during construction activities to minimize effects on the natural environment of Mt. Ka‘ala.

Section 344-4. Guidelines:

1. Population.

A. Recognize population impact as a major factor in environmental degradation and adopt guidelines to alleviate this impact and minimize future degradation;

B. Recognize optimum population levels for counties and districts within the State, keeping in mind that these will change with technology and circumstance, and adopt guidelines to limit population to the levels determined.

Discussion: The proposed project would not affect the existing or future resident populations in the surrounding district or elsewhere in the State. Proposed improvements do not involve construction of any new homes or visitor units, and short-term construction jobs are expected to be filled by O‘ahu residents. Therefore, resident population will not be affected by in-migration.

2. Land, water, mineral, visual, air, and other natural resources

A. Encourage management practices which conserve and fully utilize all natural resources;

B. Promote irrigation and waste water management practices which conserve and fully utilize vital water resources;

D. Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas;

E. Establish and maintain natural area preserves, wildlife preserves, forest reserves, marine preserves, and unique ecological preserves;

G. Promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling so that all our wastes become utilized.

Discussion: The project would be consistent with these guidelines because improvements would not adversely impact natural resources as discussed in various sections of this document. Proposed activities consist of repair and renovation work on existing State facilities at Mt. Ka‘ala. The project would not affect the use of potable water because there is no City water service provided, and the water quality of aquifers would not be impacted. The project would not impact wastewater because the State building is un-manned and there would not be an increase in wastewater generated from long-term operations.

Best management practices will be incorporated into design plans for implementation by contractors during construction activities to minimize effects on the natural environment of Mt. Ka‘ala. Such measures should protect watersheds, the forest area, etc. and maintain the ecosystem associated with this natural area reserve. Measures will be

implemented to minimize solid waste and its removal and recycling during construction activities.

3. *Flora and fauna*
   - A. *Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard.*
   - B. *Foster the planting of native as well as other trees, shrubs, and flowering plants compatible to the enhancement of our environment.*

Discussion: Based upon the technical studies conducted and discussed in this document, the project would not impact endangered species of plants and animals. Best management practices will also be incorporated into design plans for implementation by contractors during construction activities to minimize effects on important plants and animals. Various mitigative measures were also identified in Chapter 4 for the contractor to implement and minimize disturbances to important resources (e.g. cleaning equipment, shoes, etc.). If applicable, native plants would be used for replanting areas of vegetation disturbed by construction activities. Coordination with the State NARS program will be conducted to determine implementation procedures for native plants and species for use.

4. *Parks, recreation, and open space*
   - A *Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses.*
   - C. *Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment for its people.*

Discussion: The project should not negatively impact scenic resources and views associated with Mt. Ka‘ala. There are no historic properties present in the project area, and proposed improvements should not significantly impact cultural resources associated with Mt. Ka‘ala. Proposed activities consist of repair and renovation work on existing State facilities at Mt. Ka‘ala, and thus should not significantly impact the natural beauty and natural resources of this summit. Construction activities will be confined to areas associated with existing State facilities and the existing conduit route to the downhill antenna site.

5. *Economic development.*
   - C. *Encourage federal activities in Hawaii to protect the environment;*

Discussion: The U.S. Coast Guard will be supporting the State ICSD on this project by implementing the replacement of the antenna tower next to the State building. This partnership supports this policy to encourage federal activities in Hawai‘i that protect the environment, and also support public safety, emergency services, and disaster response.

6. *Transportation.*
   C. *Encourage public and private vehicles and transportation systems to conserve energy, reduce pollution emission, including noise, and provide safe and convenient accommodations for their users.*

Discussion: The project would have minimal effect on this policy because it involves repair and renovation of telecommunication facilities.

7. *Energy.*
   A. *Encourage the efficient use of energy resources.*

Discussion: The project would improve the efficient use of electrical power for telecommunication facilities at the facility.

8. *Community life and housing.*
   E. *Recognize community appearances as major economic and aesthetic assets of the counties and the State; encourage green belts, plantings, and landscape plans and designs in urban areas; and preserve and promote mountain-to-ocean vistas.*

Discussion: Repair and renovation work of existing State facilities will occur at the installation located at the summit of Mt. Ka'ala. Therefore, these activities will not affect the urban design elements of communities along the coastline. The appearance of Mt. Ka'ala from coastal roadways would also not be affected by the improvements.

9. *Education and culture.*
   A. *Foster culture and the arts and promote their linkage to the enhancement of the environment.*

Discussion: Project improvements will not affect this policy.

10. *Citizen participation*
   A. *Encourage all individuals in the State to adopt a moral ethic to respect the natural environment; to reduce waste and excessive consumption; and to fulfill the responsibility as trustees of the environment for the present and succeeding generations;*
   B. *Provide for expanding citizen participation in the decision making process so it continually embraces more citizens and more issues.*

Discussion: Project improvements would be implemented incorporating best management practices to minimize temporary construction-related effects on the natural environment. These efforts reflect an ICSD responsibility to preserve the physical and natural environment of Mt. Ka'ala. The environmental review process undertaken for this project allows for public and government agency input during the review of the Draft

EA. Public consultation efforts help provide decision-makers with a diverse array of information and comments to consider when evaluating this project. There will also be additional opportunities for citizen participation during the review of the permit applications related to the State CDUP and NARS Special Use Permit.

5.4 CITY SUSTAINABLE COMMUNITIES PLANS

The City's Development/Sustainable Communities Plan (DP) program provides a framework for implementing the City's *General Plan* objectives and policies for the growth, development, and sustainability of O'ahu at a regional level. The program established eight geographical areas for which development or sustainable communities plans have been established.

Mt. Ka'ala is situated at the summit of the Wai'anae Mountain Range where the boundaries of three O'ahu community plan districts converge. These are the North Shore, Wai'anae, and Central O'ahu districts as shown on Figure 5.2. Based upon this figure, the project area is located predominantly within the Central O'ahu district with a section of the conduit route and downhill antenna site located within the North Shore district. Thus, the project's conformance and consistency with pertinent policies from both community plans are addressed.

5.4.1 Central O'ahu Sustainable Communities Plan

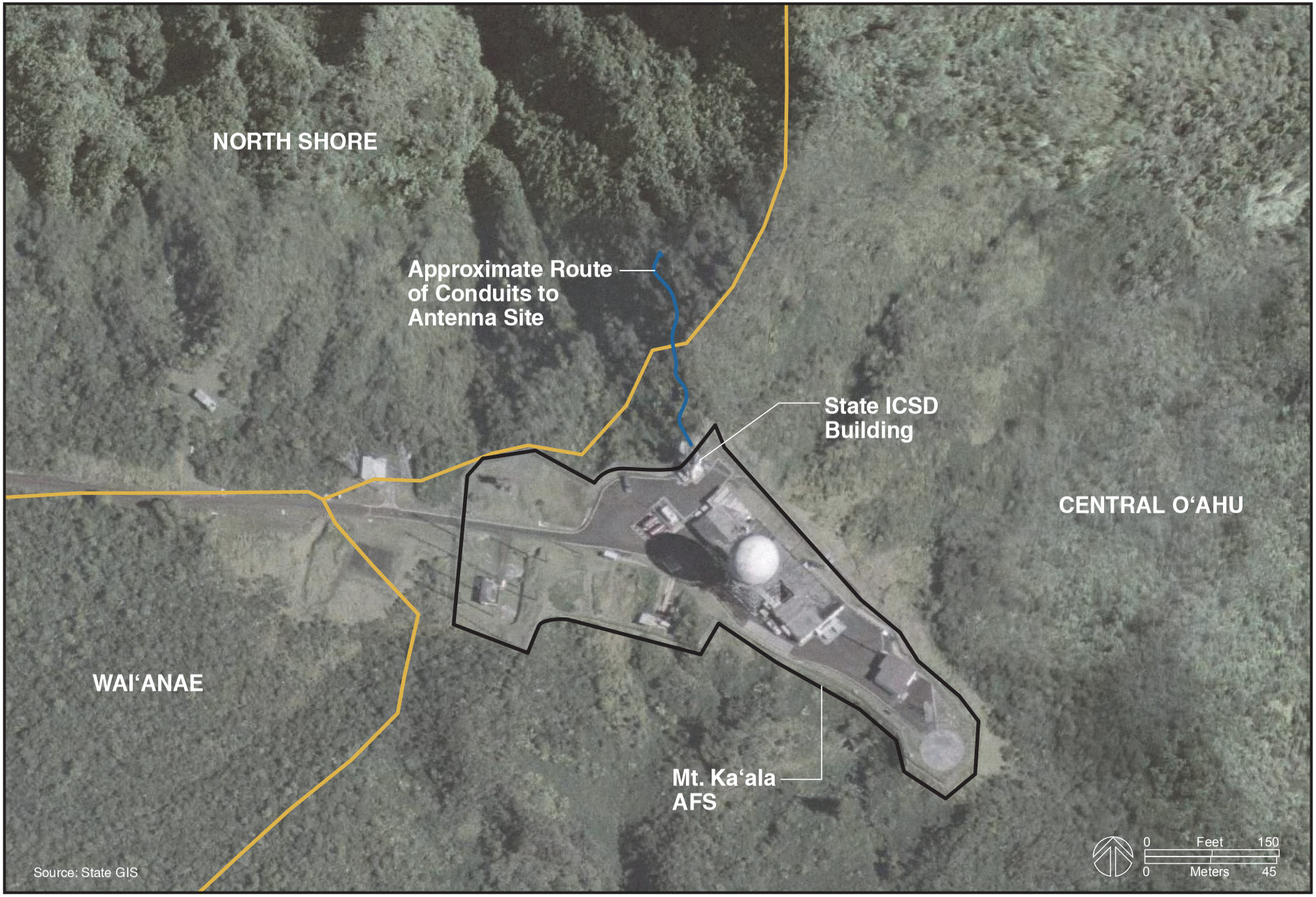
The *Central O'ahu Sustainable Communities Plan* was adopted in December 2002 as Ordinance No. 02-62, ROH. The Plan's policies support sustaining Central O'ahu's unique character, lifestyle, and economic opportunities by focusing future residential development on master planned suburban communities within an Urban Community Boundary, and on redevelopment around two transit centers in Waipahu.

Figure 5.3 shows the Urban Land Use Map from this community plan. Unfortunately, the Urban Land Use Map does not extend to the project area at Mt. Ka'ala. The land areas reaching up to the mountain range are shown as both "Military Training Area" and "Agriculture and Preservation Areas." Under the Plan's Open Space Map, upland areas are identified as either "Preservation Areas" or "Military Training Area." Therefore, Mt. Ka'ala summit area is presumed to be designated as Preservation Areas which is consistent with the area being within the State Conservation District.

The project's conformance and consistency with pertinent policies is addressed.

Section 2.2.8 Conservation of Natural Resources

- *Identifying and protecting endangered species habitats and other important ecological zones from threats such as fire, weeds, feral animals, and human activity;*

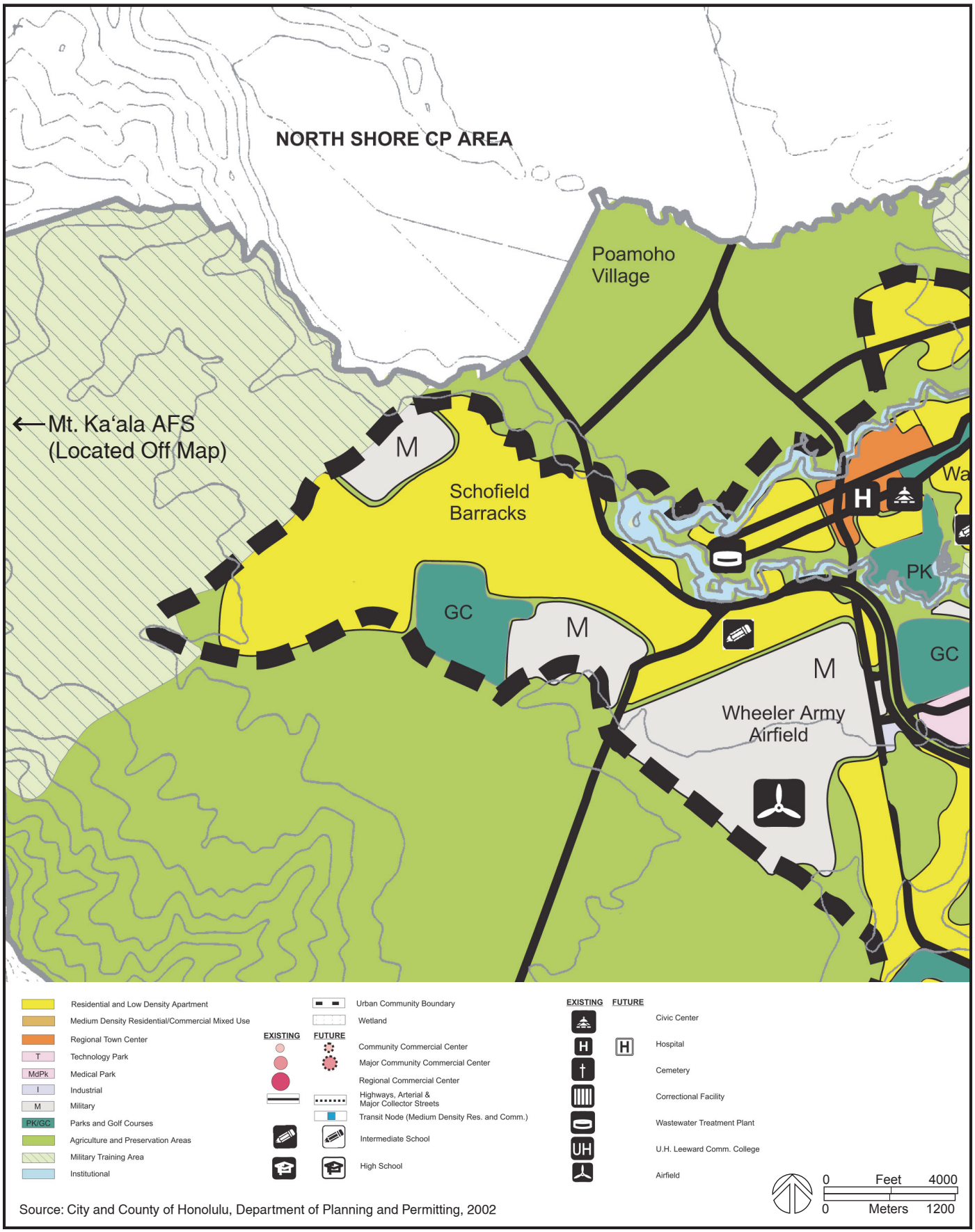


City Community Plan Districts

Figure 5.2

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division



Source: City and County of Honolulu, Department of Planning and Permitting, 2002

Central O'ahu Sustainable Communities Plan Urban Land Use Map

Figure 5.3

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Discussion: Project improvements should not adversely impact endangered species and habitat in the project area because the work consists of repair and renovation work on existing facilities predominantly within the fenced installation area. No endangered or threatened species were present in the project area based upon studies conducted, and best management practices will be incorporated into design plans for implementation by contractors to further minimize effects.

Section 3.1.4.1 Mountain Areas

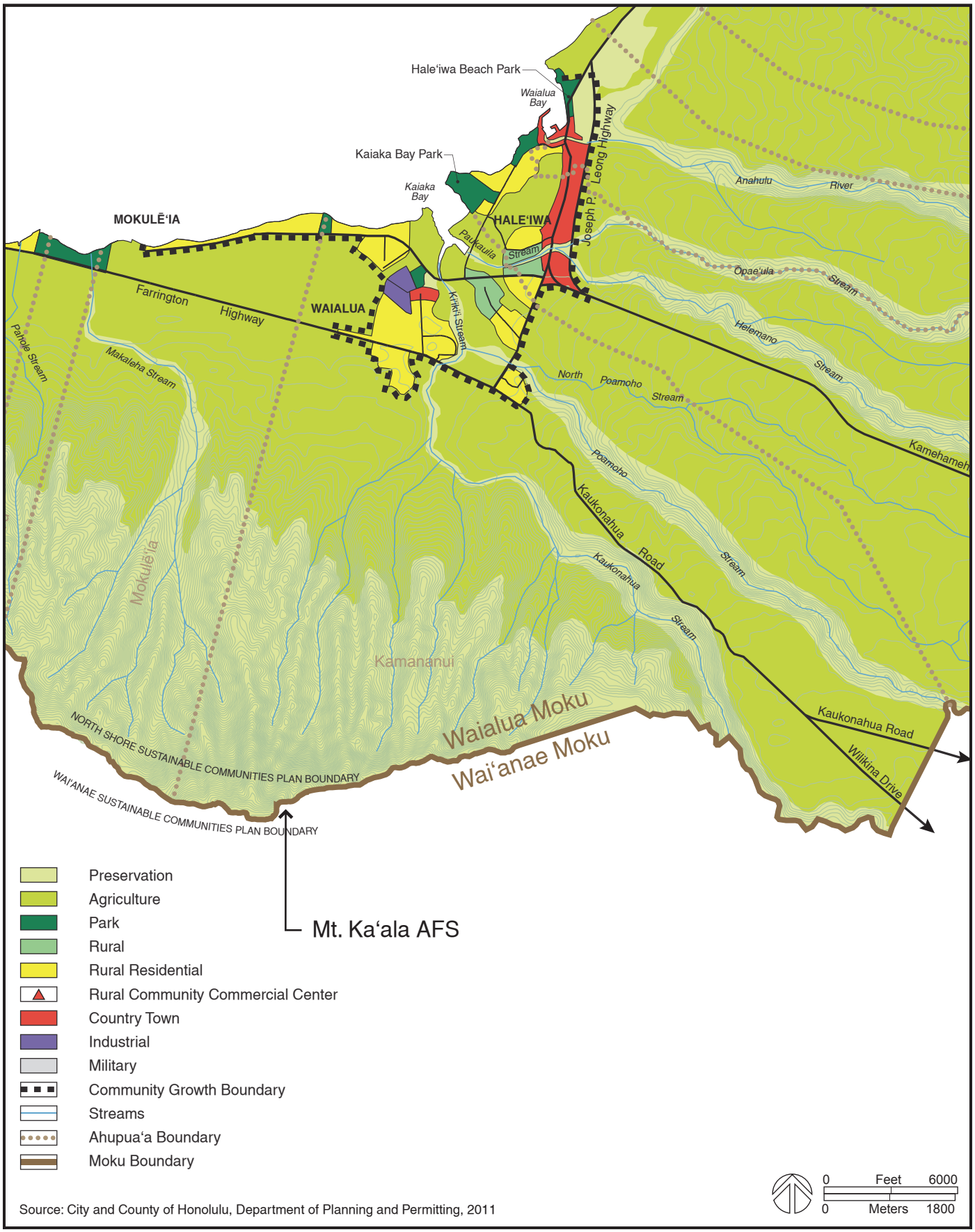
- *At higher elevations, in the State Conservation District, the forest should be maintained. Utility corridors and other uses should avoid disturbance to areas with high concentrations of native species.*
- *Endangered species habitats and other important ecological zones should be identified and protected from threats such as fire, weeds, feral animals and human activity.*

Discussion: Project improvements should not adversely affect forest areas because the work consists of repair and renovation work on existing facilities predominantly within the fenced installation area. Improvements within the forest reserve consists of additional conduit routed to the downhill antenna site that will be confined to narrow corridor. Best management practices will be incorporated into design plans for implementation by contractors to further minimize effects. Similarly, the improvements should not adversely impact endangered species and habitat in the area. No endangered or threatened species were present in the project area based upon studies conducted.

5.4.2 North Shore Sustainable Communities Plan

The *North Shore Sustainable Communities Plan* was adopted in May 2011 as Ordinance No. 11-3, ROH. The Plan's policies support maintaining the rural character, agricultural lands, open space, natural environment, recreational resources and scenic beauty of this district, in contrast to more urbanized areas of O'ahu such as the Primary Urban Center and 'Ewa. The Plan limits growth to "infill" areas within or adjacent to built-up areas to accommodate existing and future housing and employment needs, and strives to maintain the region's population at 1.7 percent of the island-wide population for the year 2025.

Figure 5.4 shows the Urban Land Use Map from this community plan. The Mt. Ka'ala AFS and project area are designated as "Preservation" which is consistent with the area being classified as Conservation under the State land use districts. The project's conformance and consistency with pertinent policies is addressed.



Source: City and County of Honolulu, Department of Planning and Permitting, 2011

North Shore Sustainable Communities Plan Urban Land Use Map

Figure 5.4

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Section 3.1 Open Space and Natural Environment
Section 3.1.1 Policies

- *Protect and enhance significant natural features and ecologically sensitive lands, including mountain areas, shoreline areas, wetlands, fishponds, natural gulches, streams and drainageways. Provide protective buffer zones and setbacks around biologically sensitive areas to minimize habitat disturbance.*
- *Protect forested areas and promote expansion of these areas through reforestation to ensure the long-term preservation of native species, watershed protection and aesthetic enhancement. Possible candidate sites that may be eligible for future Natural Area Reserves should be protected, including the Central Ko'olau Mountains, Upper Makaleha adjacent to Pahole Natural Area Reserve, and areas adjacent to Ka'ena Point.*

Discussion: Project improvements should not adversely affect the natural features of Mt. Ka'ala and surrounding forest reserve because the work consists of repair and renovation work on existing facilities predominantly within the fenced installation area. Improvements within the forest reserve consist of the additional conduit routed to the downhill antenna site that will be confined to a narrow corridor. Best management practices will be incorporated into design plans for implementation by contractors to further minimize effects. Similarly, the improvements should not adversely impact endangered species and habitat in the area. No endangered or threatened species were present in the project area based upon studies conducted. A CDUP and Special Use Permit from the Board of Land and Natural Resources for work within the Conservation District and NARS will be obtained to further ensure the overall condition of this area is preserved.

- *Limit visual impacts from utility installations. Ensure that permitted utility installations are developed and/or managed in ways that maintain or enhance the natural, cultural, and scenic resource qualities of the surrounding landscape*

Discussion: Project improvements should not have a significant impact on existing visual resources associated with Mt. Ka'ala and mountain range as discussed in Chapter 4. Most of the improvements would be within or associated with the existing State building that is already not visible from public viewing areas. Conduits added for the downhill antenna site will be placed above ground on improved cable supports about two feet above the ground, and will be shielded by surrounding vegetation. Views of this tower should not be visible from the North Shore's coastline and major highways due to this site's distance away from viewing areas.

Section 3.1.2.1 Mountain Areas

- *Maintain, protect and restore native forests and ecosystems within the State Conservation District and lands designated Preservation on the North Shore Sustainable Communities Plan Land Use Map. Ensure the protection of State*

conservation lands, especially those on the Ka‘ena coastline and Mokulē‘ia foothills.

- *Identify and protect endangered species habitats, native ecosystems, and other important ecologically sensitive areas, including the natural area reserves and forest reserves, from such threats as fire, alien species, feral animals, and human activity.*

Discussion: Project improvements should not adversely affect forest areas because the work consists of repair and renovation work on existing facilities predominantly within the fenced installation area as already discussed. Improvements should not adversely impact endangered species and habitat in the project area. No endangered or threatened species were present in the project area based upon studies conducted, and best management practices will be incorporated into design plans for implementation by contractors to further minimize effects. A CDUP and Special Use Permit from the Board of Land and Natural Resources for work within the Conservation District and NARS will be obtained to further ensure the overall condition of this area is preserved.

Section 3.1.2.7 Scenic Resources and Scenic Views

- *Views of the Wai‘anae and Ko‘olau Mountains, the Pacific Ocean and shoreline, Waialua and Hale‘iwa towns from Kamehameha Highway and Kaukonahua Road as one enters into the North Shore.*
- *Mauka views of the Wai‘anae Mountains from Farrington Highway, Kaukonahua Road, Kamehameha Highway, and Weed Junction.*
- *Views of the Wai‘anae Mountain Range and agricultural fields from Crozier Drive.*
- *Site new antennas, telecommunication equipment and alternative energy systems in appropriate locations to minimize their impact on visual resources. Encourage site clustering and techniques that blend the equipment into the natural landscape.*

Discussion: Project improvements should not have a significant impact on existing *mauka* views from roadways and visual resources associated with Mt. Ka‘ala and mountain range as discussed in Chapter 4. Most of the improvements would be within or associated with the existing State building that is already not visible. Conduits added for the downhill antenna site will be placed above ground on improved cable supports about two feet above the ground. These conduits would not be visible and existing surrounding vegetation would be taller shielding any views of it. Views of this tower should not be visible from the North Shore’s coastline and major highways due to this site’s distance away from viewing areas.

Section 3.4 *Historic and Cultural Resources*
Section 3.4.1 *Policies*

- *Preserve and protect significant cultural and historic features from earlier periods.*

Discussion: There are no historic properties present in the project area, and proposed improvements should not significantly impact cultural resources associated with Mt. Ka'ala. Proposed activities consist of repair and renovation work on existing State facilities at Mt. Ka'ala, and therefore should not significantly impact the natural beauty and cultural resources associated with this summit.

Section 4.8 *Public Safety Facilities*
Section 4.8.1 *Policies*

- *Promote an integrated approach to public safety on the North Shore, which will enable police, fire, ocean safety, civil defense, and emergency medical efforts to share resources and information, as appropriate.*
- *Provide adequate staffing and facilities to ensure effective and efficient delivery of basic government service and protection of public safety.*

Discussion: Improvements would ensure the State's telecommunication facilities are adequate to support existing and future ICSD needs to accomplish their various missions related to public safety, emergency services, disaster response, and essential government operations.

Section 4.9 *Other Community Facilities*
Section 4.8.1 *Policies*

- *Encourage co-location of antennae; towers should host the facilities of more than one service provider to minimize their proliferation and reduce visual impacts.*
- *Mount antennae onto existing buildings or structures so that public scenic views and open spaces will not be negatively affected. However, except for the occupant's personal use, antennae on single-family dwelling roofs in residential districts are not appropriate.*
- *Use "stealth" technology (e.g., towers disguised as trees) especially on free-standing antenna towers in order to blend in with the surrounding environment and minimize visual impacts.*

Discussion: The project involves repair and renovation improvements to existing State facilities most of which are located within the Mt. Ka'ala AFS. This installation supports telecommunication antenna and equipment used by several government agencies located within the site. Several antennas will be mounted to the proposed replacement tower to meet clearance requirements and support future telecommunication requirements by the State ICSD which is consistent with the policy to encourage co-location of these facilities. As previously discussed, these antennas and tower are not expected to have a

significant impact on existing *mauka* views from roadways and visual resources associated with Mt. Ka‘ala and mountain range. Stealth technology would not be appropriate for antennas located within this secure installation. Such screening would be more appropriate for other types of utility company cellular antennas that are commonly located on buildings or open areas within more urban settings.

5.5 CITY SPECIAL MANAGEMENT AREA

The Mt. Ka‘ala AFS and State’s downhill antenna site are not located within the City’s Special Management Area (SMA). Therefore, the proposed project is not subject to the requirements of Chapter 25, ROH.

5.6 CITY ZONING REGULATIONS

Permitted land uses and activities under the City’s jurisdiction are prescribed under Chapter 21, Land Use Ordinance (LUO) of the City’s *Revised Ordinances of Honolulu, as amended* (City, 1990). The Mt. Ka‘ala summit area and associated mountain range are zoned P-1, Restricted Preservation District. Restricted Preservation District (P-1) areas are governed by the State DLNR because this area is designated as State Conservation District. Conservation District designated lands fall under the jurisdiction of the State BLNR, and permitted uses are regulated under Section 13-5-23, HAR.

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CHAPTER 6
CONFORMANCE WITH FEDERAL PLANS AND POLICIES

This chapter discusses the project's conformance with Federal laws and consultations policies that are pertinent to implementing the Proposed Action.

6.1 NATIONAL ENVIRONMENTAL POLICY ACT

The Proposed Action is subject to compliance with the National Environmental Policy Act (NEPA) due to the use of Federal funds from the U.S. Coast Guard for the replacement of an existing telecommunications tower, and because improvements will also occur on Federal property owned by the U.S. Army as part of the Schofield Barracks Military Reservation. A joint State and Federal environmental document has been prepared to satisfy NEPA requirements. This document was prepared in coordination with the U.S. Coast Guard and in compliance with their NEPA implementation regulations and guidelines prescribed under the U.S. Department of Homeland Security Management Directive 5100.0 (issued April 19, 2006).

Upon publication of the Draft EA, the U.S. Coast Guard reviewed comments received and evaluated whether the Proposed Action would have a significant impact on the surrounding environment. This Final Environmental Assessment has been prepared, and a Finding of No Significant Impact is warranted. A Decision Notice will be prepared and published notifying the public of this decision.

6.2 NATIONAL HISTORIC PRESERVATION ACT

The National Historic Preservation Act (NHPA) of 1966, as amended (16 USC §470) recognizes the Nation's historic heritage and establishes a national policy for the preservation of historic properties as well as the National Register of Historic Places. Section 106 of the NHPA requires Federal agencies to take into account the effects of Federal undertakings on historic properties. The Section 106 process, as defined in 36 CFR §800, provides for the identification and evaluation of historic properties, for determining the effects of undertakings on such properties, and for developing ways to resolve adverse affects through the process of consultation.

This project is considered a Federal "undertaking" subject to Section 106 consultation under the NHPA. The USCG is the Federal Agency responsible for these requirements, and the State DAGS is serving as the Agency Official initiating this Section 106 consultation process. A preliminary "no historic properties affected" determination is being proposed for the project at this time based upon the documentation provided.

The environmental review process for this environmental assessment, and the information collected for it, was used to facilitate consultation efforts with parties to assess the project's effect. Comments received on the Draft EA document and Section 106 consultation efforts were considered in evaluating the project's final effect determination on historic properties, as

documented in this Final EA. Based upon these consultations a "no adverse effect" on historic properties determination has been issued by the USCG. This determination is consistent with the State Historic Preservation Division's position on this project.

6.2.1 Description of Undertaking

The undertaking consists of repair and renovation improvements to the State ICSD's existing telecommunication facilities at the Mt. Ka'ala AFS. Project background information, purpose and need for improvements, and description of improvements are provided in Chapter 2 of this document.

Area of Potential Effect

The "area of potential effect" (APE) on historic sites was established based upon the improvements planned and consists of the project area. The project area was estimated to be about 0.15 acres (6,534 square feet) and includes building repairs, replacement tower, electrical improvements, and conduit improvements to the antenna dish site along Kamaohanui Ridge. A conservatively large 20-foot-wide corridor for construction activity was used to estimate the area for the conduit route down the ridge. The completed route should only involve a corridor of about 8-feet-wide for access and maintenance. The archaeological study area was approximately 2.37 acres because it included the entire fenced area of the Mt. Ka'ala AFS installation. Figure 6.1 shows the project area in comparison to the archaeological study area.

The APE includes the area within which the project may directly or indirectly cause alterations to the use of a historic property. Based on available information, the project would not have visual, auditory, or other environmental impacts to any known archaeological historic properties located either inside or outside the project area. Therefore, the area of potential effect is the same as the project area which is about 0.15 acre.

Visual effects from the replacement tower were evaluated, and the area of potential visual effect was assessed from a distance of about one-half mile from the tower site. This area of visual effect extends from the installation partially down the slopes of Mt. Ka'ala, some of which are particularly steep from the west to north and southeast. As a result, views of the tower from most of these areas are difficult due to the existing terrain. These areas are not easily accessible to the public, and those who would have an opportunity for viewing in this direction would primarily consist of hikers to the summit.

Area of Potential Impact for Project

Figure 6.1

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

6.2.2 Identification of Historic Properties

An archaeological inventory survey investigation for the project was conducted by Cultural Surveys Hawai‘i, Inc., and Appendix F includes a copy of this report. The results of this study are discussed in Chapter 3 and portions are summarized here. Because no historic properties were identified in the survey area, this investigation is termed an archaeological assessment per Chapter 13-13-275-5, HAR.

The scope of the archaeological investigation included historical research of archival sources, historic maps, Land Commission Awards and previous archaeological reports. A field inspection of the project area was performed to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. Cultural consultation with several individuals was also conducted to solicit input on cultural issues and potential concerns with the project.

Results of Background Research

The State and the National Register of Historic Places do not list Mt. Ka‘ala as a registered historic property. A study of Kamananui was conducted by J. Gilbert McAllister in the 1930s. McAllister consulted with knowledgeable informants about both physical and legendary sites of this district. McAllister’s study identified 13 sites within the Kamananui *Ahupua‘a*, however, all of these sites are located over two miles from the Mt. Ka‘ala radio facility project site. In the Kamananui *Ahupua‘a*, the pattern of residences and burials appear to have been nearer to the coastline. There have been few archaeological studies in the vicinity of the Mt. Ka‘ala AFS, and it appeared unlikely any traditional Hawaiian archaeological finds would occur anywhere in the vicinity. Additional background information is provided in Chapter 3.

McAllister did identify a Luakini Fishpond (Site 212) that was once located on the summit of Mt. Ka‘ala based upon information provided by the informant Hookala. It was reported that fish were obtained from the fresh-water pond that has since become a swamp. Legends have also made reference to the mountain peak of Mt. Ka‘ala, as being symbolic of the Wai‘anae Range, serving as a forest resource, and having associations with a *mo‘o* goddess emphasizing the wetness of the summit.

Results of Fieldwork

A pedestrian survey around the entire Mt. Ka‘ala AFS facility was conducted, and nothing of archaeological interest was believed to be present. Most of the summit facilities were enclosed within a high chain link and barbed wire topped fence. The immediate area of the State building site had clearly been graded for the contemporary construction of facilities.

A main focus of the survey was the short stretch of ridge extending to the north where an antennae dish will be relocated and additional conduits are proposed along the current path. The proposed lower antennae dish location had been previously modified to support an antennae dish. It seems unlikely there ever was any modification of this heavily vegetated ridge until modern times (major trails follow other more suitable ridges).

Pedestrian inspection of the project area confirmed the findings of the background research. No pre-contact features were located during the field inspection. No historic properties, cultural deposits, or cultural materials were found within the proposed project area.

Although there were no historic sites found within the project area, the summit of Mt. Ka‘ala is likely eligible for inclusion in the National Register of Historic Places as a traditional cultural property due to the prominence of legendary and cultural associations, Hawaiian deities, and the location of a former Luakini Fishpond. The Office of Hawaiian Affairs (OHA) also assigns cultural and religious significance to the summit of Mt. Ka‘ala. The SHPD has also stated that the summit is probably eligible as a traditional cultural property in an April 5, 2002 letter[1].

Consultation was initiated by CSH with seven individuals or representatives of native Hawaiian organizations to obtain any comments on cultural issues pertaining to this project on Mt. Ka‘ala. A draft of the archaeological assessment report was provided to them for review along with a cover letter requesting their input in June 2011. The representatives and organizations are listed below:

	Representative	Organization
1.	Au, Kawika President	Waialua Hawaiian Civic Club
2.	Ayau, Halealoha	Hui Mālama I Na Kupuna ‘O Hawai`i Nei
3.	Cachola, Fred	Knowledgeable about Historic Sites, Wahipana, Heiau
4.	Kāne, Shad	O‘ahu Island Burial Council, Nā Koa ‘O Pālehua, Association of Hawaiian Civic Club’s Historic Preservation Committee
5.	Kekipi, Velma	Aloha Hawaiian Civic Club of Wahiawā
6.	Lenchanko, Tom	Hawaiian Civic Club of Wahiawā, President
7.	Shirai, Thomas	OHA-Native Hawaiian Historic Preservation Council, Past Member O‘ahu Island Burial Council, Lineal Descendant, Cultural and Historical Traditions of Waialua

[1] Letter dated April 5, 2002 from SHPD Administrator to J.M. Waller Associates, Inc.

Substantive comments were received from three of these individuals, and are summarized below.

1. Generally supportive of the necessary upgrade.
2. Comments which raise the issue of the jurisdiction of United States law on Hawaiian Kingdom national lands, and requested confirmation of lawful ownership of the subject land.
3. Comments that based upon information provided, Mt. Ka‘ala was the receptacle of Kane‘s water, “Wai ‘O Kane”, and resides on a natural elevated platform that would indicate important cultural significance in ancient times. There were also comments that because the project seemed to be one of renovation with minimal impact and within the previous footprint, the improvements can be supported, provided efforts are implemented to protect its ecosystem, the native plants, and wetlands.

Section 106 Consultations

Letters with supporting documentation on the project were distributed to several organizations and individuals on October 12, 2011 for review and comments as part of the Section 106 consultation process. A copy of the typical letter and information provided is included in Appendix A. Comments received on the Draft EA document and these Section 106 consultation efforts were also considered in evaluating the project’s effect determination on historic properties. The distribution of this material was sent to the organizations listed below. Comments were received from a total of six organizations or individuals as indicated by “»” next to them, and copies are included in Appendix A.

- State Department of Land and Natural Resources (DLNR), Director
» Historic Preservation Division, DLNR, Administrator
- History and Culture, Historic Preservation Division, DLNR, Branch Chief
» Office of Hawaiian Affairs, Administrator
- Historic Hawai‘i Foundation, Executive Director
- Hui Mālama I Nā Kūpuna ‘O Hawai‘i Nei
- Division of Forestry and Wildlife, DLNR, Administrator
- Division of State Parks, DLNR, Administrator
» Office of Conservation and Coastal Lands (OCCL), DLNR, Administrator
- O‘ahu Island Burial Council, Chair
» City Department of Planning and Permitting (DPP), Director
- Wahiawā Neighborhood Board No. 26, Chair
- Wai‘anae Coast Neighborhood Board No. 24, Chair
- North Shore Neighborhood Board No. 27, Chair
- O‘ahu Council of the Association of Hawaiian Civic Clubs, President
- Waialua Hawaiian Civic Club, President
» Hawaiian Civic Club of Wahiawā, President
- Nā Koa ‘O Pālehua

- Office of Hawaiian Affairs, Native Hawaiian Historic Preservation Council, Representative
- Mr. Fred Cachola
- » Mr. Michael Sheehan (*Note: information provided by others*)

A summary of comments along with discussion addressing them is provided.

1. SHPD commented that the installation will likely be eligible for the National Register of Historic Places (NRHP) under Criteria A (events) for its association with the Cold War era communications. Their records show no known historic properties within or near the State radio facility site that has already been disturbed for similar activities. It is unlikely that any archaeological or historic resources exist, however, Mt. Ka'ala could be a traditional cultural property significant to native Hawaiians. SHPD believes the project presents no adverse effect.

   <u>Discussion:</u> *The results of the archaeological assessment confirmed that no archaeological or historic sites will be impacted by the project, and the summit of Mt. Ka'ala are addressed as a traditional cultural property.*

2. OHA commented that they look forward to seeing the project completed in compliance with applicable laws. They would like Federal agencies to retain ultimate responsibility and jurisdiction over the Section 106 process when certain responsibilities are delegated to the State. OHA believes that a no adverse effect determination is appropriate for this project. OHA does assign cultural and religious significance to the summit of Mt. Ka'ala and believes it qualifies as a traditional cultural property. An area of potential visual effect from the replacement tower should be evaluated from a distance of a half-mile, but the no adverse effect determination should still be appropriate. Other comments were related to the archaeological assessment study conducted, and OHA would like confirmation that these comments are transmitted to both the State DAGS and USCG for their review.

   <u>Discussion:</u> *The USCG retains ultimate responsibility for the Section 106 process, and coordination has been conducted with them concerning this project and overall consultation efforts. Comments received under the 106 process have been provided to both State DAGS and the USCG for their review and consideration. The summit of Mt. Ka'ala will be addressed as a traditional cultural property, and a half-mile will be used in evaluating visual effects from the project. Revisions have been incorporated into the archaeological assessment study to address OHA's comments.*

3. OCCL commented that the project is considered a public purpose use under their rules (§13-5-22, HAR), and will require a Board Permit and public hearing. Other comments concerned a fuel tank and runoff.

   <u>Discussion:</u> *A Conservation District Use Permit application will be submitted for processing and approval by the Land Board (Board Permit) which will include a public hearing. The existing fuel tank is owned by the FAA and the project will not*

impact or involve its use. Additional information addressing best management practices are incorporated in the Final EA as appropriate.

4. DPP commented that the project is within the State Conservation District, is zoned P-1, Restricted Preservation, and is not within the Special Management Area. The City has no zoning jurisdiction over the site and will not be providing comments on the project.

   Discussion: The land use information was noted and addressed in the Final EA.

5. Individual comments raised the issue of the jurisdiction of United States law on Hawaiian Kingdom national lands, and requested confirmation of lawful ownership of the subject land.

   Discussion: The Federal property associated with the installation and surrounding area is owned by the U.S. Army as discussed in this document. In addition, portions of the property associated with the Mt. Ka'ala AFS are owned by both the U.S. Department of Army and State of Hawai'i.

6. Inquiry if an endangered species mitigation plan and habitat conservation plan have been created, and whether an incidental take permit has been applied for this project.

   Discussion: Consultation with the FWS determined that an endangered species mitigation plan, habitat conservation plan, and an incidental take permit are not required.

6.2.3 Evaluation of Project Effects

The systematic pedestrian inspection conducted of the project area did not identify any historic properties being present. Furthermore, virtually the entire project area has been impacted by the previous construction of present facilities at the Mt. Ka'ala AFS site. These findings were generally consistent with expectations for the project area based on historical and previous archaeological research. Consultation with the SHPD has also confirmed this finding.

The summit of Mt. Ka'ala is probably eligible for inclusion on the NRHP as a traditional cultural property as expressed by both OHA and SHPD due to the summit's cultural and religious significance. Therefore, an assessment was conducted to evaluate the project's effects on the summit of Mt. Ka'ala. The assessment focused primarily on the visual impact associated with the replacement tower because other repair and renovation improvements would occur to existing facilities within the installation and along an existing conduit route to a current downhill antenna site. These other improvements would not adversely affect the summit of Mt. Ka'ala or have significant visual impacts. Most of the improvements would occur within the existing State building or underground within paved areas of the installation.

From a distance of about one-half mile from the tower site, views of the replacement tower are problematic from many areas due to the existing rugged and steep terrain and mountain cliffs.

Most areas are not easily accessible to the public, and individuals who reach the area would mainly consist of hikers to the summit following established trails. Hikers use of the Mt. Ka‘ala Access Road is also prohibited because it is for official use only.

The replacement tower would be 50 feet tall in comparison to the existing 25-foot-tall tower. This new tower would be situated within the existing installation which already has several other telecommunication towers and antennas of similar height (50 feet tall). Therefore, the replacement tower should not have a significant visual impact because views toward the tower would be difficult from a half-mile away to several miles away from public roadways and highways along the coastline as discussed in Section 4.10.

Thus, the replacement tower would not introduce visual or audible elements that are out of character with the existing Mt. Ka‘ala AFS or alter the setting of this telecommunications installation at the summit of Mt. Ka‘ala. The tower would not isolate the summit of Mt. Ka‘ala from its surrounding character or significantly alter of the character of the summit’s setting. The Luakini Fishpond is no longer present, and the tower would not be located within the nearby bog or have significant impacts to it as discussed in other sections of this document.

The prominence of legendary, symbolic, and cultural associations with the summit being the highest point of the Wai‘anae Range and the island of O‘ahu would not be changed. Other legendary associations emphasizing the wetness of the summit and the general wildness of the area would similarly continue with the replacement tower because it is located within the existing installation. Therefore, the replacement tower should not have an adverse effect on the property, character, or setting of the summit of Mt. Ka‘ala.

6.2.4 Proposed Project Effect Determination

The project consists of repair of and renovation work to existing State facilities, and best management practices will be implemented to minimize temporary effects on the surrounding environment from construction activities. Biological studies have been conducted and determined the improvements should not negatively affect threatened and endangered plants, avifauna, mammals, and invertebrate. Once completed, there should be no long-term effect because the State radio facility is un-manned.

No historic properties, cultural deposits, or cultural materials were identified within the area of potential effect. Land clearing for existing facilities likely impacted or eliminated any possible surface or subsurface historic properties that may have existed within the project area. An assessment of the summit of Mt. Ka‘ala, which is probably eligible for inclusion in the NRHP as a traditional cultural property, also determined that the project should not have an adverse effect on the property, character, or setting. Consequently, after conducting this assessment and evaluating comments received, the effect determination proposed for the project is “no adverse effect” on historic properties.

6.3 COASTAL ZONE MANAGEMENT ACT

The State's Coastal Zone Management (CZM) policies and regulations prescribed under Chapter 205A, HRS implements the Federal Coastal Zone Management Act (CZMA) of 1972. The coastal zone management area is defined to include all lands of the State and the area extending seaward from the shoreline to the limit of the State's management authority. As a result, the project is within this area and subject to being consistent with the CZM program objectives and policies.

The Proposed Action would be consistent with the following pertinent CZM policies and subsequently their associated objectives as discussed below.

A. Objectives:

1. *Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*
2. *Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.*
3. *Provide public or private facilities and improvements important to the State's economy in suitable locations.*
4. *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*

B. Policies:

1. *Historic Resources:*
   a. *Identify and analyze significant archaeological resources;*
   b. *Maximize information retention through preservation of remains and artifacts or salvage operations; and*
   c. *Support state goals for protection, restoration, interpretation, and display of historic resources.*

Discussion: An archaeological assessment was conducted for this project to identify significant historic sites that may be affected by the project. The results determined there were no historic properties present in the project area, and proposed improvements should not significantly impact cultural resources associated with Mt. Ka'ala. Proposed activities consist of repair and renovation work on existing State facilities at Mt. Ka'ala, and should not significantly impact the natural beauty and cultural resources associated with this summit. These efforts, coupled with this environmental review process, support the State's goals for protection of historic resources.

3. *Scenic and Open Space Resources:*
   a. *Identify valued scenic resources in the coastal zone management area;*
   b. *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the*

alteration of natural landforms and existing public views to and along the shoreline;

Discussion: Project improvements should not have a significant impact on existing *mauka* views from roadways and visual resources associated with Mt. Ka‘ala and the Wai‘anae Mountain Range as discussed in Chapters 3 and 4. Most of the improvements would be within or associated with the existing State building that is already not visible. Conduits added for the downhill antenna site will be placed above ground on improved cable supports about two feet above the ground. These conduits would not be visible in large part due to existing surrounding vegetation shielding views of it. Thus, views of this antenna tower should not be visible from the North Shore's coastline and major highways due to this site's distance away from viewing areas.

6. Coastal hazards:

a. Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;

b. Ensure that developments comply with requirements of the Federal Flood Insurance Program; and

c. Prevent coastal flooding from inland projects.

Discussion: Improvements would ensure the State's telecommunication facilities are adequate to support existing and future ICSD needs that accomplish their various missions related to public safety, emergency services, disaster response, and essential government operations. Proposed improvements consist of repair and renovation work on existing State facilities at Mt. Ka‘ala, and should not cause coastal flooding or significant flood related impacts. The project area is not within the floodway and is not subject to the requirements of the Federal Flood Insurance Program.

7. Managing Development:

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

Discussion: This environmental document addresses the short and long-term impacts of project improvements, and its distribution during the public review process supports communication of information to the public. Other pre-assessment consultation efforts have been implemented to facilitate public input on this project.

8. *Public participation;*
   a. *Promote public involvement in coastal zone management processes;*
   b. *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and*

Discussion: The publication and processing of this environmental document allows for information to be distributed to the public and for public participation to address comments and concerns associated with the project. The environmental assessment will also comply with this policy through its use in the submittal of applications for a Conservation District Use Permit and Special Use Permit within the Mt. Ka'ala NAR system. The processing of these applications by the State DLNR will involve public hearings as well as the review and approval by the BLNR.

6.4 ENDANGERED SPECIES ACT

Under Section 7 of the Endangered Species Act (ESA) (16 USC §1531 *et seq*.), consultation with the FWS is required to address project effects on federally listed endangered and threatened plants and animals. The USCG is the project's funding participant and the Federal Agency responsible for this document's compliance with NEPA. This project is not considered a "major construction activity" and "informal consultation" is being conducted with the FWS under these requirements. This consultation is being conducted to ensure that the project is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Based upon this consultation, the FWS has concurred that the project is not likely to adversely affect listed species or designated critical habitat in their December 20, 2011 letter to the USCG. A copy of this FWS letter is included in Appendix A.

6.4.1 Coordination with the Fish and Wildlife Service

Informal consultation has been initiated with the FWS seeking concurrence that the project will "Not Likely Adversely Affect" (NLAA) any listed endangered and threatened species or any federally designated critical habitat. Such informal consultation efforts have included letters, phone conversations, and emails with FWS staff regarding the proposed improvements. A formal request letter for NLAA concurrence dated October 20, 2011 was submitted to the FWS for their review and determination, and is included in Appendix A.

The USCG sent the FWS a letter requesting technical assistance pursuant to Section 7 dated April 25, 2011. The FWS indicating the following in their response letter dated May 27, 2011 (USFWS Log# 2011-TA-0264).

1. Information in the FWS files indicated that the project footprint is within designated critical habitat for the following endangered species; *Cyanea acuminate, Cyanea*

longiflora, Labordia cyrtandrea, Phyllostegia hirsuta, Alsinidendron trinerve, Diplazium molokaiense, and the Hawaiian picture-wing fly (*Drosophila substenoptera*).

2. The project should determine whether the endangered Hawaiian tree snail, *Achatineila mustelina*, is currently using resources within the disturbance corridor.
3. The proposed action also has the potential to impact the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), the endangered Hawaiian Petrel (*Pterodroma sandwichensis*), and the threatened Newell's Shearwater (*Puffinus auricularis newelli*).

Following receipt of this letter, there were several telephone conversations and email communications with FWS staff regarding the framework and contents of information to be included in the NLAA concurrence letter prepared. After FWS review of this NLAA concurrence letter, a December 20, 2011 letter was issued by the FWS concurring with the NLAA determination and completing this informal consultation process.

6.4.2 Modification of Critical Habitat

Critical Habitat unit boundaries for the eight species identified in the FWS letter were mapped in relation to preliminary design plans for project improvements using the coordinates published in the final rules for all of these species. Most of the repair and renovation improvements would occur within the secure fenced area of the installation comprised of the State building, paved areas for parking and pavement, and short mowed grass for the existing State tower. The conduit route down the ridge to the State's other antenna site is composed of native-dominated elfin cloud forest.

Figure 3.4 previously showed the critical habitat area for botanical resources in relation to project improvements which involve *Alsinidendron trinerve* and *Labordia cyrtandrea*. This figure showed that only a portion of the conduit's route down to the existing antenna dish site would occur within critical habitat area for two listed plant species. Critical Habitat for the endangered O'ahu 'Elepaio (*Chasiempis ibidis*) were also mapped in relation to preliminary design drawings for project improvements. This critical habitat area encompasses 5,657 acres, and thus includes the entire Mt. Ka'ala summit and most of the Wai'anae Mountain Range. Based upon this mapping exercise, it was determined that project improvements will modify a total of 0.093 acres (4,051 square feet) of Critical Habitat for three listed species which are; *Alsinidendron trinerve*, *Labordia cyrtandrea,* and O'ahu 'Elepaio.

The proposed action will modify 0.093 acres of *Alsinidendron trinerve* Critical Habitat within O'ahu Unit 4, which represents 0.062 percent of the 159-acre polygon designated for this species within the 9,689-acres of Unit 4. The habitat that will be modified has already been modified by the prior construction and ongoing maintenance of the existing conduit route and dish antenna site in the same location down Kamaohanui Ridge.

The proposed action will modify 0.093 acres of *Labordia cyrtandrea* Critical Habitat within O‘ahu Unit 4, which represents 0.023 percent of the 397-acre polygon designated for this species within the 9,689-acres of Unit 4. This represents 0.003 percent of the total 2,487-acres of Critical Habitat designated for this species on O‘ahu. As with the *Alsinidendron trinerve*, the habitat that will be modified has already been modified by the construction and ongoing maintenance of the existing conduit route and dish antenna site in the same location down Kamaohanui Ridge.

The site is within the federally designated O‘ahu ‘Elepaio, Critical Habitat Unit #1, Northern Wai‘anae Mountains. This represents 0.0008 percent of the 11,005 acres of designated Critical Habitat within Unit 1, and 0.0001 percent of the approximately 65,879 acres of Critical Habitat designated for this species.

As previously discussed in Chapter 3, the FWS estimated that there was a resident ‘Elepaio population of three birds within the Mt. Ka‘ala Natural Area Reserve, but no known breeding pairs. O‘ahu ‘Elepaio are usually found in lower elevation and taller stature mixed forest than is found within the project area at the top of Mt. Ka‘ala. The proposed action will modify 0.093 acres of 'Elepaio Critical Habitat, which represents 0.002% of the 5,657 acres of Unit #1. The habitat that will be modified has already been modified by the construction and on-going maintenance of the existing State facilities in the same location within the installation along with the existing conduit route and dish antenna site down Kamaohanui Ridge.

6.4.3 Potential Impacts to Protected Species

Botanical, invertebrate, avian and mammalian studies were conducted on the site and adjoining area as discussed in Chapter 3, and the technical reports documenting their findings are included in Appendices to this document. No botanical, invertebrate, avian or mammalian species currently proposed, or listed under the ESA were detected during the course of the surveys conducted.

Effects on Plant Species

The principal threat to native plant communities and listed plant species posed by this repair and renovation work are those associated with temporary construction related activities involving some vegetation clearing activities. These activities would predominantly apply to the downhill conduit route for which vegetation would be cut in areas to allow installation of improved above ground cable supports. Repair and renovation work within the installation would not require clearing of vegetation because areas disturbed consist of the building, pavement, and grass by the existing tower.

Native species dominated habitats present along the conduit corridor to the downhill antenna site are susceptible to degradation from introduced alien weedy species typically associated with ground disturbance and construction activities. There is also a potential risk that storm-water

runoff flowing down the conduit corridor during construction may result in erosion due to the terrain between the State building and the down-slope antenna site being quite steep. Measures to minimize both of these potential threats are presented in the minimization discussion.

Effects on Invertebrate Species

The principal potential threat posed by this project to native invertebrates, which involves the listed Hawaiian tree snail (*Achatinella mustelina*) and *Drosophila substenptera*, are actions associated with vegetation clearing activities during the construction phase of the project for the conduit. This action is not expected to result in deleterious impacts to these species because no *Achatinella mustelina* or *Drosophila substenptera* were recorded during the surveys conducted.

Effects on Avian Species

The principal potential threat to the threatened Newell's shearwater (*Puffinus auricularis newelli*) and endangered Hawaiian petrel (*Pterodroma sandwichensis*), posed by this project are actions associated with: 1) the installation of exterior lighting, and 2) the erection of structures that rise above the surrounding vegetation. Seabird species can be attracted to lights and are known to collide with buildings, light poles, wires, and other tall objects as they fly from the ocean to the mountains nesting sites, especially during the breeding season.

Nighttime construction work is not planned for this project, and no lighting would be installed as part of the conduit route down the ridge to the antenna dish site. Other work consists of repairs and renovations to the existing building and replacement tower. No new exterior lighting is planned for the State building. If any existing exterior lighting needs to be replaced, it will be shielded to reduce the potential for interactions of nocturnally flying seabirds. The new antenna structure is un-guyed, and will be painted white to be more readily visible to nocturnally active birds. Therefore, the proposed action will not result in deleterious impacts to these or any other seabird species.

Effects on Mammalian Species

The principal potential impact that the proposed action poses to endangered Hawaiian hoary bats (*Lasiurus cinereus semotus*) is during the clearing phases of construction for the conduit as vegetation is removed. Hawaiian hoary bats roost in both exotic and native woody vegetation. During the pupping season, female bats carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they themselves forage. Thus, very small pups may be unable to flee a tree that is being felled.

Potential adverse effect from such disturbance is proposed to be avoided or minimized by not clearing woody vegetation taller than 15-feet tall (4.6 meters), between June 15th and September 15th. This is the period in which bats are potentially at risk from vegetation clearing, and these

measures will mitigate impacts. There is no suitable roosting vegetation on the site for this species, and woody vegetation taller than 15 feet will not be cleared during the bat pupping season. Consequently, the proposed project is not expected to result in deleterious impacts to this species.

Minimization Measures

The following minimization measures, that were confirmed in the FWS concurrence letter, will be included in the construction contracts as special conditions.

1. All construction personnel shall be briefed on the sensitivity of the habitat present down-slope from the fenced facilities, and will be informed of the need to follow all restrictions, protocols and Best Management Practices contained in the special construction contract provisions.
2. To prevent the introduction of exotic invasive species into the sensitive native dominated ecosystem below the site, all project-related materials, equipment and construction personnel boots and clothing used on the project site shall be cleaned of seedy soils prior to use on the site.
3. Silt fencing and other appropriate Best Management Practices measures will be installed and maintained for the duration of the construction phase of the project to ensure that no construction debris is allowed to migrate down-slope into the forest.
4. Any cleared areas on steep slopes will be stabilized so as to ensure that erosion does not occur.
5. Construction personnel will be restricted to activities within the project disturbance corridor to prevent trampling or further degradation of the habitat outside of the disturbance corridor.
6. No personal pets will be allowed on the job site.
7. All trash, especially those created from human comestibles shall be properly disposed of and removed from the site as soon as possible.
8. If any vegetation replanting is proposed as part of this action, only native plants suitable for the habitat present on the site shall be used where practicable in consultation with State NARS program.
9. The new antennae structure will be un-guyed and painted white to be more readily visible to birds flying at night.
10. No woody vegetation taller than 15 feet (4.6 meters) will be cleared from June 1 to September 15.

6.5 CLEAN WATER ACT

6.5.1 Section 401

Section 401 of the Clean Water Act (CWA) of 1972 requires a Water Quality Certification (WQC) be obtained from an applicant for actions that require a Federal permit to conduct an activity, construction or operation that may result in a discharge into waters of the United States.

The State DOH, Clean Water Branch (CWB) implements this program issuing WQC permits for activities affecting jurisdictional waters.

A WQC would not be required for the Proposed Action because repair and renovation activities to existing State facilities at the Mt. Ka‘ala AFS and downhill antenna site will not require a Federal permit from the COE.

6.5.2 Section 402

Section 402 of the CWA established the NPDES general permit process for point and non-point source discharges such as storm water discharges associated with construction activities. The DOH-CWB administers the NPDES permit process for the State.

An Individual NPDES permit instead of a NPDES General Permit would apply for construction activities occurring within a natural area reserve or forest reserve such as the Mt. Ka‘ala NAR. The project area presently involves disturbing a land area of less than one acre due to the limited area covered by the repair and renovation improvements. Therefore, a NPDES Individual Permit may not be required from the State DOH-CWB for this project. However, other construction related areas, such as a baseyard, may combine with the project area to reach an acre is size. If so, then an NPDES Individual Permit would be obtained for the project.

6.5.3 Section 404

Section 404 of the CWA requires a permit from the COE for the discharge of dredged or fill material into a wetland, navigable water, or jurisdictional waters of the United States. The Mt. Ka‘ala Bog falls under the jurisdiction of the COE under Section 404, and streams starting below the summit of Mt. Ka‘ala would likely fall under the COE’s jurisdiction as well.

Project improvements proposed consist of repair and renovation activities to existing State facilities at the Mt. Ka‘ala AFS and downhill antenna site. No improvements or construction related activities will occur within the Mt. Ka‘ala Bog and there should not be a significant impact due to the limited nature of repair and restoration work. The bog area is situated to the west and south of the installation site, and the State building is situated on the northern end of the installation (refer to Figure 3.2). Storm water runoff discharged from these activities would predominantly flow away from this wetland to the north down the steep cliffs of Kamaohanui Ridge.

No improvements or construction related activities will occur within streams that start downhill of the Mt. Ka‘ala summit. Thus, no discharge of dredged or filling materials will occur within these streams, and the project should not require a Department of Army Permit under Section 404 of the CWA.

6.6 EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT

Executive Order 11988 requires the Federal agency to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains associated with the project area. The project needs to avoid construction or management practices that would adversely affect floodplains unless the agency finds that: 1) there is no practical alternative, and 2) the proposed action has been designed or modified to minimize harm to or within the floodplain.

The FIRM prepared for this project area determined that the Mt. Ka‘ala project area along with much of the surrounding area is classified as Zone D. This designation is for unstudied areas where flood hazards are undetermined, but flooding is possible. Because the Mt. Ka‘ala AFS is located at the summit of the mountain range, flooding is not expected to occur within this installation. Storm water would discharge from this site down the steep cliffs of Kamaohanui Ridge. There are streams that start down the cliffs of this summit, but no streams are present within the project area. Therefore, the repair and renovation improvements associated with this project will not have long or short-term adverse impacts associated with the occupancy and modification of floodplains.

6.7 EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS

Executive Order 11990 requires the Federal agency to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. The project needs to avoid construction or management practices that would adversely affect wetlands unless the agency finds that: 1) there is no practical alternative, and 2) the proposed action has been designed or modified to minimize harm to the wetlands.

As previously discussed, project improvements consist of repair and renovation activities to existing State facilities at the Mt. Ka‘ala AFS and downhill antenna site. No improvements or construction related activities will occur within the wetland due to the limited nature of repair and restoration work, and there not be a significant impact on the Mt. Ka‘ala Bog. The bog area is situated to the west and south of the installation site, and the State building is situated on the northern end of the installation (refer to Figure 3.2). Storm water runoff discharged from these activities would predominantly flow away from this wetland to the north down the steep cliffs of Kamaohanui Ridge. Therefore, project improvements will not result in the destruction, loss, or degradation of wetlands.

6.8 EXECUTIVE ORDER 12898 ENVIRONMENTAL JUSTICE

Executive Order 12898 (Environmental Justice) requires the Federal agency to identify and address disproportionately high and adverse environmental effects from the proposed action on minority and low-income populations. As discussed in Chapters 3 and 4, the project should not have disproportionately high and adverse environmental effects on environmental justice target

populations. No target populations of concern are located in the vicinity of the project area because the State facilities are situated at the summit of Mt. Ka‘ala and surrounding areas consist of the Wai‘anae Mountain Range. The land areas associated with this mountain range are also designated as State Conservation District restricting urbanized developments such as residential subdivisions.

Project improvements consist of repair and renovation improvements to the State’s existing telecommunication facilities at the Mt. Ka‘ala AFS. Therefore, no one segment of the population or geographic area would be disproportionately burdened by environmental impacts caused by these improvements or management of the site for government telecommunication operations. The public involvement process implemented along with this environmental review process provides opportunities for all persons to have meaningful involvement and input into the project plans and decisions.

6.9 FISH AND WILDLIFE COORDINATION ACT

The Fish and Wildlife Coordination Act is administered by the Federal agency, and is intended to protect fish and wildlife when Federal actions result in the control or modification of a natural stream or body of water. The agency takes into consideration the effect that water-related projects would have on fish and wildlife resources, take action to prevent loss or damage to these resources, and provide for the development and improvement of these resources.

The project is not expected to have a significant adverse effect on wildlife associated with the Mt. Ka‘ala NAR and associated mountain range habitat as discussed in several sections of this document. Consultation efforts with the FWS as part of Section 7 of the ESA has also been conducted to address project effects which essentially revolve around temporary construction activities. Necessary mitigative measures have been identified and will be implemented to minimize potential effects on wildlife.

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CHAPTER 7
CONSULTED AGENCIES AND ORGANIZATIONS

Consultations with various government agencies and community organizations have been conducted for this project as part of the process preparing this document. Such efforts consisted of distributing pre-assessment consultation letters to several agencies and organizations to obtain their input and comments on the project and the publication of the Draft EA for public review and comment. These consultation efforts are discussed in this Chapter, and copies of comments received are included in Appendix A of this document.

7.1 PRE-ASSESSMENT CONSULTATION

Consultation with various government agencies and community organization was undertaken to obtain information on agency requirements and potential issues so that they could be addressed in the Draft EA. Consultation involved distributing a pre-assessment consultation letter with supporting documentation to various parties requesting written comments. A listing of those parties consulted is below and those providing written responses have been identified with a "»" symbol. Copies of written comments received and responses to these comments are included in Appendix A.

<u>Federal Agencies</u>

U.S. Department of the Air Force, Pacific Air Forces
15th Civil Engineer Squadron
U.S. Department of Agriculture, Natural Resources Conservation Service
» U.S. Department of Army, Honolulu District, Corps of Engineers, Regulatory Branch
U.S. Department of Homeland Security, U.S. Coast Guard
» U.S. Department of Interior, Fish and Wildlife Services
U.S. Department of Navy, Naval Facilities Engineering Command, Hawaii
U.S. Department of Transportation, Federal Aviation Administration
U.S. Environmental Protection Agency, Region 9

<u>State of Hawai'i</u>

Department of Business, Economic Development and Tourism (DBEDT)
DBEDT, Director
DBEDT, Land Use Commission
DBEDT, Office of Planning
Department of Defense
Department of Education
Department of Health (DOH)
DOH, Director
DOH, Clean Water Branch
» DOH, Environmental Planning Office

State of Hawai‘i (continued)

Department of Land and Natural Resources (DLNR)
- DLNR, Chairperson
- DLNR, Commission on Water Resource Management
- DLNR, Division of Aquatic Resources
- DLNR, Division of Forestry and Wildlife
- DLNR, Division of State Parks
- » DLNR, Land Division
- DLNR, O‘ahu Island Burial Council
- » DLNR, Office of Conservation and Coastal Lands
- » DLNR, State Historic Preservation Division

» Department of Transportation

Hawaii Air National Guard
- 154th Support Group and Environmental Management Office
- 169th Aircraft Control and Warning Squadron

» Office of Hawaiian Affairs

City and County of Honolulu

» Board of Water Supply
» Department of Design and Construction
Department of Emergency Management
» Department of Planning & Permitting
Honolulu Fire Department
» Honolulu Police Department

Utilities, Elected Officials, and Organizations

Hawaiian Telcom
Hawaiian Electric Company, Inc.
Senator Maile Shimabukuro, 21st Senate District
Senator Donovan Dela Cruz, 22nd Senate District
»[1] Representative Jo Jordan, 45th Representative District
Representative Gil Riviere, 46th Representative District
Councilmember Ernest Martin, District 2
Wai‘anae Coast Neighborhood Board No. 24
Wahiawā-Whitmore Village Neighborhood Board No. 26
North Shore Neighborhood Board No. 27
Hawai‘i’s Thousand Friends
Sierra Club, Hawai‘i Chapter
The Nature Conservancy of Hawai‘i

[1] Email received March 2, 2011 just requesting a copy of the Draft EA in pdf file format on a CD. No response letter included.

7.2 DRAFT EA COMMENTS

The notice of the availability of the Draft EA for this ICSD Mt. Ka‘ala Radio Facilities Improvements Project was published in the November 23, 2011 issue of the State Office of Environmental Quality Control's *The Environmental Notice* initiating a 30-day public comment period that ended on December 22, 2011. Copies of the Draft EA were distributed to the following parties for review and comments or notification of its availability was provided.

Those parties that submitted comments are indicated by the symbol "»". Comment letters received from these parties along with corresponding response letters are included in Appendix A. This Final EA has incorporated additional information in response to comments received on the Draft EA.

Federal Agencies

U.S. Department of the Air Force
- 15th Civil Engineer Squadron, Pacific Air Forces
- 611 CES/CEAO, Asset Optimization
- Mt. Ka‘ala Joint Use Coordinating Committee

U.S. Department of Agriculture, Natural Resources Conservation Service

U.S. Department of Army
- Honolulu District, Corps of Engineers, Regulatory Branch
- Directorate of Public Works, Environmental Division, Cultural Resources Section
- » Directorate of Public Works, Environmental Division, Natural Resources Section

U.S. Department of Interior, Fish and Wildlife Services

U.S. Environmental Protection Agency, Pacific Islands Contact Office, Region 9

U.S. Department of Navy, Naval Facilities Engineering Command, Hawai‘i, Environmental Planning Division

» U.S. Department of Transportation, Federal Aviation Administration, Honolulu Airports District Office

State of Hawai‘i

Department of Business, Economic Development and Tourism (DBEDT)
- DBEDT, Director
- DBEDT, Land Use Commission
- DBEDT, Office of Planning

» Department of Defense, Office of the Director of Civil Defense

» Department of Education

State of Hawai‘i (continued)

Department of Health (DOH)
DOH, Director
» DOH, Clean Water Branch
» DOH, Environmental Planning Office
Department of Land and Natural Resources (DLNR)
DLNR, Chairperson
DLNR, Commission on Water Resource Management
DLNR, Division of Aquatic Resources
» DLNR, Division of Forestry and Wildlife
DLNR, Division of State Parks
» DLNR, Engineering Division
» DLNR, Land Division
DLNR, O‘ahu Island Burial Council
» DLNR, Office of Conservation and Coastal Lands
» DLNR, State Historic Preservation Division
» Department of Transportation
Hawaii Air National Guard
154th Support Group, Environmental Management Office
169th Aircraft Control and Warning Squadron
» Office of Hawaiian Affairs

City and County of Honolulu

» Department of Design and Construction
» Department of Emergency Management
» Honolulu Fire Department
Honolulu Police Department

Utilities, Elected Officials, and Organizations

Hawaiian Telcom
Hawaiian Electric Company, Inc.
Senator Maile Shimabukuro, 21st Senate District
Senator Donovan Dela Cruz, 22nd Senate District
Representative Jo Jordan, 45th Representative District
Representative Gil Riviere, 46th Representative District
Councilmember Ernest Martin, District 2
Wai‘anae Coast Neighborhood Board No. 24
Wahiawā-Whitmore Village Neighborhood Board No. 26
North Shore Neighborhood Board No. 27
Hawai‘i’s Thousand Friends

Utilities, Elected Officials, and Organizations (continued)

Hawaiian Civic Club of Wahiawā
Historic Hawai‘i Foundation
Hui Mālama I Nā Kupuna O Hawai‘i Nei
Mr. Fred Cachola
» Mr. Thomas Lenchanko
Nā Koa O Palehua
Native Hawaiian Historic Preservation Council, OHA (Mr. Shirai)
O‘ahu Council of the Association of Hawaiian Civic Clubs
Sierra Club, Hawai‘i Chapter
The Nature Conservancy of Hawai‘i
Waialua Hawaiian Civic Club
Wahiawā Public Library
Waialua Public Library
Wai‘anae Public Library

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CHAPTER 8
FINDINGS AND DETERMINATION

To determine whether a proposed action may have a significant effect on the environment, the State Approving Agency and Federal Lead Agency need to consider every phase of the action, the expected primary and secondary consequences, cumulative effect, and the short- and long-term effects. The agency's review and evaluation of the proposed action's effect on the environment would result in a determination of whether: 1) the action would have a significant effect on the environment, and an Environmental Impact Statement Preparation Notice should be issued, or 2) the action would not have a significant effect warranting a Finding of No Significant Impact (FONSI).

This chapter addresses the proposed determination based upon the evaluation criteria prescribed for the State Approving Agency and Federal Lead Agency. A Finding of No Significant Impact determination is proposed for this project.

8.1 FINDINGS UNDER STATE CHAPTER 343, HRS

8.1.1 Proposed Determination

A FONSI determination is warranted for the ICSD, Mt. Ka'ala Radio Facilities Improvement Project based upon the assessment results and information provided in this Final EA. The results of the assessment conducted have determined that the proposed project should not have a significant impact on the surrounding environment. Evaluation of project effects also included review of comments received on the Draft EA from agencies and the public. The findings supporting this determination are based upon discussion of the project's effect on the environment in relation to the 13 Significance Criteria prescribed under the State Department of Health's Administrative Rules Title 11, Chapter 200.

8.1.2 Findings

1. *Involve an irrevocable commitment to loss or destruction of any natural or cultural resource;*

The project consists of repair and renovation improvements to existing State telecommunication facilities that are needed to address existing deficiencies. Hence, they would not result in the irrevocable commitment to loss or destruction of any natural or cultural resource. Improvements would ensure these facilities are adequate to support existing and future ICSD needs that accomplish their various missions related to public safety, emergency services, disaster response, and essential government operations. Project impacts are primarily associated with temporary construction related activities, and various best management practices will be incorporated into design plans for implementation by contractors as discussed in various sections of this document. These measures will minimize effects on any natural or cultural resources associated with Mt. Ka'ala.

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

The project would not curtail the range of beneficial uses associated with this property. The existing Mt. Ka'ala AFS is a secured telecommunications installation for several government agencies, and public access is restricted. Areas surrounding this installation are undeveloped serving as a forest reserve and natural area reserve, and public activities allowed only consist of hunting by permit and hiking trails. These recreational activities would continue and not be affected by this project. Preservation of the surrounding forest reserve would continue with this project, and best management practices will be implemented during construction activities for the conduit route to the State's existing downhill antenna site.

3. Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;

The improvements should not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS. A discussion of the project's consistency with applicable guidelines is provided in Chapter 5 of this document.

4. Substantially affects the economic welfare, social welfare and cultural practices of the community or state;

The project will provide minor short-term economic benefits in the form of a few construction jobs, income, and additional tax revenue to the State. No additional City revenues would be generated because the installation and project area are Federal and State-owned property. Therefore, this project should have no effect on the current or future levels of City tax revenues. The character of the existing installation and surrounding forest reserve areas would not be changed or adversely impacted by the repair and renovation improvements. This project is not expected to significantly affect traditional native Hawaiian cultural practices or other traditional cultural practices that may be occurring in the surrounding area downhill of the summit area.

5. Substantially affects public health;

The project would not substantially affect public health as discussed in various sections of this document. Minimal effects on public health from temporary construction activities are anticipated relative to various health issues such as air quality and noise. Short-term construction-related effects would be mitigated by complying with pertinent State regulations and conditions of ministerial permits obtained. Best management practices will also be implemented as part of construction activities.

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

The project should not have substantial secondary impacts on the social environment, infrastructure, and public facilities. Improvements do not involve adding residential housing or visitor accommodation units that may generate population changes and increase demands on public facilities. The project would not contribute to in-migration of residents to the island.

7. Involves a substantial degradation of environmental quality;

The project would not contribute to a substantial degradation to the quality of the surrounding environment. Proposed activities essentially involve repair and renovation improvements to existing State telecommunication facilities. Therefore, project effects on the environment predominantly involve temporary construction-related effects as discussed in several sections of this document. Appropriate mitigative measures will be implemented to address construction related impacts on the environment in coordination with appropriate government agencies. This includes implementing best management practices during construction to minimize erosion and other short-term impacts in compliance with ministerial permits and conditions.

8. Individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;

This project would not have significant cumulative effect on the environment as discussed in Chapter 4 nor does it commit to larger actions.

9. Substantially affect a rare, threatened, or endangered species, or its habitat;

The project would not have a substantial adverse effect on endangered, threatened, or rare species or resources present on the property on within the surrounding mountain range area. Several technical studies were conducted to identify the presence of any endangered, threatened, or rare species. None of the protected species were found within the project area. Mitigative measures have been identified to minimize temporary construction-related effects on existing habitat and potential species. The assessment results and mitigative measures were developed in consultation with various resource jurisdictional agencies.

10. Detrimentally affect air or water quality or ambient noise levels;

The project should not have detrimentally significant impacts on air, water quality, or ambient noise levels as discussed in this document. Impacts associated with these factors would be limited to short-term construction activities. However, such impacts are expected to be temporary and minor, and include mitigative measures such as best management practices. Construction activities would also be subject to applicable State regulations and permit conditions.

11. Affect or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

Existing State telecommunication facilities at the installation are located in environmentally sensitive areas as discussed in this document. The new replacement tower planned will allow current antennas on the State building to be better mounted to withstand strong winds from a hurricane than under current conditions. Other repair and renovation work would help ensure the continued use of State equipment and antennas at this site. These improvements are not located within a tsunami evacuation zone, flood plain, within the shoreline, or in a geologically hazardous area.

12. Substantially affect scenic vistas and view planes identified in county or state plans or studies;

Project improvements should not have a significant impact on existing mauka views from roadways and visual resources associated with Mt. Ka'ala and mountain range as discussed in Chapter 4. Most of the improvements would be within or associated with the existing State building that is already not visible. Conduits added for the downhill antenna site will be placed above ground on improved cable supports about two feet above the ground. These conduits would not be visible and existing surrounding vegetation would shield any views of them. Views of the tower should not be visible from the North Shore's coastline and major highways due to this site's distance away from viewing areas.

13. Require substantial energy consumption

The project will not require substantial energy consumption or place increased demands on the capacity of supporting electrical facilities. Coordination of design plans with the FAA will be conducted to ensure sufficient electrical improvements are properly implemented.

8.2 FINDINGS UNDER FEDERAL NEPA

This section discusses the results of the assessment conducted for the proposed project to determine whether it would significantly affect the environment under the regulations prescribed under the Council on Environmental Quality NEPA Regulations (40 CFR, Part 1500 – 1508). The purpose of this assessment was to consider the definition of "significantly" under these regulations that require considerations of both context and intensity. The resulting findings are discussed below for these criteria.

The results of the assessments conducted along with technical studies performed for various disciplines have determined that the Proposed Action should not have a significant impact on the surrounding environment. The findings supporting this determination are based upon the discussion of the project's affect on the environment in relation to the 10 intensity criteria (40 CFR 1508.27).

<u>Context</u>

Context means that the significance of an action must be analyzed in several contexts such as society as a whole, the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action, and both short- and long-term effects are relevant.

This document has addressed and evaluated the significance of the ISCD Mt. Ka'ala Radio Facilities Improvement Project under this context. The assessment included the environment associated with the affected project site and immediate surrounding vicinity. Both short- and long-term effects were addressed under this document.

Intensity

Intensity refers to the severity of impact, and several criteria are identified which should be considered in evaluating impacts. A discussion of these intensity criteria is provided below.

1. *Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.*

The project would not have significant negative impacts on the environment as discussed in this document. The project consists of repair and renovation improvements to existing State facilities at the installation, and the area affected only involves about 4,500 square feet. There are also some minor short-term beneficial effects involving economic benefits in the form of a few construction jobs, income, and tax revenue. A significant effect would not occur with this project even if considering both these benefits with environmental effects separately or on balance together.

2. *The degree to which the proposed action affects public health or safety.*

As previously discussed under the State environmental review criteria (No. 5), the project would not adversely affect the public health or safety of the surrounding community and residents.

3. *Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*

The Mt. Ka'ala AFS is situated at the summit of Mt. Ka'ala and is surrounded by the forest reserve associated with the Wai'anae Mountain Range. There were no historic sites identified within the project area and consultations with several individuals did not identify significant cultural resources or issues with the repair and renovation improvements. Therefore, project improvements are not expected to have a significant impact historic or cultural resources based upon the archaeological study conducted, consultations with SHPD, and consultations with the public as part of this environmental review process.

There are no wild and scenic rivers, park land, or prime farmlands within the project area or surrounding vicinity. Project improvements should also have negligible if any impacts on the Mt. Ka'ala Bog due to the project area located to the north of the wetland. Mitigative measures identified in this document based upon biological studies conducted and consultation with resource agencies will be implemented during construction to minimize short-term effects on the surrounding environment and forest habitat.

4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*

The project is not expected to be highly controversial within the surrounding community. Consultation efforts conducted with several government agencies, elected officials, community organizations, and the public have not raised issues of a highly controversial nature.

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

The degree to which the probable effects on the human environment associated with the project is known, and has been addressed and evaluated in this document. Project improvements involve repair and renovation work to existing State facilities, and biological studies and assessments conducted as part of this environmental review process have identified and addressed likely effects. Therefore, this project does not involve unique or unknown risks that cannot be addressed.

6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

This project would not establish a precedent for future actions having significant effects on the environment. As discussed under the State's environmental review criteria (No. 8), this document addressed the impacts resulting from the implementation of this project.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*

As discussed under the State's environmental review criteria (No. 8), this document addressed the cumulative impacts resulting from the project. It was determined that the project would not have a significant cumulative impact on the environment.

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

This project would not adversely affect or cause loss or destruction to significant historic properties as discussed in Chapter 4 of this document. Consultation with the SHPD has been conducted to address such resources, and the project should have no effect on historic properties.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

As discussed under the State environmental review criteria (No. 9), the project would not adversely affect known endangered, threatened, or rare species or critical habitat. Construction activities should not adversely affect protected species and several mitigative measures were identified to minimize any short-term effects.

10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

The project would not threaten or violate Federal, State, or City laws or requirements imposed for the protection of the environment.

CHAPTER 9
LISTING OF PREPARERS

The following is list of those associated with the preparation of this Final EA document.

APPLICANT

State of Hawai‘i Department of Accounting & General Services Division of Public Works, Project Management Branch	Mr. Daniel Jandoc *Project Manager*

FEDERAL PARTICIPATING AGENCY

U.S. Department of Homeland Security United States Coast Guard Civil Engineering Unit, Honolulu	Dr. Dennis Mead *Environmental Protection Specialist*

PREPARER OF ENVIRONMENTAL DOCUMENT

Helber Hastert & Fee, Planners, Inc.	Mr. Scott Ezer *Principal-in-Charge* Mr. Ronald Sato, AICP *Project Manager/Author*

BOTANICAL RESOURCES

LeGrande Biological Surveys, Inc.	Ms. Maya LeGrande

AVIAN AND TERRESTRIAL MAMMALS

Rana Biological Consulting, Inc.	Mr. Reginald David

TERRESTRIAL INVERTEBRATE RESOURCES

Steven Lee Montgomery, Ph.D	Dr. Steven Lee Montgomery

ARCHAEOLOGICAL RESOURCES

Cultural Surveys Hawai‘i, Inc.	Mr. David Shideler

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CHAPTER 10
REFERENCES

15 CES/CEVR. February 2004. *Management Action Plan; Ka‘ala Air Force Station.* United States Air Force, 15th Airlift Wing, Environmental Restoration Program. Hickam Air Force Base, Hawai‘i.

Center for Environmental Management of Military Lands (CEMML). July 2010. *U.S. Army Garrison Hawai‘i; Integrated Natural Resources Management Plan 2010-2014; Island of O‘ahu*. Colorado State University, For Collins, Colorado.

CH2M Hill. July 2003. *Final Decision Document to Support No Further Response Action Planned for AOC EA01 (Ethylene Glycol Disposal Area); Ka‘ala Air Force Station.* Prepared for Air Force Center for Environmental Excellence; Environmental Services Office and 15 CES/CEVR, Hickam Air Force Base, Hawai‘i.

Chu, Michael S., Robert B. Jones. 1987. *Coastal View Study*. Prepared for Department of Land Utilization, City and County of Honolulu. Honolulu, Hawai‘i.

City and County of Honolulu (City). 1990. *Revised Ordinances of Honolulu, as amended*. Honolulu, Hawai‘i.

Commission on Water Resource Management (CWRM). June 2008. *Water Resources Protection Plan, Hawai‘i Water Plan*. Department of Land and Natural Resources, State of Hawai‘i. Prepared by Wilson Okamoto Corporation. Honolulu, Hawai‘i.

Department of Health (DOH). August 2009. *State of Hawai‘i Annual Summary 2008 Air Quality Data*. Clean Air Branch, State of Hawai‘i. Honolulu, Hawai‘i.

Division of Forestry and Wildlife (DOFAW). April 1990. *Mount Kaala Natural Area Reserve Management Plan*. Department of Land and Natural Resources, State of Hawai‘i. Honolulu, Hawai‘i.

Federal Emergency Management Agency (FEMA). 1993. *Hazard Mitigation Report, Hurricane Iniki. In Response to the September 12, 1992 Federal Disaster Declaration.* FEMA-961-DR-HI. San Francisco, California.

Helber Hastert & Fee, Planners, Inc. (HHF). August 2010. *North Shore Sustainable Communities Plan*. Prepared for the Department of Planning and Permitting, City and County of Honolulu. Honolulu, Hawai‘i.

J.M. Waller Associates, Inc. (Waller). May 2002 (Unpublished). *Environmental Assessment; Land Expansion for New 50-Foot Tower Construction*. Prepared for Information and Communication Services Division, Department of Accounting and General Services, State of Hawai‘i. Kailua, Hawai‘i.

Kahihikolo, Leslie R.. January 2008. *Hawai‘i Environmental Justice Initiative Report*. Prepared for the State of Hawai‘i Environmental Council. In Harmony Solutions, LLC. Honolulu, Hawai‘i.

Macdonald, Gordon A., Abbott, Agatin T., and Peterson, Frank L. 1983. *Volcanoes in the Sea, The Geology of Hawaii*. Second Edition. University of Hawai‘i Press. Honolulu, Hawai‘i.

O‘ahu Metropolitan Planning Organization. (OMPO). March 2004. *Environmental Justice in the OMPO Planning Process: Defining Environmental Justice Populations*. Prepared with Department of Planning and Permitting, City and County of Honolulu. Honolulu, Hawai‘i.

University of Hawai‘i Land Study Bureau. 1972. *Detailed Land Classification-Island of O‘ahu*.

State of Hawai‘i. September 2004 (as amended). *Hawaii Administrative Rules*. Title 11, Department of Health, Chapter 54, Water Quality Standards.

State of Hawai‘i. 1998 (as amended). *Hawaii Revised Statutes*. Chapter 343, Environmental Impact Statements.

State of Hawai‘i. September 1996 (as amended). *Hawaii Administrative Rules*. Title 11, Department of Health, Chapter 46, Community Noise Control. On-line version [http://www.hawaii.gov/health/about/rules/11-46.pdf].

State of Hawai‘i. August 1996 (as amended). *Hawaii Administrative Rules*. Title 11, Department of Health; Chapter 200, Environmental Impact Statement Rules.

State of Hawai‘i. July 2006 (as amended). *Hawaii Administrative Rules*. Title 13, Department of Land and Natural Resources, Subtitle 1, Administration; Chapter 5, Conservation District.

State of Hawai‘i. December, 2002 (as amended). *Hawaii Administrative Rules*. Title 13, Department of Land and Natural Resources; Subtitle 5, Forestry and Wildlife; Part 2, Wildlife; Chapter 122, Rules Regulating Game Bird Hunting, Field Trails and Commercial Shooting Preserves.

State of Hawai‘i. October, 1999 (as amended). *Hawaii Administrative Rules*. Title 13, Department of Land and Natural Resources; Subtitle 5, Forestry and Wildlife; Part 2, Wildlife; Chapter 123, Rules Regulating Game Mammal Hunting.

Townscape, Inc. October 2010. *Wai‘anae Sustainable Communities Plan*. Prepared for the Department of Planning and Permitting, City and County of Honolulu. Final revised draft document. Honolulu, Hawai‘i.

Townscape, Inc. December 2002. *Central O‘ahu Sustainable Communities Plan*. Prepared for the Department of Planning and Permitting, City and County of Honolulu. Honolulu, Hawai‘i.

U.S. Department of Agriculture, Soil Conservation Service (SCS). August 1972. *The Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii*. In cooperation with the University of Hawaii, Agricultural Experiment Station. Washington, D.C.

U.S. Department of the Interior, Geological Survey (USGS). January 2002. *Atlas of Natural Hazards in the Hawaiian Coastal Zone*. Prepared by Fletcher, Charles H., Grossman, Eric E., Richmond, Bruce M., and Gibbs, Ann E. in cooperation with University of Hawai‘i, State Office of Planning, and National Oceanic and Atmospheric Administration. Geologic Investigations, Series I-2761. U.S. Government Printing Office.

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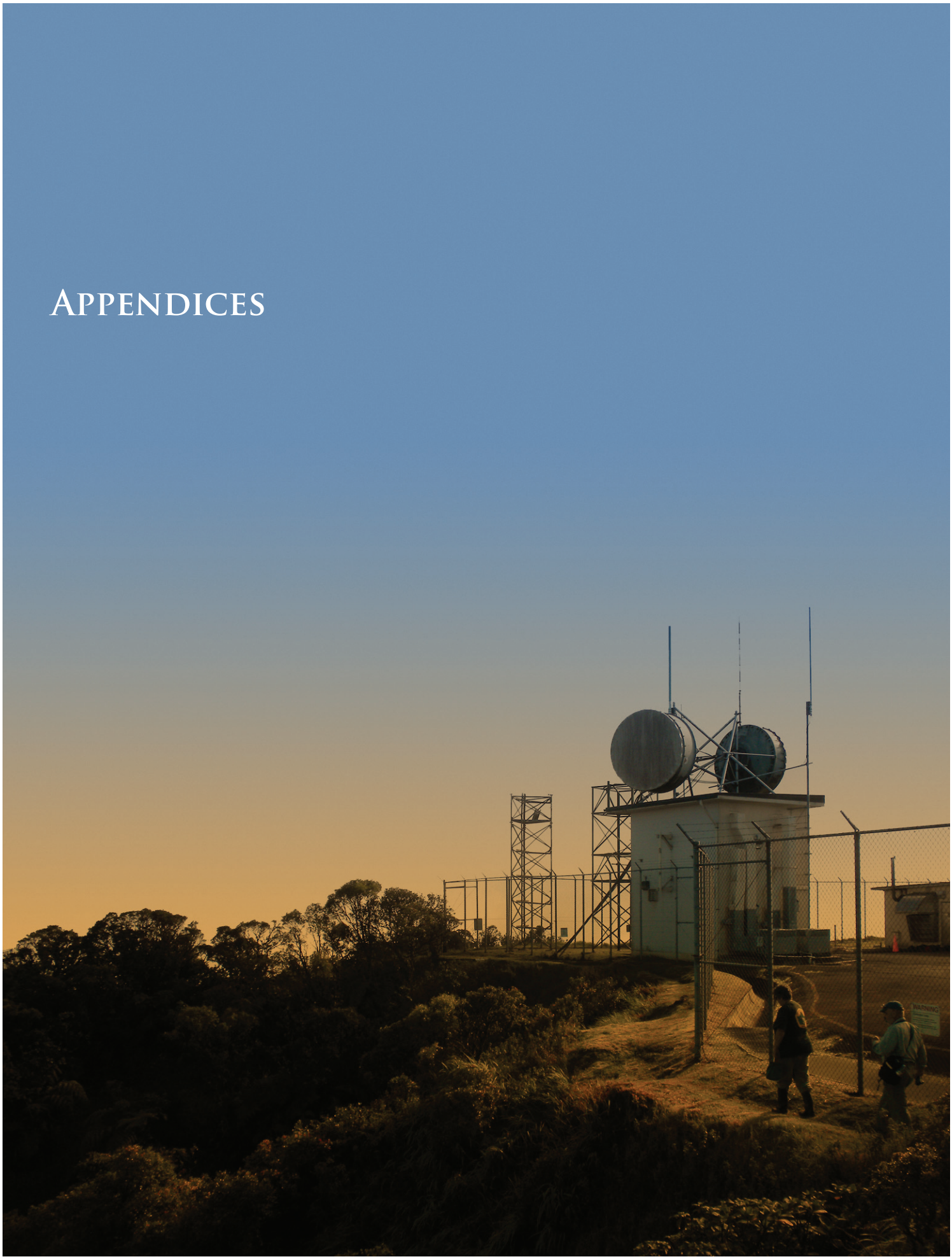
Appendices



Appendix A
Assessment Consultations

Appendix A-1

Pre-Assessment Comment Letters and Responses

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF:

March 4, 2011

Regulatory Branch

File Number POH-2011-00070

Helber, Hastert & Fee Planners, Inc.
Attention: Ronald A. Sato
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

RECEIVED
MAR -7 2011
HELBER, HASTERT & FEE PLANNERS

NO PERMIT REQUIRED

Dear Mr. Sato:

We have received your letter dated February 28, 2011 requesting Department of the Army (DA) review and comment on the Draft Environmental Assessment Pre Assessment Consultation for the proposed Mt. Kaala Radio Facility Improvements at TMK (1) 6-7-003:025 & (1) 7-7-001:001, Waianae Uka, Island of Oahu, Hawaii. We have assigned this project the reference number **POH-2011-00070**. Please cite this reference number in any future correspondence concerning this project.

We have completed our review of the submitted document pursuant to Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and Section 404 of the Clean Water Act (Section 404). For your information, Section 10 requires that a DA permit be obtained from the U.S. Army Corps of Engineers (Corps) prior to undertaking any construction, dredging, or other activity occurring in, over, or under or affecting navigable waters of the U.S. For tidal waters, the shoreward limit of the Corps' jurisdiction extends to the Mean High Water Mark. Section 404 requires that a DA permit be obtained for the discharge (placement) of dredged and/or fill material into waters of the U.S., including wetlands. For tidally influenced waters, in the absence of adjacent wetlands, the shoreward limit of the Corps' jurisdiction extends to the High Tide Line, which in Hawai'i may be approximated by reference to the Mean Higher High Water Mark. For non-tidal waters, the lateral limits of the Corps' jurisdiction extend to the Ordinary High Water Mark or the approved delineated boundary of any adjacent wetlands.

Based on the information you submitted, it appears the project sites consist entirely of uplands and is absent of waters of the U.S. under the regulatory jurisdiction of the Corps. We anticipate the proposed **repairs to the existing State building, conduit installation and tower replacement will not involve the discharge of fill material into waters of the U.S. therefore, a DA permit will not be required**. This determination does not relieve you of the responsibility to obtain any other permits, licenses, or approvals that may be required under County, State, or Federal law for your proposed work.

Thank you for contacting us regarding this project and providing us with the opportunity to comment. Should you have any questions, please contact Ms. Jessie Pa'ahana at *808.438.0391* or via e-mail at *Jessie.K.Paahana@usace.army.mil*. You are encouraged to provide comments on your experience with the Honolulu District Regulatory Branch by accessing our web-based customer survey form at *http://per2.nwp.usace.army.mil/survey.html*.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. George P. Young, P.E., Chief
Regulatory Branch
Corps of Engineers
U.S. Department of the Army, Honolulu District
Fort Shafter, Hawai'i 96858-5440

Dear Mr. Young:

State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025
File No. POH-2011-000070

Thank you for your letter of March 4, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We confirm that the project is located on upland area at the summit of Mt. Ka'ala. This project area is absent of waters of the U.S. under the regulatory jurisdiction of the Corps. Project improvements will not involve the discharge of fill material into waters of the U.S. and we concur that a Department of Army permit should not be required.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2011-TA-0176

MAR 3 1 2011

Mr. Ronald A. Sato
Helber, Hastert & Fee Planners, Inc.
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Subject: Pre-Consultation Technical Assistance for the Mount Kaala Radio Facilities Improvement Project Draft Environmental Assessment, Oahu

Dear Mr. Sato:

The U.S. Fish and Wildlife Service (Service) is in receipt of your letter, dated February 28, 2011, in which you requested comments regarding the proposed Mount Kaala Radio Facilities Improvement Project on the island of Oahu [TMK (1) 7-07-001:001, 003:023, 025]. We understand that the project is being proposed by the State of Hawaii Department of Accounting and General Services, Information and Communication Services Division (ICSD). The purpose of the project is to repair building deficiencies and increase the reliability of the equipment at the existing radio communications building on Mount Kaala.

The proposed project includes the internal and external renovation of the existing communications building, as well as the installation of a new conduit line to connect the building with a generator. The project will entail replacing the existing 25-foot radio tower with a new 50-foot tower, on which new microwave and whip antennas will be installed. The U.S. Coast Guard will be responsible for the removal of the existing tower and the construction of the proposed new tower. You have requested comments on this project to assist in the development of a joint State and Federal Draft Environmental Assessment (DEA). This response is in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended [16 U.S.C. 1531 *et seq.*] and the Migratory Bird Treaty Act [16 U.S.C. 703-712] (MBTA).

We have reviewed the information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Program and the Hawaii GAP Program. The federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) may forage and roost in the project area. Additionally, the wedge-tailed shearwater (*Puffinus pacificus*) and Laysan albatross (*Phoebastria immutabilis*), bird species federally protected under the MBTA, may use the project area while traveling from the sea to their breeding sites.

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APR - 4 2011
HELBER, HASTERT & FEE PLANNERS

The DEA should address all potential direct and indirect project impacts to protected species, including lighting, nighttime activities, and habitat modification. We offer the following suggestions to assist you in the development of the DEA:

- Based on the map provided in your letter, it appears that some vegetation removal may be required to install new conduit lines. Hawaiian hoary bats roost in both exotic and native woody vegetation and leave their young unattended in "nursery" trees and shrubs when they forage. If trees or shrubs suitable for bat roosting are cleared during the breeding season (May to August), there is a risk that young bats could inadvertently be harmed or killed. To minimize impacts to the endangered Hawaiian hoary bat, woody plants greater than 15 feet (4.6 meters) tall should not be removed or trimmed during the bat-birthing and pup-rearing season (May 15 through August 15).

- Seabird species, including the wedge-tailed shearwater, are attracted to lights and are known to collide with buildings, light poles, wires, and other tall objects as they fly from the ocean to the mountains during the nesting season. We recommend you avoid any night-time work using artificial lights between September 15 and December 15, thus reducing the risk of light attraction to these seabirds.

- To further avoid impacts to seabird species, we recommend that any lights associated with the project be shielded so that the bulb can be seen only from below and use the lowest wattage bulbs possible. In places where existing artificial lights are unnecessary, we suggest that they be removed. If Federal mandates require that the communication tower be lighted, we recommend the use of a flashing red bulb, rather than the use of a constant red, flashing white, or constant white light configuration.

We hope this information assists you in developing a comprehensive and thorough DEA. If, as the project development progresses, it is determined that the proposed project may affect federally listed species, then we recommend you contact us early in the process so that we may assist you in developing avoidance and minimization measures. For our record, we request that a hard copy and CD version of the DEA be sent to our office when complete. We appreciate your efforts to conserve endangered species. If you have questions regarding these comments, please contact Michelle Bogardus, Consultation and Habitat Conservation Planning Program (phone: 808-792-9473, fax: 808-792-9400).

Sincerely,

For

Loyal Mehrhoff
Field Supervisor

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. Loyal Mehrhoff, Field Supervisor
Pacific Islands Administrator
Fish and Wildlife Services
U.S. Department of the Interior
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawai‘i 96813

Dear Mr. Mehrhoff:

State ICSD Mt. Ka‘ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O‘ahu, Hawai‘i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025
File No. 2011-TA-0176

Thank you for your letter of March 31, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project. We also confirm that these comments are being sent as part of consultation efforts under Section 7 of the Federal Endangered Species Act (ESA) and the Migratory Bird Treaty Act.

We appreciate the comments provided concerning the Federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), wedge-tailed shearwater (*Puffinus pacificus*) and Laysan albatross (*Phoebastria immutabilis*). The project team’s biologist has been coordinating with staff from your office to address informational requirements and mitigative measures as part of informal consultation efforts under Section 7 of the ESA. The three suggestions identified in your letter to address the Hawaiian hoary bat and seabird species have been incorporated into consultation documents.

As requested, we will provide your agency with a hard copy and CD of the Draft EA published for public review. Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

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NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 21, 2011

RECEIVED
MAR 23 2011
HELBER, HASTERT & FEE PLANNERS

Helber, Hastert & Fee Planners, Inc.
733 Bishop Street Suite 2590
Honolulu, Hawaii 96813

Attention: Mr. Ronald A. Sato, AICP

Ladies and Gentlemen:

Subject: Pre-Assessment Consultation for Draft Environmental Assessment for the Mt. Ka'ala Radio Facility Improvements Project

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

Other than the comments from Commission on Water Resource Management, Land Division-Oahu District, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0414. Thank you.

Sincerely,

Charlene E. Unoki
for Russell Y. Tsuji
Administrator

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
INTERIM 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
Phone: (808) 587-0433
Fax: (808) 587-0455

March 2, 2011

MEMORANDUM

FROM: ~~TO:~~ **DLNR Agencies:**
x Div. of Aquatic Resources
__ Div. of Boating & Ocean Recreation
x Engineering Division
x Div. of Forestry & Wildlife
__ Div. of State Parks
x Commission on Water Resource Management
x Office of Conservation & Coastal Lands
x Land Division –Oahu District
x Historic Preservation

Charlene

TO: ~~FROM:~~ Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for the Mt. Ka'ala Radio Facility Improvements Project
LOCATION: Island of Oahu
APPLICANT: Helber Hastert & Fee on behalf of DAGS ICSD

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 20, 2011.

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 my office at 587-0433. Thank you.

Attachments

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

Signed: T. Cha
Date: 3/4/2011

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

RECEIVED
LAND DIVISION
2011 MAR 10 P 3:06
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809
Phone: (808) 587-0433
Fax: (808) 587-0455

March 2, 2011

RECEIVED
COMMISSION ON WATER RESOURCE MANAGEMENT
2011 MAR -3 PM 3:24

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__ Div. of Boating & Ocean Recreation
x Engineering Division
x Div. of Forestry & Wildlife
__ Div. of State Parks
x Commission on Water Resource Management
x Office of Conservation & Coastal Lands
x Land Division –Oahu District
x Historic Preservation

Charlene

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for the Mt. Ka'ala Radio Facility Improvements Project
LOCATION: Island of Oahu
APPLICANT: Helber Hastert & Fee on behalf of DAGS ICSD

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 20, 2011.

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 my office at 587-0433. Thank you.

Attachments

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

Signed: RKChang
Date: 3/4/11

FILE ID: RAD. 2856.3
DOC ID: 7522 ✓

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

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

Dear Mr. Tsuji:

State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated March 21, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project. Our responses address the comments from each division.

Commission on Water Resource Management

We confirm this division has no objections to the proposed project.

Land Division – O'ahu District

We note this division had no comments.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
APR 15 2011
HELBER, HASTERT & FEE PLANNERS

April 14, 2011

Helber, Hastert & Fee Planners, Inc.
733 Bishop Street Suite 2590
Honolulu, Hawaii 96813

Attention: Mr. Ronald A. Sato, AICP

Ladies and Gentlemen:

Subject: Pre-Assessment Consultation for Draft Environmental Assessment for the Mt. Ka'ala Radio Facility Improvements Project

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

The Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0414. Thank you.

Sincerely,

Charlene Unoki

Charlene Unoki
Assistant Administrator

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

GUY H. KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
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

RECEIVED
LAND DIVISION
2011 APR 13 P 3:08
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
KAHUHIHEWA BUILDING
601 KAMOKILA BLVD, KAPOLEI HI 96706

DATE: April 8, 2011 **LOG:** 2011.0679
DOC: 1103RS62

TO: Charlene Unoki
Assistant Administrator
Land Division
State Department of Land and Natural Resources
Post Office Box 621
Honolulu, HI 96809

SUBJECT: **Section 6E-8 Historic Preservation Review / Draft EA Pre-Assessment Consultation DAGS ICSD Communications Upgrades at Mt. Kaala**
Building Owner: State of Hawaii
Location: Mt. Kaala, Oahu
Tax Map Key: (1) 6-7-003:023 and :025; (1) 7-7-001:001

This letter is in response to materials dated March 2, 2011, received by our office on March 7, 2011, re proposed communications equipment upgrades to the Department of Accounting and General Services (DAGS) Information and Communication Services Division (ICSD) facility atop Mt. Kaala. Work includes re-roofing and filling of cracks and leaks to an existing State-owned building; placing new conduit within an existing driveway to connect the building to a nearby generator building; replacement of an existing 25 foot tall tower with a 50 foot tower; installation of additional microwave and whip antennas to the new tower; relocation of existing corner reflector antennas from the building to an existing microwave antenna site located downhill off Kamaohanui and placement of a new camera there; and increasing the number of above ground antenna cables to five from the building to the microwave antenna site. The area of potential effect will be the three parcels listed above.

While no dates have been provided for the construction of these facilities, the fact that a request for comments has been issued for the Pre-Assessment Consultation for a Draft Environmental Assessment leads us to determine that the complex contains structures are over 50 years old. This could make the Mt. Kaala facility eligible as a Cold War facility under Criteria A (Events). We appreciate the submission of maps and photographs as documentation for the request.

Our comments are divided into two sections.

Archaeology: SHPD will withhold full comments until development of the EA. Please be advised that our records show multiple archaeological sites with parcel (1) 7-1-001:001 which should be identified in relation to the proposed development.

Architecture: We do not, in concept, object to these renovations. However, in order to provide any full determination we will need more detailed information as to the proposed placement of these alterations on the existing structures (especially in terms of visual impacts).

Any questions should be addressed to Ross W. Stephenson, SHPD Historian, at (808) 692-8028 (office), (808) 497-2233 (cell) or ross.w.stephenson@hawaii.gov.

Mahalo for the opportunity to comment.

Pua Aiu
Administrator

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Ms. Charlene Unoki, Assistant Administrator
Land Division
Department of Land and Natural Resources
State of Hawai‘i
P.O. Box 621
Honolulu, Hawai‘i 96809

Dear Ms. Unoki:

State ICSD Mt. Ka‘ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O‘ahu, Hawai‘i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated April 14, 2011 providing comments from the State Historic Preservation Division as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

The Mt. Ka‘alaAir Force Station is not yet 50 years old as it became operational in 1965, and the existing Federal buildings are located outside the project’s area of potential effect. The State building within this installation received approval of its construction plans in November 1988, and is also not 50 years old.

There are several archeological sites within the large Federal parcel (7-07-001: 001), however, these sites are considerable distances away from the project area. An archaeological assessment has been conducted for this project to identify and evaluate any historic sites that may be affected by the project. The study determined that no historic properties would be affected by the project, and the results will be incorporated in the Draft EA document.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

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NEIL ABERCROMBIE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

GUY H. KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

ref:OCCL:MC

Correspondence OA-11-173

MAR 24 2011

RECEIVED
MAR 25 2011
HELBER, HASTERT & FEE
PLANNERS

Ronald A. Saito, AICP
Helber Hastert & Fee
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, HI 96813

Dear Mr. Saito,

SUBJECT: DEA PREP NOTICE, MT. KA`ALA RADIO IMPROVEMENT PROJECT
Waialua, O`ahu, Hawai`i
TMK (1) 6-7-003:023 & 025; 7-7-001:001

The Office of Conservation and Coastal Lands (OCCL), part of the Department of Land and Natural Resources (DLNR), has reviewed the material you provided regarding the Mount Ka`ala Radio Improvement Project. The project area is in the Protective Subzone of the State Land Use Conservation District. The Western portion of the project area, on a portion of the State owned parcels 6-7-003:023 and 025, is in the Natural Areas Reserve System. Parcel 7-7-001:001 is Federally owned.

The State Department of Accounting and General Services (DAGS), Information and Communication Services Department (ICSD) is proposing a series of repairs and improvements to the facility, including:

- Reroofing the existing State building;
- Installing a conduit within the existing driveway to connect the State building with the nearby generator building;
- Replacing a 25' tower with a 50' tower;
- Installing additional antenna on the new tower;
- Increasing the number of cables running down the ridge from one to five.

Helbert Hastert and Fee is currently preparing a joint Federal and State environmental assessment for the project.

The project as described will require a Conservation District Use Permit.

OCCL has two other CDUP on file for the telecommunications facility, OA-1794 (1985) and OA-2353 (2002). These files are open to the public, and may be of assistance to you in the preparation of the Environmental Assessment.

You can contact Michael Cain at 587-0048 should you have any further questions.

Sincerely,

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

c: *Land Division; ICSD*

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands
Department of Land and Natural Resources
State of Hawai‘i
P.O. Box 621
Honolulu, Hawai‘i 96809

Dear Mr. Lemmo:

State ICSD Mt. Ka‘ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O‘ahu, Hawai‘i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated March 24, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We confirm that the project area is in the Protective Subzone of the State Land Use Conservation District. In addition, the western portion of the project area, on a portion of the State-owned parcels 6-7-003: 023 and 025, is in the State’s Natural Areas Reserve System, and that parcel 7-7-001: 001 is Federally owned. We have been consulting with staff from the Division of Forestry and Wildlife, Natural Area Reserve System regarding this project, including a joint field survey involving their staff and our project team.

A Conservation District Use Permit (CDUP) application will be filed for this project. We also appreciated your staff’s assistance in having the files associated with the two other CDUPs (OA-1794 and OA-2353) available for our review.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

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NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
INTERIM DIRECTOR OF HEALTH

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

In reply, please refer to:
File:
EPO-11-025

March 8, 2011

RECEIVED
MAR 14 2011
HELBER, HASTERT & FEE PLANNERS

Mr. Ronald A. Sato, AICP
Helber, Hastert & Fee Planners, Inc.
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

SUBJECT: Draft Environmental Assessment Pre-Assessment Consultation for ICSD, Mt. Ka`ala Radio Facility Improvements Project, Waialua, Oahu, Hawai`i TMK: (1)6-07-003: portion of 025 and 7-07-001: portion of 001

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have no comments at this time, but reserve the right to future comments. We strongly recommend that you review all of the Standard Comments on our website: www.hawaii.gov/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this application should be adhered to.

The same website also features a Healthy Community Design Smart Growth Checklist (Checklist). The Hawaii State Department of Health, Built Environment Working Group, recommends that State and county planning departments, developers, planners, engineers and other interested parties apply the healthy built environment principles in the Checklist whenever they plan or review new developments or redevelopments projects. We also ask you to share this list with others to increase community awareness on healthy community design.

If there are any questions about these comments please contact the Environmental Planning Office at 586-4337.

Sincerely,

Genevieve Salmonson

GENEVIEVE SALMONSON, Acting Manager
Environmental Planning Office

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Ms. Genevieve Salmonson, Manager
Environmental Planning Office
Department of Health
State of Hawai‘i
P.O. Box 3378
Honolulu, Hawai‘i 96801-3378

Dear Ms. Salmonson:

State ICSD Mt. Ka‘ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O‘ahu, Hawai‘i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated March 8, 2011 as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note that your office has no comments at this time, but reserve the right to provide future comments. We will provide you with a copy of the Draft EA when published for public review. The Healthy Community Design Smart Growth Checklist will be reviewed by the project’s design team to evaluate the applicability of principles to this project.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
FORD N. FUCHIGAMI
JAN S. GOUVEIA
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

STP 8.0394

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

April 6, 2011

RECEIVED
APR 13 2011
HELBER, HASTERT & FEE
PLANNERS

Mr. Ronald A. Sato, AICP
Senior Planner
Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

Subject: ICSD, Mt. Kaala Radio Facility Improvements Project
Draft Environmental Assessment (DEA) Pre-Assessment Consultation

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project. DOT understands the State Department of Accounting and General Services (DAGS), Information and Communication Services Division (ICSD), is proposing to implement repair and renovation improvements to their existing radio facility, a telecommunications tower, a downhill antenna site along with conduit lines serving it, and other accessory electrical improvements located on Mt. Kaala. Access to the project is from Farrington Highway.

DOT does not anticipate any significant adverse impacts to the State transportation facilities. However, the DAGS is required to obtain a permit from DOT Highways Division, if any oversize and overweight equipment/loads for the subject project will be transported on State highways facilities.

DOT appreciates the opportunity to provide comment. If there are any questions or the need to meet with DOT staff, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. Glenn Okimoto, P.E., Director
Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

Dear Mr. Okimoto:

State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your department's letter dated April 6, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We concur that the project should not have a significant impact on State highway facilities. A permit from your highways division will be obtained if any oversized and overweight equipment/loads need to be transported on State highways facilities.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD11/5602

March 21, 2011

RECEIVED
MAR 25 2011
HELBER, HASTERT & FEE
PLANNERS

Ronald A. Sato, Senior Planner
Helber, Hastert & Fee
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Re: Pre-Draft Environmental Assessment Consultation
Mt. Ka'ala Radio Facility Improvements Project
Island of O'ahu

Aloha e Ronald Sato,

The Office of Hawaiian Affairs (OHA) is in receipt of your February 28, 2011 letter initiating consultation ahead of a draft environmental assessment (DEA) to support improvements and upgrades to the existing Mt. Ka'ala Radio Facility (facility) proposed by the State of Hawai'i Department of Accounting and General Services. The facility is approximately 1,161 square feet in size and situated within a larger 6.6 acre area (parcel) known as the "Mt. Ka'ala Air Force Station". The majority of the parcel is owned by the United States of America, with smaller portions under the control of the Department of Land and Natural Resources-Division of Forestry and Wildlife which are designated as part of the Mt. Ka'ala Natural Area Reserve. Your letter details that because the use of State funds and lands, and federal lands are proposed, the forthcoming DEA will be prepared to meet the requirements of Chapter 343, Hawaii Revised Statutes and the National Environmental Policy Act.

The portion of the parcel on State lands is within the State Land Use Conservation District. Your letter details that the United States Coast Guard will be responsible for the demolition of an existing 25-foot tall tower, followed by the construction of a 50-foot tall replacement tower. Other improvements include interior and exterior repairs to existing facility buildings, construction of a utility conduit, installation of a new reflector antenna and camera on supporting equipment on Kamaohanui Ridge which will be connected to the facility by five above ground cables (depicted in "Exhibit 1 included with your letter).

OHA recognizes that the facility supports the telecommunications infrastructure for a wide variety of agencies, including State Civil Defense and others involved in emergency services and rescue operations. With this in mind, we look forward to seeing the improvements and equipment upgrades completed.

OHA requests that the DEA clearly describe what State and federal laws and approvals are required for this project and which agencies will issue necessary approvals. Thank you for initiating consultation at this early stage. We look forward to reviewing the DEA and providing additional comments at that time. Should you have any questions or concerns, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. Clyde W. Nāmuʻo, Chief Executive Officer
Office of Hawaiian Affairs
State of Hawaiʻi
711 Kapiʻolani Boulevard, Suite 500
Honolulu, Hawaiʻi 96813

Dear Mr. Nāmuʻo:

State ICSD Mt. Kaʻala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, Oʻahu, Hawaiʻi
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated March 21, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

The State's facility at Mt. Kaʻala does support State-wide telecommunications infrastructure for a wide variety of agencies to achieve the agency's mission related to public safety, emergency services, disaster response, and essential government operations. We appreciate your agency's support of this project and desire to see the improvements and equipment upgrades completed.

The Draft EA will describe what State and Federal laws and regulatory requirements apply to this project, and a copy of this document will be provided to your agency for review when published.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

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BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

March 3, 2011

PETER B. CARLISLE, MAYOR

RANDALL Y. S. CHUNG, Chairman
DENISE C. DE COSTA
ANTHONY R. GUERRERO, JR.
THERESIA C. McMURDO
ADAM C. WONG

WESTLEY K.C. CHUN, Ex-Officio
GLENN M. OKIMOTO, Ex-Officio

WAYNE M. HASHIRO, P.E.
Manager and Chief Engineer

DEAN A. NAKANO
Deputy Manager

Mr. Ronald A. Sato, AICP
Helber, Hastert & Fee Planners, Inc.
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

Subject: Your Letter Dated February 28, 2011 on the Draft Environmental Assessment Pre-Assessment Consultation for ICSD, Mt. Kaala Radio Facility Improvements Project, TMK: 6-7-3:25 and 7-7-1:1

Thank you for the opportunity to comment on the proposed radio facilities improvements.

We do not have a water system in this area.

We would like to be removed from the list of parties to review the Environmental Assessment.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

PAUL S. KIKUCHI
Chief Financial Officer
Customer Care Division

RECEIVED
MAR - 9 2011
HELBER, HASTERT & FEE
PLANNERS

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. Paul S. Kikuchi, Chief Financial Officer
Customer Care Division
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawai'i 96813

Dear Mr. Kikuchi:

State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for letter dated March 3, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We confirm that your department has no water system in the project area. As requested, we will also remove your agency from the list of parties receiving the Draft EA for public review.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

PETER B. CARLISLE
MAYOR

COLLINS D LAM, P.E.
ACTING DIRECTOR

LORITA M. KAHIKINA, P.E.
DEPUTY DIRECTOR

March 22, 2011

RECEIVED
MAR 25 2011
HELBER, HASTERT & FEE PLANNERS

Mr. Ronald A. Sato
Helber, Hastert & Fee Planners, Inc.
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

Subject: ICSD, Mt. Ka'ala Radio Facility Improvements Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Oahu, Hawaii TMK (1) 6- 07-003: portion of 025 and
7-07-001: portion of 001

Thank you for inviting us to review the Draft Environmental Assessment for the Mt. Ka'ala Radio Facility Improvement Project. The Department of Design and Construction does not have any comments to offer at this time.

Should you have any questions, please contact me at 768-8480.

Very truly yours,

for Collins D. Lam, P.E.
Director

CL:pg(405923)

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. Collins Lam, P.E., Director
Department of Design and Construction
City and County of Honolulu
650 South Beretania Street, 11th Floor
Honolulu, Hawai'i 96813

Dear Mr. Lam:

State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated March 22, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note your department does not have any comments to offer at this time.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

PETER B. CARLISLE
MAYOR

DAVID K. TANOUE
DIRECTOR

JIRO A. SUMADA
DEPUTY DIRECTOR

2011/ELOG-478(WA)

May 24, 2011

RECEIVED
MAY 25 2011
HELBER, HASTERT & FEE
PLANNERS

Mr. Ronald A. Saito, Senior Planner
Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Saito:

Subject: Draft Environmental Assessment Pre-Assessment Consultation
Mt. Ka'ala Radio Facility
Tax Map Keys 6-7-3: Portion of 25 and 7-7-1: Portion of 1

This is in response to your request received March 1, 2011, for comments regarding pre-assessment consultation for your forthcoming Draft Environmental Assessment (DEA) for the Mt. Ka'ala Radio Facility located at the Mt. Ka'ala Air Force Station in the Waianae Mountain Range.

The project site is in the State Conservation District and zoned P-1 Restricted Preservation District, and it is not within the Special Management Area. Land uses and development standards in the State Conservation District are under the jurisdiction of the State of Hawaii Department of Land and Natural Resources. The City and County of Honolulu has no zoning jurisdiction over the site. Therefore, the City and County Department of Planning and Permitting will not be providing comments on the DEA.

Please contact William J. Ammons of our staff at 768-8025 if you have any questions.

Very truly yours,

Elizabeth Ch

for David K. Tanoue, Director
Department of Planning and Permitting

DKT:cs

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. David K. Tanoue, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawai'i 96813

Dear Mr. Tanoue:

State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated March 24, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We confirm that the project site is within the State Conservation District, is zoned P-1 Restricted Preservation District, and it is not within the Special Management Area. Land uses with the State Conservation District are under the jurisdiction of the State Board of Land and Natural Resources, and the City and County of Honolulu has no zoning jurisdiction over the site. Based upon your comments, we will also remove your agency from the Draft EA distribution list when published because your agency will not be providing comments on that document.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
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OUR REFERENCE DMK-LS

RECEIVED
MAR 24 2011
HELBER, HASTERT & FEE
PLANNERS

March 22, 2011

Mr. Ronald A. Sato, AICP
Senior Planner
Helber, Hastert and Fee Planners, Inc.
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

This is in response to your letter of February 28, 2011, regarding the Pre-Assessment Consultation, Draft Environmental Assessment, for the Mount Ka'ala Radio Facility Improvements project in Waialua.

This project should have no significant impact on the facilities and services of the Honolulu Police Department.

In response to your inquiry, we would prefer to receive any future project-related material on a compact disk.

If there are any questions, please call Acting Major Moana Heu of District 2 (Wahiawa) at 621-8442.

LOUIS M. KEALOHA
Chief of Police

By
DAVE M. KAJIHIRO
Assistant Chief of Police
Support Services Bureau

Serving and Protecting With Aloha

Helber Hastert & Fee
Planners, Inc.

November 8, 2011

Mr. Louis M. Kealoha, Chief
Honolulu Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawai'i 96813

Dear Mr. Kealoha:

State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment Pre-Assessment Consultation
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated March 22, 2011 providing comments as part of pre-assessment consultation efforts for the preparation of the Draft Environmental Assessment (Draft EA) for the subject project.

We note your department believes the project will have no significant impact on your department's facilities or services. As indicated, we will provide a copy of the Draft EA in pdf format on a CD when published.

Thank you for your participation in this process. If you need additional information, please contact me by phone at 545-2055, or by email at rsato@hhf.com.

Sincerely,

HELBER HASTERT & FEE, Planners

Ronald A. Sato, AICP
Associate

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Appendix A-2
Section 106 Consultations

Preliminary Proposed No Effect Determination Letters to Consulting Parties, Dated October 12, 2011

Helber Hastert & Fee
Planners, Inc.

Typical Letter Distributed to Consulted Parties

October 12, 2011

Ms. Pua Aiu, Administrator
Historic Preservation Division
Department of Land and Natural Resources
State of Hawai‘i
601 Kamokila Blvd., Rm. 555
Kapolei, Hawai‘i 96707

Dear Ms. Aiu:

Subject: ICSD Mt. Ka‘ala Radio Facility Improvements Projects
Wahiawā and Waialua, O‘ahu, Hawai‘i
Section 106 Consultation – No Historic Properties Affected Determination

The State of Hawai‘i, Department of Accounting and General Services (DAGS), Information and Communication Services Division (ICSD) is proposing to implement repair and renovation improvements to their existing building used as a radio facility, a telecommunications tower, a downhill antenna site along with conduit lines serving it, and other accessory electrical improvements located at the Mt. Ka‘ala Air Force Station on the island of O‘ahu. This project is referred to as the “ICSD Mt. Ka‘ala Radio Facility Improvements Project”.

The proposed replacement of an existing telecommunications tower with a new one will involve the use of Federal funds from the United States Coast Guard, and the project is thus subject to Section 106 consultation under the National Historic Preservation Act, as amended (NHPA) (16 U.S.C. 470(f)). We are soliciting your comments on a proposed “no historic properties affected” determination for this project, and have enclosed documentation for your review. The State DAGS is serving as the Agency Official initiating this Section 106 consultation process.

We would greatly appreciate your written response within 30 days of receipt of this letter, or sooner if possible.

Please contact me at 545-2055 or via email at rsato@hhf.com if you have any questions.

Sincerely,

Ronald A. Sato, AICP
Associate

Enclosures – Mt. Ka‘ala 106 Documentation

State Department of Accounting and General Services,
Information and Communication Services Division
Mt. Ka‘ala Radio Facility Improvements Project
Section 106 Consultation - No Historic Properties Affected Documentation

October 2011

The State of Hawai‘i, Department of Accounting and General Services (DAGS), Information and Communication Services Division (ICSD) is proposing to implement repair and renovation improvements to their existing building used as a radio facility, a telecommunications tower, a downhill antenna site along with conduit lines serving it, and other accessory electrical improvements located at the Mt. Ka‘ala Air Force Station on the island of O‘ahu. This project is referred to as the “ICSD Mt. Ka‘ala Radio Facility Improvements Project”.

The proposed replacement of an existing telecommunications tower with a new one will involve the use of Federal funds from the United States Coast Guard (USCG). This improvement is considered a Federal “undertaking” and the project is subject to Section 106 consultation under the National Historic Preservation Act, as amended (NHPA) (16 U.S.C. 470(f)). Section 106 consultation procedures are defined by the Advisory Council on Historic Preservation (ACHP) under 36 CFR Part 800, Protection of Historic Properties.

The State DAGS is serving as the Agency Official initiating this Section 106 consultation process for this project. A “no historic properties affected” determination is proposed for the project based upon the documentation provided.

A. DESCRIPTION OF UNDERTAKING

Project Location and Land Ownership

The State’s licensed radio facility is 1,161 square feet in size and located within the larger 2.37-acre Mt. Ka‘ala Air Force Station (AFS) site situated at the summit of Mt. Ka‘ala. Mt. Ka‘ala is at the northern end of the Wai‘anae Mountain Range, and is the highest peak on the island of O‘ahu at an elevation of 4,025 feet above mean sea level (msl). The Mt. Ka‘ala AFS is located where the districts of Wahiawā, Waialua, and Wai‘anae all converge at this mountain’s summit. The State’s radio facility is situated within the Wahiawā district and electrical conduit improvements would extend slightly down Kamaohanui Ridge to an existing microwave antenna site into the Waialua district. Project location maps showing the community plan districts and project site are included in Attachment A (Figures).

The majority of the land on which Mt. Ka‘ala AFS is constructed is owned by the U.S. Army as part of the Schofield Barracks Military Reservation. This Federal property is identified as Tax Map Key (TMK) (1) 7-07-001: portion of 001. This station is fenced for security, and other government agencies have telecommunication facilities on this site. The U.S. Army maintains tenant agreements with both the U.S. Air Force and the Federal Aviation Administration (FAA)

for their facilities at this station. The State of Hawai'i, Hawai‘i Air National Guard, and the U.S. Navy also maintain individual structures.

The western portion of the Mt. Ka‘ala AFS includes two parcels owned by the State of Hawai‘i, identified as TMK (1) 6-07-003: 023 and a portion of 025. These areas of the station are leased to the U.S. Air Force by the State of Hawai‘i. This State property is designated as the Mt. Ka‘ala Natural Area Reserve and is under the jurisdiction of the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW).

Project Background and Objectives

The State DAGS ICSD is the central organization within the State that carries out the responsibilities for statewide data processing, information systems, and telecommunications. As a result, the ICSD owns and operates the State's telecommunications systems and supporting infrastructure as part of its responsibilities. The ICSD provides services to all agencies in the State of Hawai‘i. The ICSD plans, coordinates, organizes, directs, and administers services to ensure the efficient and effective development of systems. Major components of the State's system include microwave radios, land mobile radio systems, antenna systems, towers, and the building at the Mt. Ka‘ala AFS.

Over the years, there have been tremendous advances in technology and an increased reliance on telecommunications and computers in the workplace. The ICSD is leading the way in implementing cost-effective and efficient information and communication services. The proper application and installation of these technologies continues to be a key component towards the accomplishment of agency missions relating to public safety, emergency services, disaster response, and essential government operations.

To meet this agency's responsibilities effectively, improvements are needed to the State's radio facility to repair building deficiencies and increase reliability of the equipment. This building (see Exhibit 1) is in need of various interior and exterior repairs, including roof repairs due to cracks and leaks.

Exhibit 1
Photo of Existing State Building and Tower

Proposed Project Improvements

Interior and exterior repairs to the existing State building would be implemented to fix deficiencies. This includes re-roofing to address cracks and leaks. A new electrical conduit would be installed within the existing driveway to connect the State building with a nearby generator building. Additional electrical and communication conduit connections between the State building and adjacent FAA building would also be implemented. Two bare copper lines about 90 feet each in length would be placed above ground down the ridge from the State building to serve as mitigation in the event of a lightning strike. Attachment A includes a conceptual site plan for this project.

An existing 25-foot-tall telecommunications tower needs to be replaced with a 50-foot-tall tower. Additional microwave and whip antennas will be installed on the new tower along with relocating existing antennas from the State building. This is needed because there has been a change of the State/Federal Rainbow analog microwave system to a new digital microwave in the lower gigahertz (GHz) band. Replacement microwave links all operate in this lower GHz microwave band that forces the use of heavy, large-diameter, high-performance, solid microwave dish antennas that are too large of a structural load for the existing tower. This old tower was designed for lighter grid dishes used on the original higher GHz band frequencies.

Second, the FAA installed a new perimeter security fence around the Mt. Ka‘ala AFS facility. Two 13-foot high sections of the fence blocked portions of the signal path of two existing digital microwave radio antennas resulting in their temporary relocation on top the State building. The weight of these antennas has contributed to some of the damage to the roof. The temporary roof antenna mounting structure is not strong enough to withstand wind speed above 80 mph. To achieve a permanent acceptable path clearance, these antennas must be permanently raised and relocated to a taller replacement tower. There is also a need for additional microwave capacity to the island of Kaua‘i, new links, and additional land mobile radio services. The USCG will be responsible for demolishing this existing radio tower, designing, and constructing the new taller tower.

An existing microwave antenna site located downhill off Kamaohanui Ridge (see Exhibit 2) has two antenna mounting structures. A 48-inch wide, 75-inch tall VHF corner reflector antenna needs to be relocated from its current location on the State's facility building roof to the lower of the two antenna mounts. Relocation of this antenna is needed to lower the radio frequency energy emitted from its existing

Exhibit 2.
Photo of Radio Facility and Downhill Antenna Site on Kamaohanui Ridge

site on the building roof. The corner reflector is needed to provide State Civil Defense with emergency siren control. Additional conduit lines routed from the State building to this antenna site are also required to improve reliability.

The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced by ICSD with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility.

There is one existing above-ground microwave antenna feed line routed from the Mt. Ka‘ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits are planned to be routed above ground from the State's radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) generally following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai‘i for its Hawai‘i Interactive Television System (HITS) distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State's critical land mobile radio systems that support public safety and critical government operations. Construction of these improvements are planned to start in the Fall of 2012 and be completed by the end of 2013.

B. IDENTIFICATION OF HISTORIC PROPERTIES

An archaeological inventory survey investigation for the project was conducted by Cultural Surveys Hawai‘i, Inc. The study was conducted to identify, document, and make Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the survey area's historic properties per the requirements of Chapter 13-13-276, Hawai‘i Administrative Rules (HAR). Because no historic properties were identified in the survey area, this investigation is termed an archaeological assessment per Chapter 13-13-275-5, HAR. A copy of this report is included in Attachment B.

Area of Potential Effect

The project area was estimated to be about 0.15 acres (6,534 square feet) and includes building repairs, electrical improvements, and conduit improvements to the antenna dish site along Kamaohanui Ridge. The archaeological study area was approximately 2.37 acres because it included the Mt. Ka‘ala AFS facility. A figure showing the project area and archaeological study area is included in Attachment A.

The "area of potential effect" (APE) on historic sites was established based upon the improvements planned. This APE includes the area within which the project may directly or indirectly cause alterations to the use of a historic property. Based on available information, the project will not have visual, auditory, or other environmental impacts to any known archaeological historic properties located either inside or outside the project area. Therefore, the area of potential effect is the same as the project area of about 0.15 acre.

Scope of Archaeological Investigation

The scope of the archaeological investigation included historical research of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property. A field inspection of the project area was performed to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. Cultural consultation with several individuals was also conducted to solicit input on cultural issues and concerns with the project.

Results of Background Research

The State Historic Preservation Division (SHPD) and the National Register of Historic Places (NRHP) do not list Mt. Ka‘ala as a registered historic property. The first systematic archaeological study of Kamananui was conducted by J. Gilbert McAllister of the Bernice P. Bishop Museum in the 1930s. Although McAllister identified 13 sites within Kamananui, all of these sites are located some distance away (over two miles) from the Mt. Ka‘ala radio facility project site. In the Kamananui *Ahupua‘a*, the pattern of residences and burials appear to have been nearer to the coastline.

There have been few archaeological studies in the vicinity of the Mt. Ka‘ala AFS. Inland studies have reported no finds other than the irregular rock structures noted far inland. The majority of documented burials within the Kamananui *Ahupua‘a*, seem to be specific to coastal Jaucas sand deposits. Therefore, it seems unlikely any traditional Hawaiian archaeological finds would occur anywhere in the vicinity with the possible exception of trail alignments traversing the cliffs.

Consultation with the SHPD was conducted in 2002 as part of a previous project for the currently proposed State tower replacement at this facility. However, that project did not move forward at that time due to funding issues. A comment letter received from SHPD dated April 5, 2002 (included in Attachment C) as part of consultation efforts determined that a review of their records showed there were no known historic properties at this project location. A cultural resource management plan prepared by the U.S. Air Force also reported that there were no previously identified archaeological or historic buildings within the fenced portion of this installation. SHPD also noted that they believed the tower replacement project would have "no effect" on archaeological sites or historic buildings because the proposed action was located within the existing fenced portion of the installation.

The SHPD letter also noted that consultation with the native Hawaiian community should occur on the cultural importance of Mt. Ka‘ala and the proposed action. SHPD would then review the results of that consultation before confirming a “no effect” on historic properties determination. The current archaeological work conducted by CSH for this present project included consultation with several members of native Hawaiian organizations as discussed later.

A recent letter from SHPD dated April 8, 2011 (included in Attachment C) as part of consultation efforts for this project, provided additional comments. One comment was related to the Mt. Ka‘ala AFS having buildings possibly being eligible for the NRHP as a Cold War facility. However, the facility is not yet 50 years old because it became operational in 1965, and the existing Federal buildings are located outside the project’s APE. The State building within this facility received approval of its construction plans in November 1988, and is thus not 50 years old.

Results of Fieldwork

Most of the summit telecommunication facilities were enclosed within a high chain link and barbed wire topped fence. Mt. Ka‘ala is proverbially known for good views, but few signs of human endeavor in the vicinity were seen other than the government facilities within the installation. The area planned for improvements within the installation is clearly visible and was graded for the contemporary construction of existing facilities. Nothing of archaeological interest is believed to be present within the installation.

A focus of the fieldwork was the short stretch of ridge extending down to where the replacement antennae and additional conduit are proposed. The ridge was steep, narrow and heavily vegetated. The proposed downhill antenna site has been previously modified for the existing dish antenna. It seems unlikely there ever was any modification of this heavily vegetated ridge until modern times. Other major trails to the summit follow other more suitable ridges.

The pedestrian inspection of the project area confirmed the findings of the background research. No pre-contact features were located during the field inspection. No historic properties, cultural deposits, or cultural material were found within the proposed project area.

Results of Cultural Consultations

Consultation was conducted with several individuals or representatives of Native Hawaiian organizations to solicit their input and comments on the project relative to cultural issues associated with Mt. Ka‘ala. A draft of this archaeological assessment report was provided to seven representatives of organizations in June 2011 with a request for comment. Follow-up efforts were also made with these representatives to solicit their comments. The organizations are listed below.

1. Hui Mālama I Na Kupuna ‘O Hawai‘i Nei;
2. President, Waialua Hawaiian Civic Club;

3. Individual knowledgeable about historic sites, wahi pana, and Heiau;
4. Individual on the O‘ahu Island Burial Council, Nā Koa ‘O Pālehua, and Association of Hawaiian Civic Club’s Historic Preservation Committee;
5. President, Hawaiian Civic Club of Wahiawā;
6. Individual with Hawaiian Civic Club of Wahiawā;
7. Individual with OHA-Native Hawaiian Historic Preservation Council, past member of O‘ahu Island Burial Council, lineal descendant, and cultural and historical traditions of Waialua.

Substantive comments were received from three of these individuals, and are summarized below.

1. Generally supportive of the necessary upgrade.
2. Comments that raised the issue of the jurisdiction of United States law on Hawaiian Kingdom national lands, and confirmation of lawful ownership of the subject land. As previously discussed in this document, portions of the property associated with the Mt. Ka‘ala AFS are owned by both the U.S. Department of Army and State of Hawai‘i.
3. Comments that Mt. Ka‘ala was the receptacle of Kane‘s water, “Wai ‘O Kane,” and it resides on a natural elevated platform that would make it have an enormous amount of cultural significance anciently. The project seemed to be one of renovation with minimal impact and within the previous footprint. Improvements can be supported provided efforts are implemented to protect its ecosystem, the native plants, and wetlands. The project consists of repair of and renovation work to existing State facilities, and best management practices will be implemented to minimize temporary effects on the surrounding environment from construction activities. Biological studies have been conducted and determined the improvements should not negatively affect threatened and endangered plants, avifauna, mammals, and invertebrate. Once completed, there should be no long-term effect because the State radio facility is un-manned.

Proposed Project Effect and Determination

The systematic pedestrian inspection conducted of the project area did not identify any historic properties being present. Furthermore, virtually the entire project area has been impacted by the present facilities associated with the Mt. Ka‘ala AFS site. These findings are generally consistent with expectations for the project area based on historical and previous archaeological research. Cultural consultations undertaken did not raise specific cultural concerns with the project.

Therefore, no historic properties, cultural deposits, or cultural material were identified within the proposed project area. Land clearing for existing facilities likely impacted or destroyed any possible surface or subsurface historic properties that may have existed within the project area. Consequently, the proposed effect determination for the proposed project is “no historic properties affected.”

ATTACHMENT A

Figures

Regional Districts Map (Community Plan Districts)
ICSD MT. KA'ALA RADIO FACILITY IMPROVEMENTS PROJECT
WAHIAWĀ AND WAIALUA, O'AHU

Figure 1

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

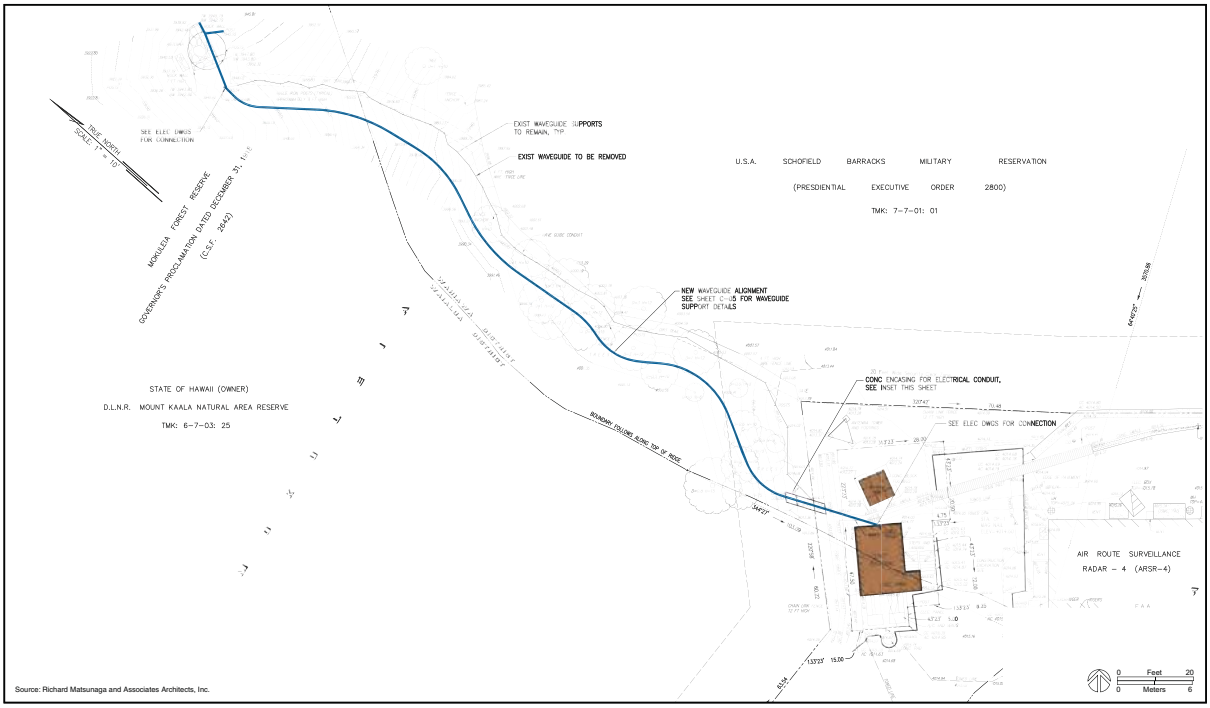
Tax Map Key Map Based Upon State GIS Data

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Figure 2

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division



Mt. Ka'ala Radio Facility Site Plan

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Figure 3

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Source: Cultural Surveys Hawaii (July 2011)

Archaeological Study Project Area

Figure 4

ISCD Mt. Kaala Radio Facility Improvements Project
Wahiawa and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

ATTACHMENT B

Archaeological Assessment Report

Archaeological Assessment for the Information and Communication Services Division (ICSD) Mt. Ka‘ala Radio Facility Improvements Project, Kamananui Ahupua‘a, Waialua District, O‘ahu Island

[TMK: (1) 6-7-003:023 por. & :025 por. (State) and (1) 7-7-001:001 por. (Federal)]

Prepared for

Helber Hastert & Fee, Planners

Prepared by

Hallett H. Hammatt, Ph.D.

and

David W. Shideler, M.A.

Cultural Surveys Hawai‘i, Inc.

Kailua, Hawai‘i

(Job Code: KAMANANUI 3)

August 2011

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Reference	Archaeological Assessment for the Information and Communication Services Division (ICSD) Mt. Ka‘ala Radio Facility Improvements Project, Kamananui Ahupua‘a, Waialua District, O‘ahu Island [TMK: (1) 6-7-003:023 por. & :025 por. (State) and (1) 7-7-001:001 por. (Federal)] (Hammatt and Shideler 2011)
Date	August 2011
Project Number (s)	Cultural Surveys Hawai‘i (CSH) Job Code KAMANANUI 3
Investigation Permit Number	The fieldwork component was carried out under archaeological permit number 10-10, issued to Cultural Surveys Hawai‘i, Inc. (CSH) by the Hawai‘i State Historic Preservation Division/ Department of Land and Natural Resources (SHPD/DLNR), per Hawai‘i Administrative Rules (HAR) Chapter 13-282.
Project Location	The project area is on the summit of Mount Ka‘ala. The State’s radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Ka‘ala Air Force Station (AFS) situated at the summit of Mt. Ka‘ala. The State also has a microwave antenna site located downhill off Kamaohanui Ridge connected to the radio facility by an above-ground conduit line. The project area is depicted on the U.S. Geological Survey 7.5-minute series topographic map, Haleiwa (1999) and Schofield Barracks (1998) quadrangles
Land Jurisdiction	Federal (U.S. Air Force and Federal Aviation Administration) and State
Agencies	Hawai‘i State Historic Preservation Division/ Department of Land and Natural Resources (SHPD/DLNR)
Project Description	This Department of Accounting and General Services (DAGS) Radio Facility Project involves placing new conduit within an existing driveway to connect the State building to a nearby generator building, replacement of an existing 25 foot tower with a 50 foot tower, the relocation of a small (10-foot diameter) solid microwave antenna dish approximately 230 feet northeast and 90 feet below grade of an existing State building to be connected with four conduit lines alongthe existing conduit route. Minimal excavations within the previously graded existing State compound is anticipated.
Project Acreage	The project area per se is approximately 0.15 acres. The archaeological study area is approximately 2.37 acres.
Area of Potential Effect (APE) and Survey Acreage	Based on available information, the proposed project will not have visual, auditory or other environmental impacts to any known archaeological historic properties located either inside or outside the project area. Therefore the area of potential effect is the same as the project area 0.15 acre APE.

Historic Preservation Regulatory Context	This project has previously undergone a Section 6E-8 Historic Preservation Review (Aiu to Unoki, April 8, 2011, Log No 2011.0679, Doc No. 1103RS62; present Appendix A). CSH conducted an archaeological inventory survey investigation for the proposed project. Per the requirements of Hawai‘i Administrative Rules (HAR) Chapter 13-13-276, the study was conducted to identify, document, and make Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the survey area's historic properties. Because no historic properties were identified in the survey area, this investigation is termed an archaeological assessment per HAR Chapter 13-13-275-5. This archaeological assessment report was prepared to support the proposed project's historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-8, HAR Chapter 13-13-275, and any other project-related historic preservation consultation.
Fieldwork Effort	A field inspection was conducted on by Todd Tulchin, B.S., and David Shideler, M.A., under the overall supervision of Hallett H. Hammatt, Ph. D. (principal investigator), and required approximately 8 person-hours to complete.
Number of Historic Properties Identified	None
Effect Recommendation	CSH's effect recommendation for the proposed development is "no historic properties affected." The project area was observed to have undergone extensive land modification.
Mitigation Recommendation	No further archaeological work is recommended for the proposed project.

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Section 1 Introduction

1.1 Project Background

At the request of Helber, Hastert & Fee, Planners, Cultural Surveys Hawai‘i prepared this Archaeological Assessment for a proposed Information and Communication Services Division (ICSD) Division of the Department of Accounting and General Services (DAGS) Radio Facility Improvements Project on the summit of Mount Ka‘ala, at the highest point of O‘ahu in the northern Wai‘anae Mountain Range (Figure 1 to Figure 3). A complex of State (DAGS) and federal (FAA) facilities are present at the summit of Mount Ka‘ala within a high chain-link fence enclosure (Figure 3).

1.1.1 Project Location and Land Ownership

The State’s licensed radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Ka‘ala Air Force Station (AFS) site situated at the summit of Mt. Ka‘ala. Mt. Ka‘ala is at the northern end of the Waianae Mountain Range, and is the highest peak on the island of O‘ahu at an elevation of 4,025 feet above mean sea level (msl). The Mt. Ka‘ala AFS is located where the districts of Wahiawa, Waialua, and Wai‘anae all converge at this mountain’s summit. Portions of the State’s radio facility is situated within both the Waialua and Wahiawa districts because this boundary line crosses through the facility. Electrical conduit improvements would extend from this facility slightly down Kamaohanui Ridge to an existing microwave antenna site into the Waialua district (Figure 4 & Figure 5).

The majority of the land on which Mt. Ka‘ala AFS is constructed is owned by the U.S. Army as part of the Schofield Barracks Military Reservation. This Federal property is identified as Tax Map Key (TMK) (1) 7-07-001: portion of 001. This station is fenced for security, and other government agencies have telecommunication facilities on this site. The U.S. Army maintains tenant agreements with both the U.S. Air Force and the Federal Aviation Administration (FAA) for their facilities at this station. The State of Hawai'i, Hawai‘i Air National Guard, and the U.S. Navy also maintain isolated individual structures.

The western portion of the Mt. Ka‘ala AFS includes two parcels owned by the State of Hawai‘i, identified as TMK (1) 6-07-003: portions of 023 and 025. These areas of the station are leased to the U.S. Air Force by the State of Hawai‘i. This State-owned property is designated as the Mt. Ka‘ala Natural Area Reserve and is under the jurisdiction of the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW).

1.1.2 Project Background and Objectives

The State DAGS ICSD is the State’s central organization carrying out the responsibilities for statewide data processing, information systems, and telecommunications. As a result, the ICSD owns and operates the State’s telecommunications systems and supporting infrastructure as part of its responsibilities. Major components of the State’s system include microwave radios, land mobile radio systems, antenna systems, towers, and the building at the Mt. Ka‘ala AFS.

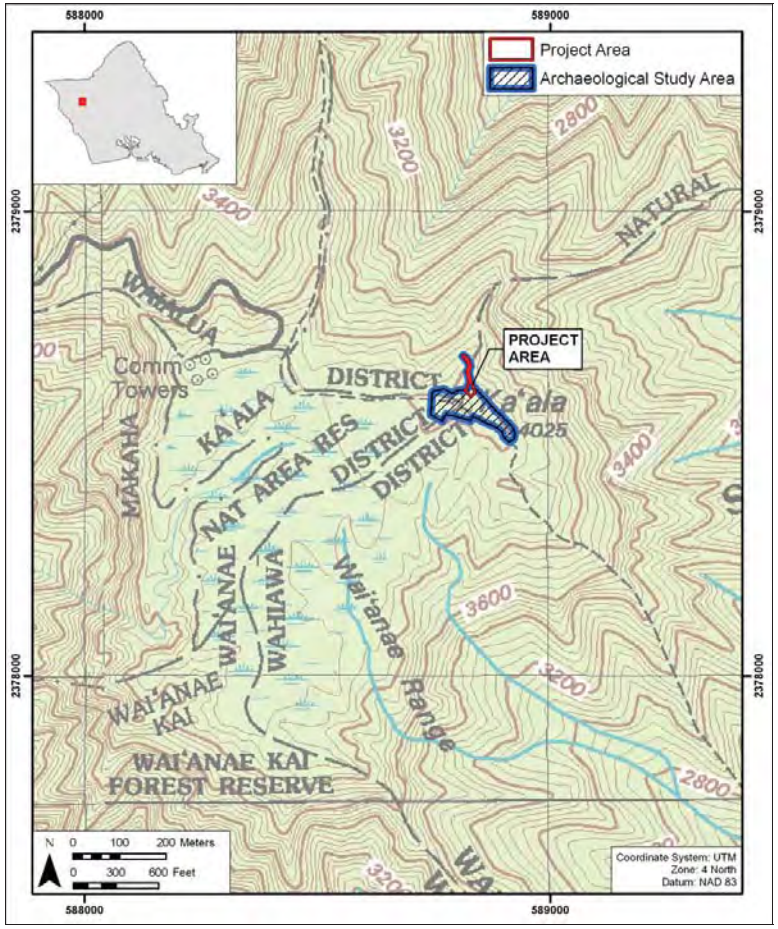

Figure 1. Portion of the U. S. Geological Survey 7.5-minute series topographic map, Hale‘iwa (1999) and Schofield Barracks (1998) quadrangles, showing the project area

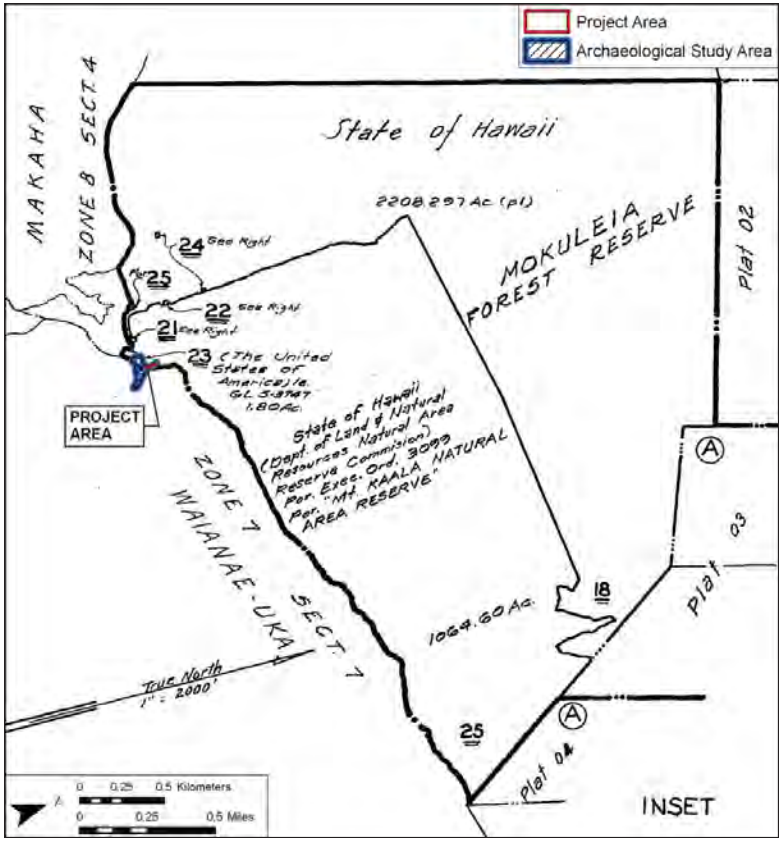

Figure 2. Tax Map Key (TMK) plat [1] 6-5-02 showing the project area

Figure 3. Aerial photograph (source: Google Earth 2008) showing the project area

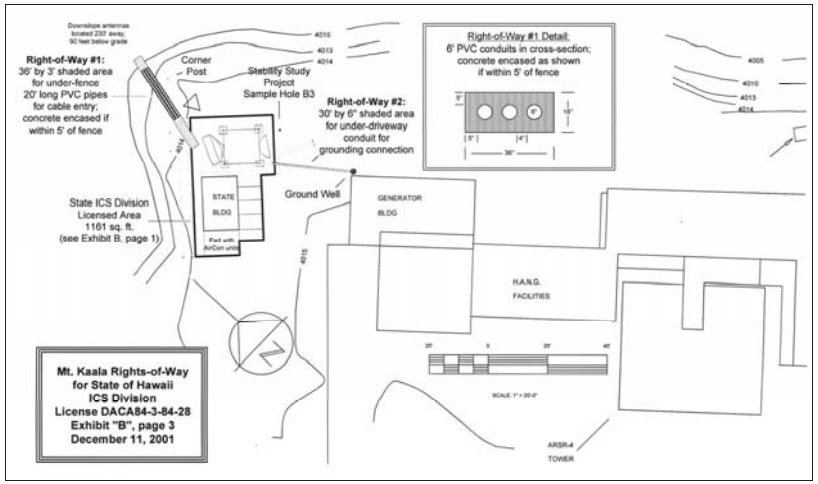

Figure 4. Plan showing relationship of State Building and conduit extending toward down slope antennas

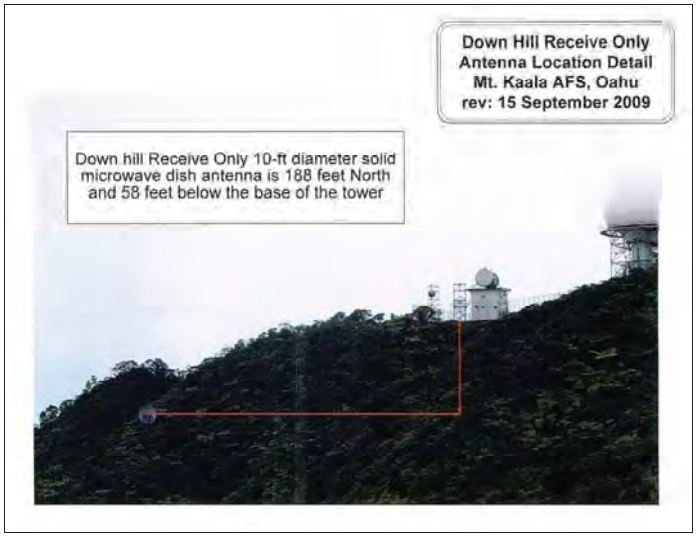

Figure 5. View of the relationship of Mt. Ka'ala facility to the down slope dish antenna

The ICSD provides services to all agencies in the State of Hawaii. The ICSD plans, coordinates, organizes, directs, and administers services to ensure the efficient and effective development of systems. Over the years, there have been tremendous advances in technology and an increased reliance on telecommunications and computers in the workplace. The ICSD is leading the way in implementing cost-effective and efficient information and communication services. The proper application and installation of these technologies continues to be a key component towards the accomplishment of agency missions relating to public safety, emergency services, disaster response, and essential government operations.

To meet this agency's responsibilities effectively, improvements are needed to the State's radio facility to repair building deficiencies and increase reliability of the equipment. This building is in need of various interior and exterior repairs.

An existing 25-foot-tall telecommunications tower needs to be replaced with a 50-foot-tall tower for two reasons. First, there has been a change of the State/Federal Rainbow analog microwave system to a new digital microwave in the lower 6 GHz band instead of the 2 GHz band. Replacement microwave links all operate in the lower 6 GHz microwave band that forces the use of heavy, large-diameter, high-performance, solid microwave dish antennas that are too large of a structural load for the existing tower. This old tower was designed for the lighter grid dishes used on the original 2 GHz band frequencies.

Second the FAA installed a new perimeter security fence around the Mt. Ka'ala AFS facility. Two 13-foot high portions of the FAA fence block portions of the signal path of two existing 6 GHz digital microwave radio antennas at Mt. Ka'ala. In order to achieve necessary path clearance, the antennas must be permanently raised, requiring a taller tower.

An existing microwave antenna site located downhill off Kamaohanui Ridge (see Figure 5) has two antenna mounting structures. A VHF corner reflector antenna needs to be relocated from its current location on the State's facility building roof to the lower of the two antenna mounts. Relocation of this antenna is needed to lower the radio frequency energy emitted from its existing site on the building roof. This corner reflector antenna to be exchanged was inadvertently installed on the building years ago and thus needs to be moved. The corner reflector is needed to provide State Civil Defense siren control. Additional conduit lines routed from the State building to this antenna site are also required to improve reliability.

1.1.3 Proposed Project Improvements

Both interior and exterior repairs to the existing State building would be implemented to fix deficiencies. This includes re-roofing to address cracks and leaks and upgrading electrical service for the facility. A new conduit would be installed within the existing driveway to connect the State building with a nearby FAA generator building. Other repairs include replacing security lighting for the building, doors, and locks. Two 90-foot bare copper wires would also be placed above ground on each side of the ridge to serve as an electrical ground in the event the State facility is struck by lightning.

The State's existing 25-foot-tall tower will be replaced with a 50-foot-tall tower within the State's licensed area. Additional microwave and whip antennas will be installed on the new tower along with relocating existing antennas from the State building. The U.S. Coast Guard will

be responsible for demolishing this existing radio tower, and designing and constructing the new taller tower.

A 48-inch-tall, 75-inch-wide corner reflector antenna will be relocated from the State building to the lower mount at the existing antenna site downhill of Kamaohanui Ridge. The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced by DAGS ICSD with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility.

There is one existing above ground microwave antenna feed line routed from the Mt. Ka‘ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits are planned to be routed above ground from the State’s radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai‘i for its Hawai‘i Interactive Television System (HITS) distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State’s critical land mobile radio systems that support public safety and critical government operations. Construction of these improvements are planned to start in the Fall of 2012 and be completed by the end of 2013.

Minimal excavations within the previously graded existing State compound is anticipated in association with trenching for a utility conduit and erection of a short (50-foot tower). The project area per se is approximately 0.15 acres. The archaeological study area [TMK: (1) 6-7-003:023 & :025 (State) and (1) 7-7-001:001 Federal)] is approximately 2.37 acres – conforming to the entire chain link fence enclosure as well as the short run to the proposed lower elevation antenna.

The immediate vicinity is the confluence of the traditional Native Hawaiian land districts (*moku*) of Waialua, Wai‘anae and Wahiawā and is the confluence of the traditional Native Hawaiian smaller land units (*ahupua‘a*) of Kamananui and Mokulē‘ia (Waialua Moku), Mākaha and Wai‘anae (Wai‘anae Moku) and Wahiawā – which all come together at the summit of Mount Ka‘ala. The location and affinities of the specific project area are understood to be primarily with Kamananui Ahupua‘a of Waialua (see Figure 7). An overview of the cultural and archaeological legacy of both Kamananui Ahupua‘a and the summit area of Mount Ka‘ala are presented in this study.

1.2 Scope of Work

The scope of work for this investigation includes:

1. Historical research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
2. Field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment was to identify any sensitive areas that may require further investigation or mitigation before the project proceeds.
3. Preparation of a report to include the results of the historical research and the fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It was also to provide mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

1.3 Environmental Setting

1.3.1 Natural Environment

The archaeological study area of approximately 2.37 acres includes a relatively level, previously graded area of the summit of Mount Ka‘ala and a short approximately 200 foot stretch of narrow ridge descending sharply to the north (toward Mokulē‘ia).

Annual rainfall in the project area vicinity is approximately 2,000 mm (79 inches) (Giambelluca et al. 1986:73)

Project area sediments on the summit plateau are Alakai mucky peat, 0 to 30 percent slopes (rAAE) and the northern extending ridge line lies on Tropohumults-Dystrandepts association (rTP) soils. (Foote et al. 1972; Figure 6).

The Alakai series consists of deep, very poorly drained soils that formed in organic material overlaying clay weathered from basalt. Alakai soils are on ridges and have slopes of 0 to 30 percent. These soils are very poorly drained; with slow runoff; and slow to moderately slow permeability below the muck. Used for wildlife, watershed, and recreation. Vegetation is *‘ōhia* (*Metrosideros collina*), *lapalapa* (*Cheirondendron sp.*), Hawaiian lobelia (*Lobelia hypoleuca*), *mokihana* (*Pelea anista*), *puakeawa* (*Styphelia tameiameiae*), treefern (*Cibotium splendens*), bracken fern (*Pteridium aquilinum*), *uki uki* (*Dianella*), and associated plants.

The Tropohumults-Dystrandepts association consists of the mountainous areas and lower slopes of the Wai‘anae Range, at elevations from 1,000 to 4,000 feet. This association is composed of gently sloping to very steep, well-drained soils that are underlain by soft weathered rock, volcanic ash, or colluvium, on narrow ridges and side slopes. The mean annual soil temperature is between 56 and 71°F.

Tropohumults soils occur on the narrow ridges at the upper elevations. They have a surface layer and subsoil of reddish-brown silty clay. The subsoil has subangular blocky structure and is

underlain by saprolite (original rock). Dystrandepts occur in concave positions on the steep side slopes. They were derived dominantly from volcanic ash mixed with colluvium. They are dark colored, and in most places the surface is silty clay. The subsoil is generally massive (irregular and lacking structure); however, there are areas where the subsoil is fine textured.

1.3.2 Built Environment

The summit of Mount Ka‘ala has been completely graded for state and federal facilities that are for the most part contained within a high chain-link fence enclosure. The Mount Ka‘ala Summit complex is accessed via a long winding paved road.

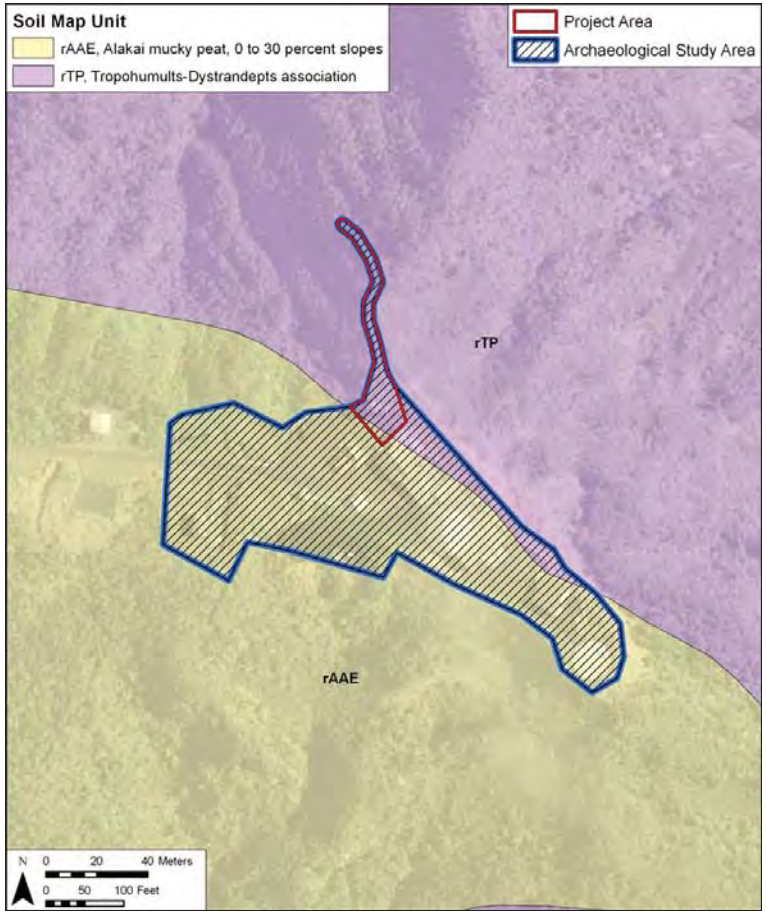

Figure 6. U.S. Geological Survey 7.5-Minute Series Topographic map, ‘Haleiwa (1999) and Schofield Barracks (1998) quadrangles, with overlay of the U.S. Department of Agriculture soil survey data (Foote et al. 1972), indicating sediment types within the project area

Section 2 Methods

2.1 Field Methods

The fieldwork component of this archaeological assessment was conducted on November 5, 2010 by two CSH archaeologists, Todd Tulchin, B.S., and David Shideler, M.A., under the overall supervision of Hallett H. Hammatt, Ph. D. (principal investigator), and required approximately 8 person-hours to complete. The fieldwork consisted of a pedestrian inspection of the proposed DAGS radio facility project area as well as a study as far as possible of the State/Federal compound from outside the tall chain-link fence enclosure.

No historic properties were encountered and the pedestrian inspection was documented with field notes, maps, and photographs.

2.2 Document Review

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

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.

2.3 Consultation

By way of cultural consultation, a draft of this report was circulated to seven parties on June 6, 2011 with a request for comment. Two weeks later on June 21 initial follow-up occurred. The results are presented in the consultation Section 7 of this study.

Section 3 Background Research

The proposed DAGS Radio Facility Project, is understood to lie primarily within the traditional Hawaiian land division of Kamananui Ahupua‘a in Waialua District (Figure 7). This section explores the traditions and history of Kamananui of Waialua with particular study of Mount Ka‘ala per se provided in the following Section 4.

Pukui et al. (1974:80) translate the name “Kamananui” as “the large branch” presumably a reference to Ki‘iki‘i Stream (also known as Kaukonahua Stream) that joins Paukauila Stream at the head of Kaiaka Bay. Kirch and Sahlins (1992:20) relate that Kaiaka Bay “is more commonly called Waialua Bay in historic accounts,” since it is within Kamananui, “the political center of the *moku* [district] of Waialua.”

There is another Kamananui in Waialua District that is a tributary to the Waimea River.

3.1 Mythological and Traditional Accounts

There are few mythological accounts specific to Kamananui, O‘ahu. Thrum’s (1907:252-253) account of “Kaneaukai A Legend of Waialua” makes a passing reference to Kamananui Stream. Two *kahuna* of Waimea are told by the god Kāneaukai to go to Mokulē‘ia to fetch a certain image of the god. The *kahuna* baulk at going “as it was a dark night and there were usually quicksands after a freshet in the Kamananui River.” It is agreed they will send their sons who were aided: “…when a meteor (*hōkū kaolele*) appeared and went before them, showing them how to escape the quicksands.”

3.2 Early Historic Period

Waialua enters the historic record in 1794 when Ka-‘eo-kū-lani recruited the “warriors of Waialua and Wai‘anae” to make war on his nephew Kalanikūpule, then ruler of O‘ahu (Kamakau 1992:168); by December 1794 Ka‘eo had been killed and his forces were defeated. Kalanikūpule was deposed the following year when the invading Hawai‘i Island forces of Kamehameha prevailed at the Battle of Nu‘uanu in April 1795. Apparently the Waialua District was spared direct involvement in the battles associated with Kamehameha’s conquest. However, Kamehameha’s hegemony on O‘ahu would have immediate consequences for the district — including Kamananui Ahupua‘a — during the first decades of the 19th century.

Handy (1940:85) relates that Kamananui formerly had:

> … large terrace areas along the flatlands between the junction of Helemano and Poamoho Streams and the flatland west of Poamoho. There were also small terrace areas up in the lower flats of Poamoho and Kaukonahua Valleys. There were small flats in the bottom of Kaukonahua Canyon for several miles above its junction with Manawai Stream. Poamoho is probably too narrow for taro terraces. It is likely that in these gulches, as at Waimea, sweet potatoes and bananas were planted around home sites along the ridge and near taro patches at the bottom of the gulch. Wild taro and bananas grow in Manawai Valley and presumably also in the other five valleys that run up toward Puu Kane. At Kamananui are the remains

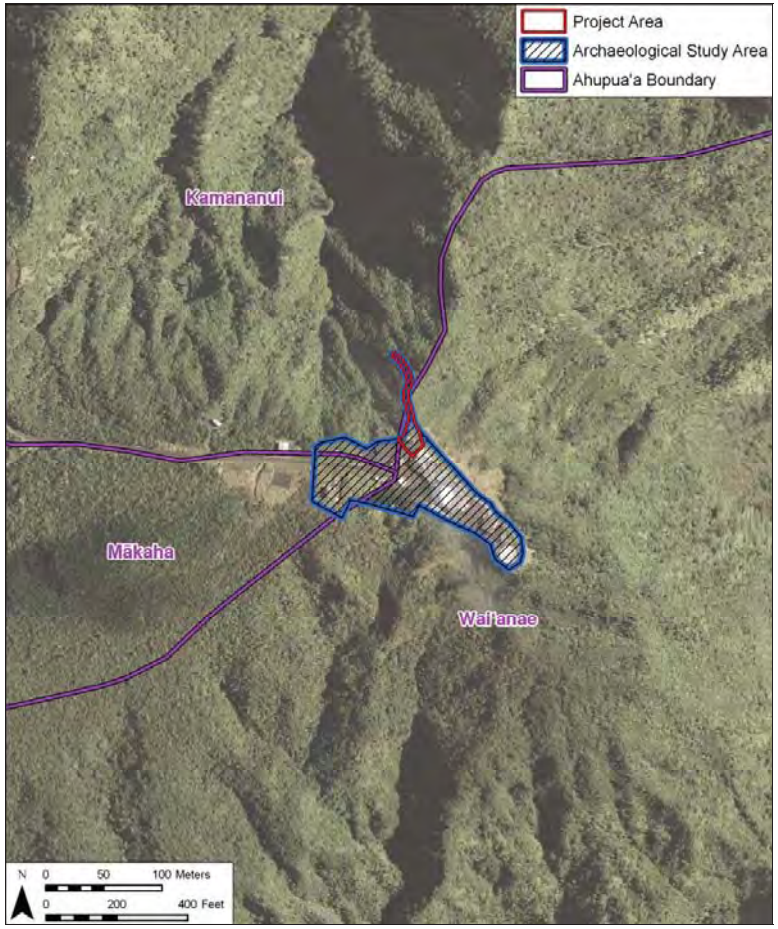

Figure 7. Aerial photograph with annotations of *ahupua‘a* boundaries

of what McAllister describes as “the longest irrigation ditch of which there is any memory: among modern Hawaiians.

3.3 Early to Mid-1800s

> The Hawaiian Islands began exporting sandalwood to the Orient shortly after 1800 and the commerce flourished until the supply dwindled in the mid-1830s. Trade in sandalwood was the strict monopoly of the ali‘i beginning with Kamehameha. At the height of the sandalwood boom, Kamehameha was buying foreign ships, including six vessels between 1816 and 1818, to transport his own wood to the Orient (Kuykendall 1965:87). When Kamehameha bought the schooner Columbia in 1817, it was paid for with sandalwood from Kauai and from the districts of Waimea and Wai‘anae on O‘ahu (Kuykendall 1965:88).

After Kamehameha’s death in 1819, Liholiho (Kamehameha II) allowed his chiefs to share in the trade, resulting in an unrestrained demand on stocks of the wood and upon the energies of the *maka‘āinana* (commoners) who harvested the sandalwood. In October 1817, a Russian visitor on O‘ahu noted: “There are now many fields left uncultivated, since the natives are obliged to be cutting sandalwood” (Barratt 1988:218).

“Traders records from Kamehameha’s last years show several important *ali‘i* trafficking in sandalwood on their own, including...Kalaimoku, Cox, Boki, Ka‘ahumanu, and some others” (Kirch and Sahlins 1992:59). Among these *ali‘i*, Ke‘eaumoku Cox was the Hawai‘i Island chief who had been given control of Waialua by Kamehameha. Diaries and journals of the western entrepreneurs on O‘ahu record the early 19th-century sandalwood-based trade that intruded upon the established mores and customs of the Waialua population. Stephen Reynolds, a clerk for the Honolulu merchant William French, noted in his journal on April 30, 1824:

> Very hot sun — many of the residents [of Honolulu] preparing to go to Wairua [Waialua], some for wood — some to buy hogs, some for pleasure — All the Kanakas of Wairua belonging to Cox who lately died, came up to day — bringing cows, Pigs, Dogs, Fowls & other things, produce of the Country to give to Krymakoo [Kalaimoku, the Regent], Kahumana [Ka‘ahumanu], & other principal chiefs — according to the custom of the country. (King 1989:27)

Quite likely some of the sandalwood came from the slopes of Mount Ka‘ala.

During the same decades that commercial ventures were forcing changes upon the Hawaiian landscape, western missionaries were gaining a foothold in the islands. The American Board of Commissioners for Foreign Missions, headquartered in Boston, sent its first company of missionaries to the Hawaiian Islands in 1819, leaving Boston on October 23rd aboard the brig Thaddeus.

Accounts by missionary visitors present some of the first documentation of the Kamananui landscape and inhabitants. By the 1820s, the Protestant missionaries had established close links with the *ali‘i*. From July to August 1826, Ka‘ahumanu and an entourage consisting of up to 300 people conducted a proselytizing tour around O‘ahu. Rev. Hiram Bingham’s account of the proceedings at Waialua suggests the extent of the missionaries’ inroads in the district:

> A very large concourse of people assembled on the Lord’s day, for public worship in the open air. To the listening throngs I endeavored to proclaim the great salvation...
>
> After the Sabbath we examined and encouraged, and partially supplied with books, the incipient schools established there under the particular patronage of Lydia Namahana and Gideon Laanui, to whom the district belonged. There were found under Maiao and his assistant teachers, four hundred and ninety-five male and female pupils, and under Kaoo, one hundred and sixty-four, amounting together to six hundred and fifty-nine pupils, chiefly men and women. (Bingham 1847:295-296)

Lydia Pi‘ia Namahana, sister of Ka‘ahumanu, was involved in the Waialua sandalwood trade by 1826 and the following year, retained control of Kamananui and the Waialua District. Stephen Reynolds’ journal entry of October 24, 1826 noted: “Convoy sailed for Wairua — to get 400 piculs of wood from Piia [Namahana] — Due from Cox’s estate” (King 1989:155).

> Namahana’s husband, Gideon La‘anui, had been born on Hawai‘i Island and grew up in the train of Kamehameha. Elizabeth Pratt, La‘anui’s daughter (by his second wife, Teresa Owana), records that it was Kamehameha himself who arranged La‘anui’s marriage to Namahana:
>
> Among the visitors to the royal court was Kekuwai-Piia [Namahana], who had just become a widow, coming as a guest of her sister, Queen Kaahumanu. Laanui was a boy growing to maturity. The king had not forgotten the great wish of his heart, coveting possession of Waimea and hoping to gain it, if not in battle, through a matrimonial alliance...[Now] he chose a new agent of his ambition by inviting Laanui to the court. The invitation was gladly accepted and the visit lasted for months. Kamehameha was loath to have Laanui depart while he was still slyly intriguing with Kaahumanu to negotiate a marriage between Piia and Laanui. Piia is described as being a person heavily built and not prepossessing in appearance like her sisters Kaahumanu and Kaheiheimalie. When at last the proposition was put squarely to Laanui, that it was the united wish of the king and queen that the marriage should take place, for a moment he was dejected. To wed a woman very many years his senior was not the desire of his heart. Yet realizing that it might be perilous to go contrary to the express desire of the powerful monarch he quietly consented “to take the bitter pill.” (Pratt 1920:46)

La‘anui’s own words (given in testimony to the mid-nineteenth century Land Commission) reveal how he and his wife came to reside at Waialua and tell of his land interests in Kamananui:

> My wife Kuaipua [Lydia Namahana Kekuaipi‘ia] is the foundation [kumu] of my claim here at Waialua, and I have truly become a kamaaina here, like the native children of the place [a lilo maoli i kamaaina no o nei, me ke keiki papa la]. After I had been living at Waialua for a little while with Kekuaipiia, the ili of Ukoa became hers — that is at Kamananui — along with Kalopa [Kalaopa], the two of them. Kaahumanu asked Keeaumoku [Cox] for Lokoea and he consented it be given to Piia and she gave me [a haawi a Piia ia‘u] Ukoa, Lokoea and Kalopa in

> [the ahupua‘a of] Kamananui. When Keeaumoku died in 1824, Ka‘ahumanu gave Piia Waialua, from one point to the other, just for her support [‘food’, kona ai io nae], and Kawailoa from the sea inland to the mountain and one side to the other, excepting the kus [‘ili kūpono]. Piia then said to me: Your land is Kawailoa, from upland to the sea and one side to the other, I retain no ku within it; I give it to you, together with the two ili at Paalaa and the six ili at Kamananui. Ukoa and Lokoea are to be joined with the ahupua‘a of Kawailoa. Thus Piia spoke to me. (in Kirch and Sahlins 1992:95)

La‘anui was living at Kawailoa, adjacent to Kamananui, in 1832 (Namahana had died in 1829) when the Rev. John S. Emerson (1800-1867) and his wife arrived at Waialua Bay to establish a mission station in the Waialua district; Emerson reported in a letter:

> The wind was against us as we entered the harbor at Waialua, and we were obliged to “beat in.” As soon as we approached the land, La‘anui, our chief, came alongside in a canoe to welcome us, presenting us with a good watermelon, of which we ate freely and were at once relieved of our seasickness. (Emerson 1928:55)

Emerson gave the name “Haleiwa” (home of the frigate bird) to their settlement. Emerson’s son, Oliver Pomeroy Emerson, recounts an episode revealing the authority La‘anui possessed within Waialua:

> The new [meeting] house [at Waialua] was opened for the first time for dedication and public worship on September 25th, 1833, and Dr. Judd, Mr. Bingham and Mr. Brinsmade, a merchant, came from Honolulu for the occasion. When they got to the meeting with my father, they found an immense crowd of natives filling every part of the house and others crowding around all the windows and doors, utterly unable to enter. “Truly the spirit of God is here working on the hearts of this people, who are hungering for instruction,” thought my father. Dr. Judd, who had been in the country four years longer than he, began to ask questions, and found that La‘anui had issued positive commands that everyone in the entire district of Waialua should attend this service under threat of severe penalty...When La‘anui had filled the meeting-house with the crowd of people standing, he ordered them to sit down on the floor, packed together as close as possible, but a great many were still compelled to stand outside. After the services were over, Dr. Judd and my father kindly explained to La‘anui that he should not force the people to attend church in that way... (Emerson 1928:88-89)

Protestant missionaries throughout the Hawaiian Islands began census taking in 1831, providing the earliest documentation of the size of the native population after the first decades of western contact. During the first census of O‘ahu Island in 1831-1832, a total population of 2,640 was recorded in the Waialua District, comprising only 8.8% of the entire island population of 29,745 (Schmitt 1977:12). By the census of 1835-1836, the Waialua population had dropped to 2,415 comprising 8.6% of the O‘ahu Island population of 27, 798 (Schmitt 1977:38). These early censuses do not record the specific Kamananui Ahupua‘a population figures.

By the time Protestant missionaries were establishing their presence in Waialua in the 1830s, the sandalwood trade that had driven commerce in the Hawaiian Islands had collapsed. However, new enterprises began emerging to fill the void and activity at Waialua would continue apace. In October of 1819, two whaling ships had anchored in the Hawaiian Islands. During the next decades, other whaling ships followed, as the islands became a victual and layover base in the mid-Pacific. Supplies of beef, fresh and salted, and produce were in demand; and a trade in hide and tallow was also developing. As had happened during the years of the sandalwood trade, authority to commandeer valued goods from the commoners of Waialua was vested in the chiefs.

> The variety as well as amount of things being appropriated from Waialua by the ruling chiefs is impressive. The [letters of Gideon La‘anui] speak of ocean fish taken in sweeps as well as great quantities of fish shipped from the old royal ponds of ‘Uko‘a and Lokoea, of dry cooked taro (pai‘ai) as well as poi, of sweet potato, breadfruit, shrimp, goats and pigs, timbers of different kinds, chickens, oranges and lemons — and often cash money. (Kirch and Sahlins 1992:145)

3.4 Māhele of 1848

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established “for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property” (Chinen 1958:8). This led to the Māhele, the division of lands between the king of Hawaii, the *ali‘i*, and the common people, which introduced the concept of private property into the Hawaiian society. In 1848, Kamehameha III divided the land into four categories: certain lands to be reserved for himself and the royal house were known as Crown Lands; lands set aside to generate revenue for the government were known as Government Lands; lands claimed by *ali‘i* and their *konohiki* (supervisors) were called Konohiki Lands; and habitation and agricultural plots claimed by the common people were called *kuleana* (Chinen 1958:8-15). Kamananui Ahupua‘a was retained by the Kingdom as “government lands”.

The Waihona ‘Aina Māhele website shows nineteen land claims filed in Kamananui (Table 1) but none of them were awarded. This appears to have been the pattern in all the Waialua District lands other than in the *ahupua‘a* of Pa‘ala‘a and Kawailoa. Apparently, the missionary in residence, Reverend John S. Emerson, concluded it was in the interest of the native Hawaiians to buy land outright as grants rather than to complete the Land Commission Award application process. “He himself wrote the deeds and had them recorded, issued the titles, and collected for the Government the amounts due….” (Emerson 1928:141). Reverend John Emerson would assert with some pride, “I have accepted an appointment to sell to the natives, at my discretion, about 10,000 acres of land in the district of Waialua” and further that “I have plotted out about 8,000 acres, mostly grazing land, into about 300 lots, and nearly all are bargained for by natives” (Emerson 1928:142). While this system may have been a service to his parish it makes it more difficult to reconstruct traditional Hawaiian patterns of land use at Kamananui from the historic record.

Table 1. Land Claims at Kamananui Ahupua‘a (seemingly none of which was awarded)

LCA #	Claimant	*Ahupua‘a*	*‘Ili*
02683	Imaui	Kamananui	Paukauila, Puaae
02693	Wanahea	Kamananui	Kamahu
02719	Polu	Kamananui?	Manuaula
02742	Puu	Kamananui	Nonokihewa
02797	Kahakinaawa	Kamananui	-
02805	Keoa	Kamananui	-
02810	Kiekie	Kamananui	Paukauila
02899	Kioi	Kamananui	Kumupali
02902	Kauakahi	Kamananui	-
02908	Kuemanu	Kamananui	Muliwai
04313	Kuhi	Kamananui	-
04314	Kaaiohelohua	Kamananui	-
04315	Kahinapoo	Kamananui	-
04317	Keoahu	Kamananui	Keoneula
07342	Kuokoa, L.	Waialua, Kawailoa, Kamananui	Puaena, Lahuimoho, Honohikilua, Kalaopa, Kupalu, Kawaipuolo, Anahulu, Kalehunui, Kamahu, Lokoea, Kealia
07400	Koa	Kamananui	Paukauila
07405	Kahaimoana	Kamananui	-
07415	Kaelehiwa	Kamananui	-
07416	Kaamoku	Kamananui	-

The nature of the Land Grants is long thin rectangles with parallel sides. This form is not at all typical for traditional Hawaiian land holdings that are more commonly in the shape of irregular polygons.

3.5 1850s to 1900

In 1850, the first road from Honolulu to Waialua was built. Economic changes also impacted life within Waialua District at this time.

> Although the whaling industry in the Pacific Ocean reached its peak in 1859, prices for whale oil collapsed five years later. This price decline during the 1860s led to far fewer whaling ships taking long layovers in the islands. The paucity of whaling ships caused a decline in demand for provisions that adversely impacted the Hawaiian economy, which had been dependent on the heightened demands for goods and services by the whalers. Many residents of districts like Waialua, whom had been dependent on cultivating crops for trade, migrated to Honolulu and other parts of O‘ahu. Twenty-two percent of Hawai‘i’s population resided in Honolulu by 1860 (Juvik and Juvik 1998:174).

Government censuses during the second half of the 19th century document the diminishing population of the Waialua District and, presumably, Kamananui Ahupua‘a. In 1853 a total of

1,126 persons was recorded in Waialua. Nineteen years later, in 1872, the total district population had dropped to 851 (Schmitt 1977: 12-13).

The diaries of Robert C. Perkins, an entomologist and ornithologist, who collected specimens in the Waialua District in 1892-1893, reveal aspects of life in the area near the end of the 19th century:

> The end of 1892 and early months of 1893 were not very favorable for collecting, the weather being generally wet in the mountains and there were three big spates of the mountain streams, these did very much damage to the system of flumes belonging to the Chinese of the district on more than one occasion during the winter months. (Perkins 1892-1893)

The “Chinese of the district” mentioned above were the rice growers who had settled in the area after fulfilling their sugar plantation contracts. In 1852, the first Chinese contract laborers arrived in the islands. Contracts were for five years, and pay was $3 a month plus room and board. Upon completion of their contracts, a number of the immigrants remained in the islands, many of whom became merchants or rice farmers. As was occurring in other locales in the 1880s, groups of Chinese began leasing and buying (from the Hawaiians of Waialua) former taro lands for conversion to rice farming. The taro lands’ availability throughout the islands in the late 1800s reflected the declining demand for taro as the native Hawaiian population diminished.

The Hawaiian Islands were well positioned for rice cultivation. A market for rice in California developed as increasing numbers of Chinese laborers immigrated there beginning in the mid-nineteenth century. Similarly, as Chinese immigration to the islands also accelerated, a domestic market opened.

> By 1876 there was still a considerable amount of former taro land available for rice farming. The great demand for rice land brought disused taro patches into requisition — especially because water rights attached to them...
>
> As the demand for rice continued, it became profitable to bring into use land hitherto unused. The land most easily rendered fit for rice cultivation was swamp or marsh land of which there was a large amount in the islands...At Waialua on Oahu, about three hundred acres of swamp land were reclaimed for rice farming. (Coulter and Chun 1937: 11)

Additionally, as Chinese immigration to the islands increased, a domestic market for rice developed. The immigrant Chinese may account for the rise in the Waialua District population during the last quarter of the 19th century: Government censuses record populations of 939 in 1878, 1,265 in 1884 and 1,286 in 1890 (Schmitt 1977:13). In 1892, 180 acres of rice were under cultivation in the Waialua District; these rice fields were located in the *ahupua‘a* of Mokulē‘ia, Kamananui and Kawailoa (Coulter and Chun 1937:12, 21).

In addition to agricultural changes, western entrepreneurial interests would also alter the Kamananui landscape. The Oahu Railway and Land (OR&L) Company, organized by Benjamin Dillingham in 1889, connected outlying areas of O‘ahu to Honolulu. During the last decade of the 19th century, the railroad extended from Honolulu to Pearl City in 1890, to Waianae in 1895, to Waialua in 1898, and to Kahuku in 1899 (Kuykendall 1967:100).

In 1899, Dillingham recognized the economic advantage of providing additional services for the increasing numbers of visitors to the north shore of O‘ahu. The two-story Hale‘iwa Hotel at Waialua Bay in neighboring Pa‘ala‘a Ahupua‘a had its grand-opening in 1899. The hotel was built at a cost of more than $50,000 on land leased from the Bernice Pauahi Bishop Estate. The hotel’s name – Hale‘iwa - eventually became synonymous with the area above the bay and the “town” which comprised the hotel, a church, and a courthouse.

The development of a railroad system also spurred the development of large-scale sugar farming in Waialua. John Emerson, a missionary, cultivated the first sugarcane in Waialua earlier in the century. He constructed a small sugar mill that also produced molasses. During subsequent decades, other missionaries and western entrepreneurs continued expanding sugar cultivation in the district although still on a small-scale. Benjamin Dillingham, pursuing new business for his railroad, persuaded Castle & Cooke to lease Waialua land already under cultivation of sugar. In 1898, Castle & Cooke organized the Waialua Agricultural Company and soon began a program of land purchases and leases to increase the plantation’s capacity.

A description of the original state of the lands within the plantation at its inception is provided by William Warren Goodale, the Waialua Agriculture Company’s plantation manager:

> At the time Waialua Agricultural Co., Ltd., was organized in October, 1898, it took over the old Halstead Plantation with about 600 acres of cane, certain leases of large tracts of unimproved lands covered with lantana and stones, several hundred acres of rice and ranch land, a small mill, one five million gallon pumping station, no reservoirs or railroads, one small set of steam plows and other equipment of a small plantation. (Clark 2007:58)

3.6 1900s

Waialua Agricultural Company — later named Waialua Sugar Company — continued to expand during the first decades of the 20th century, eventually reaching more than 12,000 acres, including extensive portions of Kamananui and Pa‘ala‘a Ahupua‘a. The expansion of the sugar plantation is reflected in government censuses of the early 1900s. While in 1896 there were only 1,349 persons recorded in Waialua District, subsequent censuses recorded 3,285 persons in 1900; 6,083 in 1910; 7,641 in 1920; and 8,129 in 1930 (Schmitt 1977:13-14). The center of operations was the mill and mill village located in coastal Waialua Town..

Into the 20th century, rice continued to be cultivated in well-watered areas of Kamananui, the Waialua District, and other areas within the Hawaiian Islands. However:

> Rice farming went into a steady decline for several decades before phasing out almost completely just before the beginning of World War II. In 1921, Hawai‘i exported seven hundred thousand pounds of rice as compared to the ten million pounds produced at its height in 1890. In 1929 there were only twenty-five hundred acres of rice grown in Hawai‘i by less than seven hundred laborers, nearly five thousand laborers less than in 1903 when there were 5,643 rice planters. (Chong 1998:53)

On the North Shore, the Hale‘iwa Hotel continued to operate in the first decades of the 20th century. It was taken over by the U.S. Army in the 1930s, serving as a center for recreational

activities by military personnel in Hale‘iwa during World War II. The uplands of Kamananui were divided into a large number of relatively large land grants by the Territory of Hawaii circa 1913. The Waianae Uka U.S. Military Reservation lands that became Schofield Barracks were ceded to the U.S. Government in 1899. Construction of the military post began in 1908 and by 1914, 6,000 men resided on the base (Tropic Lightning Museum 2005). The 10,064 acre federal Schofield Barracks lands [TMK (1) 7-7-001:001] extend from the summit plateau of Mount Ka‘ala as far east as Lake Wilson

The 1919 U.S. War Department map (Figure 8) shows no development in the vicinity of the summit of Mount Ka‘ala.

A 1928/1929 U.S. Geological Survey map (Figure 9) shows two trails but no other development. The trail to Waialua extends west from the present study area along the north edge of the summit plateau before turning almost due north descending a prominent steep ridge towards Mokulē‘ia. A second, Schofield Barracks trail, leaves the vicinity of the present study area along the northeast edge of the summit plateau before turning east descending a steep ridge to the vicinity of Schofield Barracks on the central plateau.

A 1943 War Department map (Figure 10) shows the same two trails as the 1928/1929 map but also shows two additional trails. A trail is shown continuing along the north edge of the Ka‘ala Plateau west of where the trail to Waialua heads north and then continuing along the crest of the Wai‘anae Range towards the upland above Ka‘ena Point. A fourth trail winds across the central portion of the summit plateau from the present study area towards the southwest and then extends due west down a steep ridge towards Wai‘anae. No other development is shown.

During World War II, an aircraft control and warning squadron (ACWS), very high frequency communication station, and base camp were established near the summit of Mt. Ka‘ala. During this period access to the facility was provided by an aerial tram system approximately 2 miles (3.2 kilometers) long. The facility was inactivated after the war until 1963 when construction of the existing facility began.

A 1953 U.S. Army Mapping Service map (Figure 11) shows the same four trails as the 1943 map and now shows the first real development – the establishment of the aerial tram from the immediate vicinity of the present study area down to the southeast to Schofield Barracks. Three small structures are shown just south (outside) of the present study area that are understood to have been associated with the tram way.

Due to their similar mission needs, the FAA and the Hawaii Air National Guard (HIANG) agreed to jointly develop the Mt. Ka‘ala facility in 1962. The facility became fully operational for its current mission in July 1965.

A 1977/178 aerial photograph (Figure 12) clearly shows the summit as having been graded for radar/communications facilities and the present paved Mt. Ka‘ala Road extending to the west of the present study area.

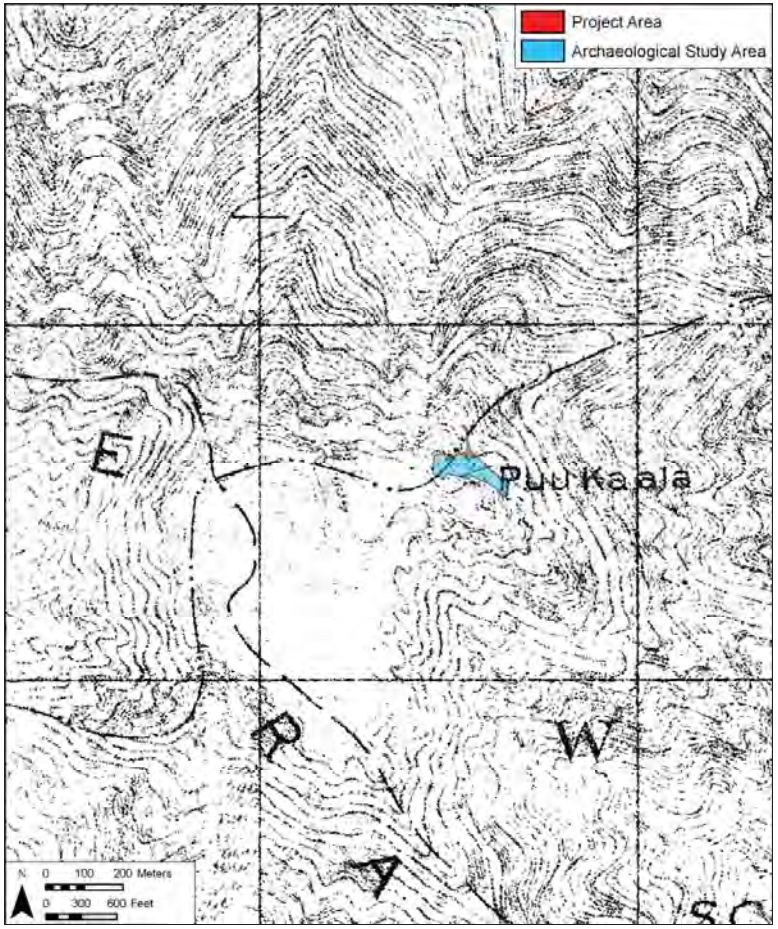

Figure 8.Portion of 1919 U.S. War Department map, Waianae and Wahiawa quadrangles, showing the project area

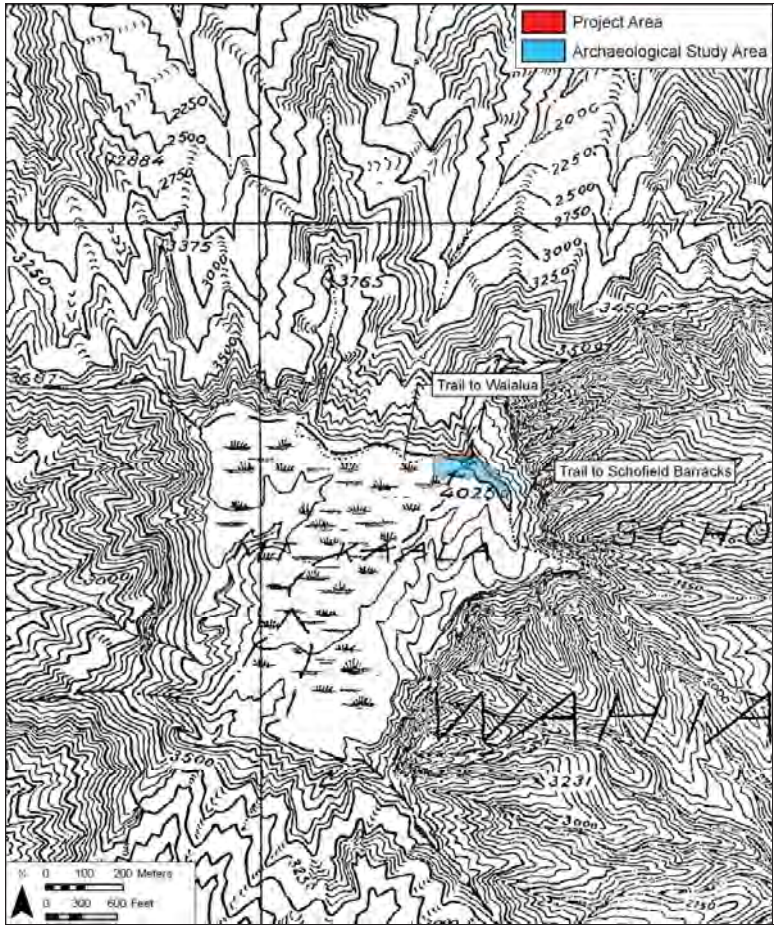

Figure 9. Portion of 1928-1929 U.S. Geological Survey map, Schofield and Wahiawa quadrangles, showing the project area

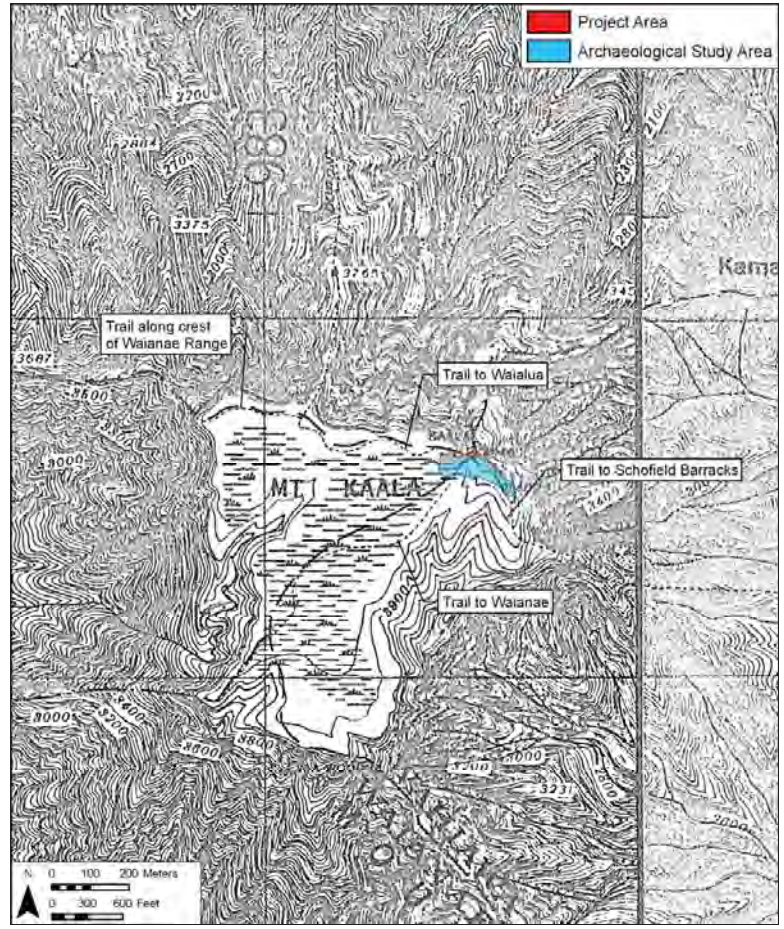

Figure 10. Portion of 1943 U.S. War Department map, Haleiwa, Paalaa, and Schofield Barracks quadrangles, showing the project area

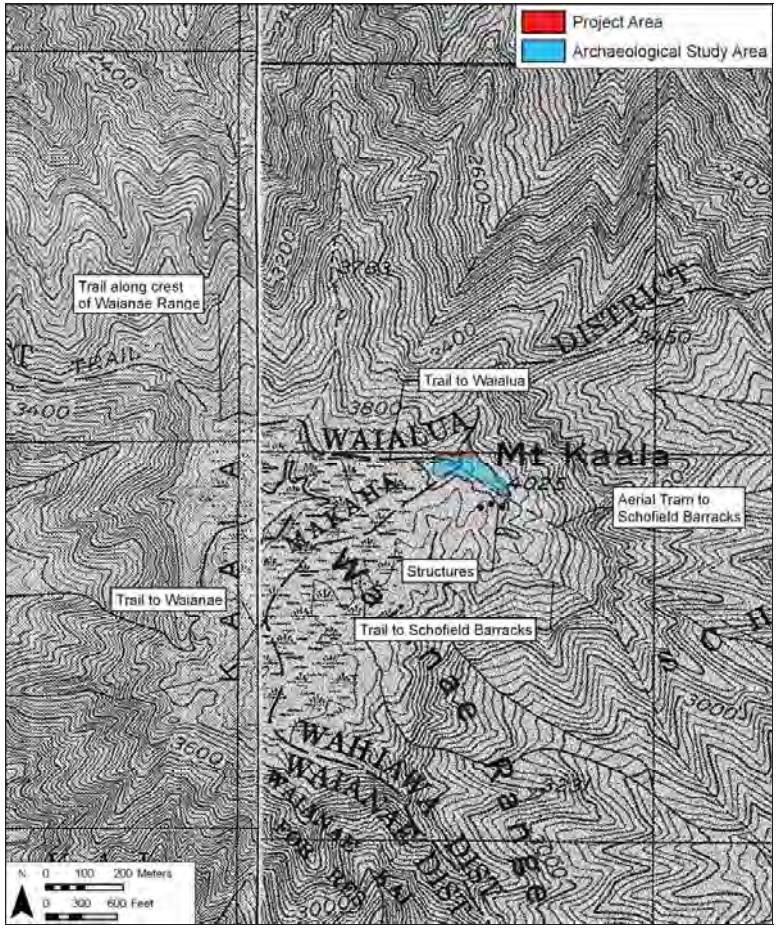

Figure 11. Portion of 1953 U.S. Army Mapping Service map, Haleiwa and Schofield quadrangles, showing the project area

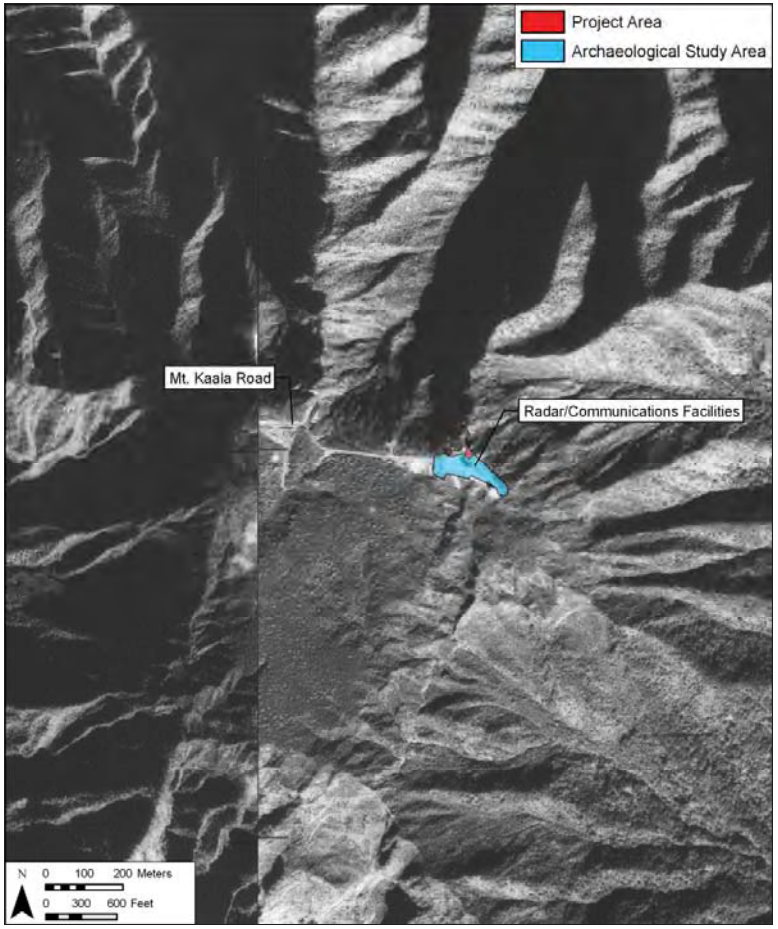

Figure 12. 1977-1978 aerial photograph showing the location of the project area (U.S. Geological Survey Orthoimagery 1977-1978)

Section 4 *Mo‘olelo* of Mount Ka‘ala

Mount Ka‘ala, as the highest point on the island of O‘ahu was the subject of a good deal of Native Hawaiian cultural expression. Sayings and legends of Mount Ka‘ala are explored below.

4.1 *‘Ōlelo No‘eau* (Poetical Sayings) of Mount Ka‘ala

He lā‘au ku ho‘okāhi, he lehua no Ka‘ala

A lone tree, a *lehua* of Ka‘ala

An expression of admiration for an outstanding person, unequaled in beauty, wisdom or skill. (saying 714 Pukui 1983:79)

Ka ua Kolowao o Ka‘ala

The Mountain-creeper rain of Ka‘ala.

This rain is accompanied by a mist that seems to creep among the trees.

(saying 1573 Pukui 1983:169)

Ka wahine hele lā o kaiona,

Alualu wai li‘ulā o ke kaha pua ‘ōhai

The woman, Kaiona, who travels in the sunshine pursuing the mirage of the place where the *‘ōhai* blossoms grow.

Kaiona was a goddess of Ka‘ala and the Wai‘anae Mountains. She was a kind person who helped anyone who lost his way in the mountains by sending a bird, an *‘iwa*, to guide the lost one out of the forest. In modern times Princess Bernice Pauahi Bishop was compared to Kaiona in songs. (saying 1643 Pukui 1983:177)

Ke kaha ‘ōhai o Kaiona

Kaiona’s place where the *‘ōhai* grows.

Kaiona is a benevolent goddess whose home is Mt. Ka‘ala and vicinity. The *‘ōhai* grew in profusion there. Because of her graciousness, Princess Bernice Pauahi Bishop was compared to this goddess in songs. (saying 1714 Pukui 1983:185)

Nani Ka‘ala, he ki‘owai na ke kēhau

Beautiful Ka‘ala, a pool that holds the dew.

Praise of Mt. Ka‘ala, on O‘ahu, a depository for the dew. . (saying 2273 Pukui 1983:248)

In these ‘*Ōlelo No‘eau* (Poetical Sayings) of Mount Ka‘ala common themes are precipitation (rain, pool, dew), verdure (*lehua* and *‘ōhai plants),* and the goddess Kaiona (discussed further below).

Mauna Ka‘ala is usually understood as having been named for the pleasant fragrance (“*ka ‘ala*”) of plants growing there. Pukui (June 1954, cited in Sterling and Summers 1978:133)

relates: “ Kaala – (an archaic word can mean - - Lizard - - widow or widower - - (forbidding aspect, aloof, not friendly) - - This latter may be the meaning that applies.

Pukui relates a second brief account pertaining to Ka‘ala:

> Kaiona was a goddess who dwelled in the Wai‘anae mountains near Ka‘ala. She was referred to as “the lady of sunshine”. Mrs. Pukui says that she has never found anything that suggests that this goddess has ever done an unkind thing. Never harmed anyone.
>
> Was an ‘aumakua of Mrs. Pukui’s relative. Pauahi Bishop was sometimes known by this name, probably because of her good and kind ways. Pukui (July 16 1953, cited in Sterling and Summers 1978:133)

McAllister (1933:133) identified: “Site 212 Luakini fishpond, once located on the summit of Mount Kaala.” McAllister (1933:133) goes on to relate that:

> According to Hookala, his father often obtained fish from the fresh-water pond. In it were to be found many shore fish, hinalea, wuwoa, a kind of mullet, and others. Kamaoha was the moo or goddess of the pond. There is now only a swamp at the site.

The prospect of their having ever been “many shore fish”, or any fish at all, at the summit of Mount Ka‘ala seems inconceivable (see however the discussion under “History of Kūali‘i” below).

4.2 Legends of Ka‘ala

4.2.1 The Legend of Aukelenuiaiku

In Fornander’s account of the Legend of Aukelenuiaiku (“*He Mo‘olelo No Aukelenuiaiku*”; Fornander 1917 Volume IV Part II: 104-105) is a passing reference to high peaks being “as high as that of Ka‘ala mountain” (“*Ua like paha ke kiekie o ia aina me ke kuahiwi o Ka‘ala*”). The context is that Ka‘ala is a well-known high mountain to which the height of other high mountains may be compared.

4.2.2 The Legend of Kalelealuaka and Keinohoomanawanui

In Fornander’s account of the Legend of Kalelealuaka and Keinohoomanawanui (“*Ka‘ao No Kalelealuaka a Me Keinohoomanawanui”;* Fornander 1917 Volume IV Part III: 464-465) is a passing reference to the geographic location of “Lihue [O‘ahu]” as “… situated below and to the east of the Ka‘ala mountains on O‘ahu.” (*Lihue e waiho ana malalo hikina o ka mauna o Ka‘ala i O‘ahu*.”). In this context Ka‘ala mountain takes on a meaning almost synonymous with the “Wai‘anae Range”

4.2.3 The Legend of Kawelo

Another passing account is found in Fornander’s account of the Legend of Kawelo (“*He Mo‘olelo No Kawelo”;* Fornander 1917 Volume V Part I: 12-13).b The folk hero Kawelo is fishing at a Ka‘ena Point, Wai‘anae fishing ground and catches the fabulous fish-god

Uhumakaikai who tows Kawelo and a fisherman colleague out to sea "until the Ka‘ala Mountain disappeared" ("… *a nalowale ke kuahiwi o Ka‘ala*…") (see also Fornander 1959:42,45). While this is just meant to indicate that the fishermen are towed far from shore; Ka‘ala could reasonably be construed as symbolic of O‘ahu, a last remembrance of O‘ahu or a longing for O‘ahu..

Pukui's (1951:97-122) account of Kawelo of Kaua‘i has a similar account that as the fishermen are being dragged out to sea, Kawelo's anxious companion: "…could not even see Mount Ka‘ala. O‘ahu had disappeared…" (Pukui 1951: 107)

The Green and Pukui (1936: 28-112) account of "The Legend of Kawelo" also relates Kawelo's attempts to catch the fabulous fish-god Uhumakaikai. At one point Kawelo becomes so angry and frustrated at the failure of his attempts:

> That pole and this were thrown into the canoe, Kawelo breaking them to pieces (in his rage). When his companion saw him in such a passion and all the poles broken he said, "Do you never want to go fishing again, Kawelo? It is tedious work obtaining poles; the forests are on Ka‘ala Mountain."
>
> *Ia Manawa o Kawelo i huki mai ai I kana upena. O kela, o keia, kau ana iluna o ka wa‘a, pau aela nā la‘au i ka haihai. A ike aku la kona hoa Makuakeke i ka lele li‘ili‘i o ka ehu kai, pau maila nā la‘au i ka haihai, - pane aku la ‘oia ia Kawelo, "Manao lawai‘a hou ‘ole, e Kawelo? He mea luhi ka la‘au o ka huli hou ana ‘ku – aia ka la‘au la iluna o Ka‘ala !!!* Green and Pukui (1936: 54-55)

Thus Ka‘ala is associated with forest resources – specifically poles for fishing – but the nuance is that it is a really tiring matter to obtain things from way up on Ka‘ala!

4.2.4 The Legend of Kahalaopuna

In Fornander's account of the Legend of Kahalaopuna ("He *Ka‘ao No Kahalaopuna";* Fornander 1917 Volume V Part I: 188-189) is a passing reference to the geographic location of Pōhākea [Pass] as "… a place above ‘Ewa lying close to the Ka‘ala mountain." ("…*Pōhākea, ma uka o ‘Ewa, e pili la me ke kuahiwi o Ka‘ala*." The reference helps the listener understand the location of the less well-known Pōhākea and adds a poetic quality (more so than precise geographic reference as the Ka‘ala summit is more than 10 kilometers from Pōhākea Pass).

Kalākaua's (1990: 511-522) account of "Kahalaopuna, the Princess of Manoa" has a quite similar location gloss reference: "to Pōhākea, on the ‘Ewa slope of the Ka‘ala mountains." (Kalākaua 1990: 515)

Thrum's (1998:118-132) account of "Kahalaopuna, Princess of Manoa" also has an account of Kahalaopuna's murder "at Pōhākea, on the ‘Ewa slope of the Ka‘ala mountains." (Thrum (1998:125)

4.2.5 The Legend of Halemano

In Fornander's account of the Legend of Halemano ("*Ka‘ao No Halemano";* Fornander 1917 Volume V Part II: 188-189) the folk-hero Halemano recites a remembrance song (*mele*) for the lovely Kamalalawalu is a passing reference to the geographic location of

... He anu au la he koekoe	I am cold and chilly
Ma ka poli au e ku aloha e	Let me lie in your bosom, love
Holo i Kalena ia uka o Halela‘au,	We have roamed over Kalena in the uplands of Halela‘au
Ka nahele anu i Wahiawa e.	In the cold thickets at Wahiawa
He wa olelo na ka noe i Ka‘ala,	It was during the days of the heavy fog at Ka‘ala
Ke huea mai la e ke Kehau,	For the cold was brought forth by the dew
Ka noenoe ‘a‘ala a ke kupukupu o Lihue ...	Together with the fragrance of the *kupukupu* of Lihue … (see also Fornander 1959:278-279)

Halemano is evoking a sense of intimacy and closeness and is linking the mountain "Ka‘ala" (often translated as "the Fragrance") with the sweet-smelling ("*‘a‘ala*") of the *Kupukupu* fern.

4.2.6 An Account of Kahahawai

In Fornander's accounts of "Famous Men of Early Days" ("*Po‘e Kaulana o ka Wā i Hala"*; Fornander 1917 Volume V Part II: 498-499) is an account of Kahahawai ("*No Kahahawai*") a military leader under the ruling chief of Maui, Kahekili who carried out a final defeat of the O‘ahu forces loyal to the O‘ahu ruling chief Kahahana. After the defeat of the O‘ahu forces in the decisive battle of Niuhelewai (Kapālama, Kona, O‘ahu) a loyal remnant of O‘ahu "retreated and encamped on the mountains of Ka‘ala" (… *he‘e aku nei nā ‘li‘i a me nā koa a noho iluna o ke kuahiwi o Ka‘ala*."). "But Kahahawai and his men arose and destroyed all the people who were asleep on the hills and mountains of Ka‘ala." (*Ia lākou i lele ai peia, ala maila o Kahahawai ma a luku i nā kānaka e moe ana maluna o na pu‘u a me na kuahiwi o Ka‘ala*)."

In this account the reference to "Ka‘ala" is again something of a generic reference to give the audience a general understanding of the geographic area in which the O‘ahu remnant was encamped – under the hills and uplands of Ka‘ala (the actual round-up and slaughter of the O‘ahu forces is indicated to have been close to "a cliff called Kolekole" ("*kekahi pali i kapa ia o Kolekole*") – in other words at Kolekole Pass well to the south of the Ka‘ala summit area.

4.2.7 Hua, King of Hāna

Kalākaua (1990: 155-173) relates a story of "Hua, King of Hana". The ruling chief Hua of Hāna, Maui slays the kahuna Luaho‘omoe who has cursed those who would participate in his murder. Wherever Hua and his attendants go is afflicted – particularly by drought and blight. The scourge follows a Hāna chief and his retainers to Waimalu, ‘Ewa, O‘ahu where a celebrated prophet, Naula-a-Maihea lived. Alarmed at the threat of destruction the prophet Naula-a-Maihea "ascended the highest peak of the Wai‘anae Mountains" (Kalākaua (1990: 170). Naula-a-Maihea observes the patterns of clouds and determines what to do. "Naula descended from the mountain and the same night embarked alone in a canoe for Maui." Naula-a-Maihea carries out a course of rituals with the sons of Luaho‘omoe and the rains and fertility of the land is restored.

In this account Ka‘ala is indicated to be a particularly good place to observe and interpret clouds for their meteorological import and their signs of supernatural matters.

Pukui’s (1951:201-207) account of “The Punishment of Hua” has a slight variant in which it is a kahuna of Kaua‘i who climbs a mountain on Kaua‘i and then Mount Ka‘ala to study atmospheric signs to end the drought. “He reached O‘ahu and climbed Ka‘ala to study the clouds once more. He did not find the sign he looked for … ” (Pukui 1951:206) and then heads on to Maui. For Pukui’s Kaua‘i Island kahuna, Ka‘ala does not provide direct answers but rather is tried and is eliminated as a source of answers to the cause of the drought. For Naula-a-Maihea Ka‘ala offers insight leading to rejuvenation – but the long hike provides no insight for Pukui’s Kaua‘i Island kahuna

4.2.8 Kaulula‘au

Kalākaua (1990: 209-225) relates a story of “The Sacred Spear-point”. The folk-hero Kaulula‘au of Maui and his attendant journey around the archipelago and land at Waialua, O‘ahu. They proceed to head toward Waikīkī to meet the O‘ahu ruling chief Kalona-iki “proceeding along the foot of the Ka‘ala range of mountains” (Kalākaua 1990: 220) – where they hear screaming and tumult. A monstrous bird has slain a woman’s only child.

> They could still see it in the distance, like a dark cloud against the mountain. After following it for some time the bird swooped down to commit some fresh depredation, and then rose and alighted upon a rocky ridge with precipitous face sweeping down from the main summit of Ka‘ala.” (Kalākaua 1990: 220).

Kaulula‘au slays the giant bird with his magic javelin. It is related that the bird’s feathers were seven paces in length and that the bird was in fact a bird-god relative of the Hawai‘i Island chief Hilo-a-Lakapu (who had previously invaded O‘ahu and been slain in the fighting). Ka‘ala is an abode of dangerous and unknown forces.

4.2.9 The Legend of Lo-lale, the Eccentric Prince of O‘ahu

Kalākaua (1990: 229-246) relates a story of “Kelea, the surf-rider of Maui: The Legend of Lo-lale, the Eccentric Prince of O‘ahu” in which Kelea, sister of the Ruling Chief of Maui, marries Lo-lale, the brother of the ruling chief of O‘ahu and they live at Lihue, O‘ahu. She leaves Lo-lale and marries his brother Piliwale (the ruling chief of O‘ahu). There is a passing reference to Lo-lale who “spent the remainder of his days in Lihue [O‘ahu] caring for the welfare of his people and dreaming in the shadows of the hills of Ka‘ala” (Kalākaua 1990: 246). A theme of the story is that Lo-lale “abhorred the sea” which had taken the life of a prior love and that Kelea loved the sea and surfing. A nuance of the reference to Ka‘ala is that it is symbolically about as far inland as you can get.

4.2.10 The story of Laieikawai

Kalākaua (1990: 455-480) relates “The story of Laieikawai” in which a great prophet of Kaua‘i, Hulumaniani by name, observes a curious rainbow for twenty days in succession. He follows the sign by canoe landing at Wai‘anae, O‘ahu. Soon, “he ascended Mount Ka‘ala, when he saw the rainbow over the island of Molokai.” (Kalākaua 1990: 458). As in Kalākaua’s (1990: 155-173) story of “Hua, King of Hana” we see a kahuna searching for atmospheric signs from Mount Ka‘ala.

4.2.11 Hi‘iaka and Ka‘ala

In Emerson’s (1915:99-100) translation of the Pele and Hi‘iaka Saga the goddess Hi‘iaka is on her way to Kaua‘i to fetch Lohiau for her elder sister the volcano goddess Pele.

From the plain near Lau-hulu Hi‘iaka took a fresh view of Mount Ka‘ala and, in a tone of bantering apology, said, “Forget me not, O Ka‘ala. Perhaps you complain that I have not chanted your praises:

O Ka‘ala, kuahiwi mauna kēhau,	Ka‘ala dewy and forest clad,
Ke opu mai la, la, i Ka-maoha;	Belies the plain at Ma-oha
Poluea iho la ilalo o Hale-auau;	As it slopes to the land below.
Ke kini ke kēhau anu o Ka-lena.	The cool dew fall comforts Ka-lena:
Akahi no ka nele o ka la pomaikai:	First pinch this of want mid good luck -
Aohe moe-wa‘a o ka po nei –	No dream of canoe voyage last night
Ka moe-wa‘a e!	No dream of disaster at sea.

The Emerson account (1915: 160-165) describes the vignette of Hi‘iaka at Pōhākea Pass (as Hi‘iaka and Lohiau are heading back to Hawai‘i Island) at some length but makes no reference to Ka‘ala per se in that context.

In Kalākaua (1990: 483-497) account of the story of “Lohiau, the Lover of a Goddess” he relates a famous scene of Hi‘iaka seeing her beloved *lehua* groves in Puna, Hawai‘i Island being destroyed by her older sister - the volcano goddess Pele. While most accounts place this vision of Hi‘iaka’s at Pōhākea Pass, the Kalākaua account (1990: 490) relates that “Hi‘iaka ascended the Ka‘ala mountains and saw that her beautiful *lehua* and *hala* groves near the beach of Puna, on the distant island of Hawai‘i, had been destroyed by a lava flow.” Again reference to “Ka‘ala” is somewhat generic for the Wai‘anae Mountain Range.

4.2.12 The Punahou Spring

Thrum’s (1998:133-138) account of “The Punahou Spring” associates the creation of the new spring with a benevolent water *mo‘o*, named Kakea who was an ancestor of the persecuted twin children Kauawa‘ahila (the boy named “Waahila Rain”) and Kauakiowao (the girl named “Mountain Mist”). In this account the twin’s father, Kahaakea, “formerly lived on the Ka‘ala Mountains” (Thrum 1998:133) and the twins’ evil step-mother, Hawea, “told [the twins] to return to Ka‘ala, where they would be constantly under her eye.” (Thrum 1998:134). “Ka‘ala seems to be a somewhat generic geographic reference to the northern Wai‘anae Mountain Range. Possibly the story picks up on Ka‘ala as a place of danger and the unknown where mo‘o, monstrous birds and evil step-mothers reside.

4.2.13 Legend of Pa‘alua and Kawelu

Thrum’s (1923: 136-148) account of the “Legend of Pa‘alua and Kawelu” relates a passing reference that when an old chief of Kaua‘i sends his son, Pa‘alua, to O‘ahu “… at early dawn the high table mountain of Ka‘ala was visible on the far southern horizon…”. While this is

eminently reasonable as a geographic account it seems common for Ka‘ala to assume a kind of symbolic reference to O‘ahu.

4.2.14 History of Kūali‘i

In Fornander's account of the "History of Kūali‘i" ("*Mo‘olelo o Kūali‘i";* Fornander 1917 Volume IV Part II: 390-391) relates a song (*mele*) that compares Kūali‘i with a miracle-working ruling chief of Hawai‘i named Keaweikekahialiiokamoku with a curious account:

Ka limu kau i ka la‘au	The moss that hangs on the wood,
Ka elemihi ‘ula i ka luna o Ka‘ala-la	The red crab on the top of Ka‘ala
Aole i like Kū	Not like unto these art though, Kū.
Aole i like Kū	Not like the *kukui*,
Aole I like I ke aalii	The rough barked *kukui*

By way of partial explanation, Fornander (1917 Volume IV Part II: 390) relates in a footnote that "There is said to be a pond on the summit of Ka‘ala in which is found a fresh-water crab." There is reason to believe that there were in fact land crabs in the Hawaiian Islands in pre-Contact times. However, land crabs, for which we have hardly any other reference, would still need to reproduce in salt water so their presence at the summit of Ka‘ala seems exceedingly doubtful. An account of *Elemihi ‘ula* crabs (or something of the sort) could conceivably be understood as a kind of "*i‘a*" (Hawaiian for fish or any marine animal, meat, or any flesh food) commonly glossed in English as "fish" thus potentially relating to the tradition McAllister documented quoted above.

Sterling and Summers (1978:132) relate an account from a Thomas McGuire dated September 26, 1953) regarding the Ka‘ala "Summit Swamp" that:

> Swamp on the top of Ka‘ala not likely to have been used as fishpond. There is a deep depression on side towards Wai‘anae and there is no trace of stone walls or dykes which would have been necessary to keep water from flowing out. Also Lehua trees growing in swamp have moss and other growth indicating they have been growing there a very long time. The age of these trees is obvious and had there been a pond these trees would not be there or have the appearance they do if of recent growth.

4.3 Summary of Traditions of Mount Ka‘ala

As with other highest summits of the Hawaiian Islands Mount Ka‘ala is symbolic, for purposes of comparison, of that which is beyond compare or unequaled. Ka‘ala, as the highest point of the Wai‘anae Range and of the Island of O‘ahu becomes symbolic of the Wai‘anae Range and of the Island of O‘ahu.

The associations with a *mo‘o* goddess emphasizes the wetness of the summit and at least to some extent the general wildness of the area and the potential for danger. The account of Ka‘ala as the abode of a monstrous bird and evil step-mother also emphasizes danger.

While Ka‘ala is associated with forest resources – specifically poles for fishing –the nuance is that it is a tiring matter to obtain things from way up on Ka‘ala! It is a "*mea luhi*" (laborious thing) to get up there on foot.

One is called to try and explain McAllister's account of Luakini fishpond, where "were to be found many shore fish, hinalea, wuwoa, a kind of mullet, and others" and the presence of Fornander's *elemihi ‘ula* fresh-water crab. Perhaps this was always in the nature of a joke to rib new-comers or perhaps the moss-covered twigs were evocative of sea creatures.

Section 5 Previous Archaeological Research

5.1 McAllister’s Documentation of Sites at Kamananui

The first systematic archaeological study of Kamananui was conducted by J. Gilbert McAllister of the Bernice P. Bishop Museum in the 1930s. McAllister (1933) consulted with knowledgeable informants about both physical and legendary sites of each district during his island-wide survey of O‘ahu. McAllister identified 13 sites (see Figure 13) within Kamananui Ahupua‘a (sites 197-200, 202, 203 and 205-211) described as follows:

> Site 197. Kalakiki Heiau in Kamananui, on the slope back of the Waialua mill beneath Puu Kaupakuhale
>
> Located on the crest of the ridge, with a slope on all except the mountain side, a large front terrace is about all that remains of the structure, and only that portion which is rock-paved is visible. The remainder of the heiau is covered with a dense growth of Lantana. The mountain-ward portion has undoubtedly been covered by dirt washed down from the almost bare slope behind. The heiau was probably of two or more terraces, with several small divisions. The highest wall is 1.5 feet, but terrace facings are as much as 6 feet high.
>
> Thrum (79, 14) says: “it is deemed unwise to express an intent to go a-fishing abrest of Kalakiki unless in an indirect or figurative way, else Keanini, the shark-god deity of the heiau, which is a huge rock lying awash a few hundred feet from the shore, will cause the phosphorescent lights to so dog one’s efforts as to render the attempt futile. A still further superstition is, that a house built within the range from the temple to its deity must not have its doorway face the hills, else trouble, sickness and death to the household are sure to follow.” (McAllister 1933:129)
>
> Site 198. Burial cave, Kaumoku Gulch, Waialua
>
> Powdered skeletal material was noticed on the side of a cliff beneath several very small caves. Upon examination portions of two skeletons were found in a lava tube whose entrance was so cleverly sealed that the material would not have been discovered had there not been a hole into a lower cave larger than a man’s head. From the inside, light was noticed through the cracks of the rocks, and the entrance then discovered. No mortar had been used, but sharp-edged rocks had been carefully fitted together. There were no artifacts with the burial. The bones had probably been bundled together, but had evidently been disturbed by animals, as several had been recently gnawed. There was one skull but no mandible, one humerus, one radius, two ulnas, four femurs, three tibiae, and many fragments. (McAllister 1933:130)

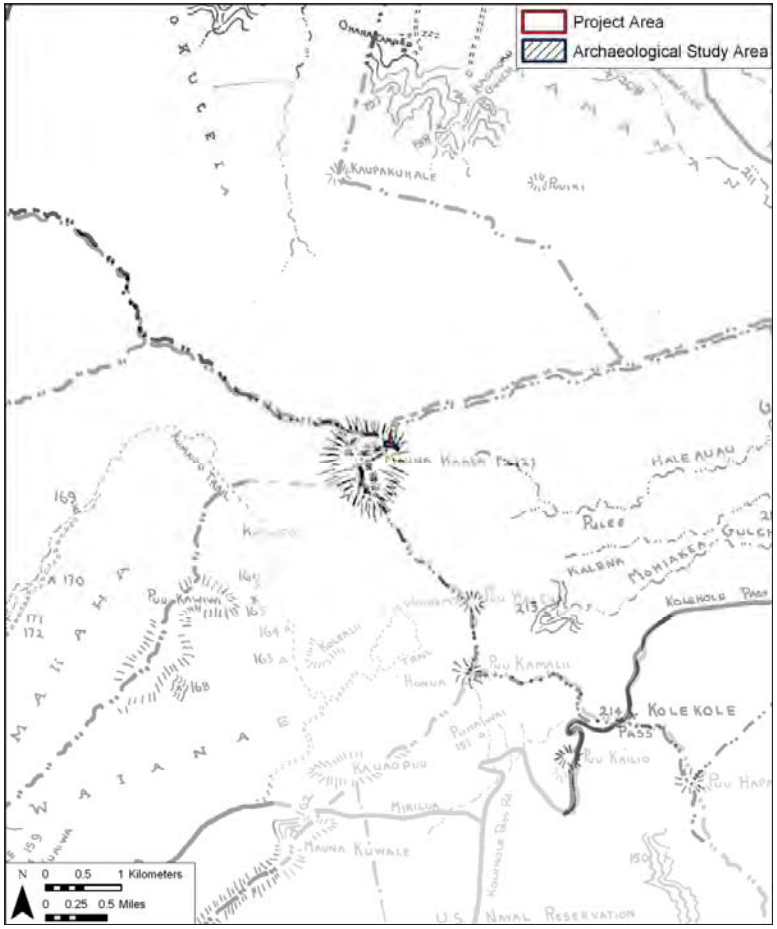

Figure 13. Map of Vicinity of Mount Ka‘ala (adapted from Sterling and Summers 1978) showing location of McAllister sites and present project area

Site 199. Pile of stones, near the mouth of Kaumoku Gulch, Waialua.
Near the mountain side of the siphon put in 1930 by the Waialua Agricultural Company are many piles of stones which, as I was told by Mr. Low, who is of the opinion that they are old Hawaiian, were there 24 years ago when cane was first planted on this land. The larges pile is oval in shape, 28 by 15.5 feet by 7 feet high. There are six piles in a group averaging from 50 to 200 feet apart, evenly faced but with the top comparatively level. Just west of this group are a number of stone walls and one or two small inclosures [sic]. The whole site is in the mouth of the gulch. The stones may have been cleared away for agricultural purposes before the plantation took over the land. A large field on the mountain side and east of the Dillingham ranch which had also formerly been planted in cane has similar mounds of stone. I was also told that these stones were there in 1908 when the plantation took over the land. Hookala says they were pile in this manner to clear the land for agricultural purposes. (McAllister 1933:130-131)

Site 200. Cave in Kaumoku Gulch, Kamananui, Waialua.

At present one can squirm about 200 feet into the interior but comes in contact with large stones which obstruct the passage. It is believed that in the construction of the water tunnel just above, the blasting dislocated these stones. Water also constantly drips from the roof making shallow pools in the passageway. Twenty years or more ago the cave is said to have contained skeletal material, though there is no evidence now of such remains, which undoubtedly would have decayed with so much moisture. (McAllister 1933:131)

(Site 201 is understood as located within Mokulēi‘a Ahupua‘a.)

Site 202. Skeletal remains, near Puuiki station, Waialua.
In the sands near the present station a number of skeletons have been uncovered at a depth of approximately 4 feet by plantation workers who were removing sand. The skeletons are said to have been in good condition. One skull which I saw was well preserved. (McAllister 1933:132)

Site 203. Heiau, near Kaukonahua Stream, Waialua.
It is said that a small heiau once occupied the site where the Waialua Agricultural Company has installed their Pump Number 1. This is near the mountain side of the bridge which crosses Kaukonahua Stream near the plantation settlement. The name is not known. (McAllister 1933:132)

(Site 204 is understood as located within Waianae-Uka Ahupua‘a.)

Site 205. Akua stone, Poloa grove, Kamananui (pl. 11, *B*).
The grove, once sacred to Pele, has been left untouched in the midst of cane, and covers an area of approximately 80 by 170 feet. On the eastern side is a stone, triangular in cross section, standing 1.7 feet high, 0.6 foot thick, surrounded by eight small stones. The plantation placed a small iron fence about this stone many years ago and it is now almost completely rusted. The stone was believed by Oscar Cox to be called Kaneaukai, but his uncle Hookala does not remember that name applied to this stone. Hawaiians have been buried in the grove within the

last 50 years, though there is nothing to indicate such graves, which are shaded by breadfruit, mango, kukui, and Pride of India trees. (McAllister 1933:132)

Site 206. Kahakahuna heiau, Pala-kai, was once located on the sea side of the road and north of the old mill site. The stones have been removed and the slightly elevated ground upon which it was built it is used for agricultural purposes. (McAllister 1933:132)

Site 207. Kawai heiau was located just below the junction of Poamoho and Kaheeka gulches, on the elevation below the Waialua Plantation manager’s house. It was one of the first heiaus to be destroyed. (McAllister 1933:132)

Site 208. Irrigation ditch, Kamananui, Waialua.

The longest irrigation ditch of which there is any memory. The intake was from the Kaukonahua Stream, just before it issues from the gulch, about 2 miles inland from the mill. According to Tom Low, the ditch could be traced as far as the intersection of the Mokuleia, Haleiwa, and Honolulu roads. The most distant land watered surrounded the site of the old mill one and one-third miles away. This ditch was for many years used by the plantation. The cemented intake and portion of the rebuilt walls are still to be seen. Along part of its course the ditch flowed along the side of a hill about 50 feet high. According to Low, the old ditch was made by piling stones on the lower side, with a rubble fill. Consequently there was much seepage and loss of water. Aside from following the old course, the plantation had practically to reconstruct the walls. (McAllister 1933:133)

Site 209. Worked stones, found some years ago in Poamoho Gulch.

When the shaft for the pump in Poamoho Gulch was being dug, a number of artificially worked stones were found at depths of 13 to 18 feet. Gravel and silt were found above the artifacts, according to G. L. Trist, who was in charge of the work. The stones are said to have resembled ulumaika. (McAllister 1933:133)

Site 210. Indications of former habitations, Kaukonahua Gulch, Waialua.

House sites on both sides of the stream and in the south bank a small cave with the decayed remnants of skeletal material. Four piles of large stones approximately 3 feet in height are built in a perfect line, with an interval of approximately 20 feet between each pile. It was at first thought that these were supports of a former flume, but there has never been a pipeline in this section, though cane is planted in this gulch on a small plain just above these stones. No explanation has been obtained. The Hawaiians say that the stone piles were built by Europeans. (McAllister 1933:133)

Site 211. Burial cave, immediate vicinity of the Waialua Agricultural Company pumping plant (known as K.P.P.).

A small cave. The mouth had been walled up, but has since been broken into and the burials disturbed. Much of the skeletal material had evidently been removed. Bits of cloth and shoes indicate that it was post-European, though it may also have been used earlier. Just across the stream are indications that the narrow

> fertile plain was used for the cultivation of taro, and also the foundations of several frame houses. In the side of the bank is another burial cave, 10 feet wide and high and 15 feet deep, said to have been used by the Keloha family for many generations. When soldiers became troublesome the family built a doorway to the vault, which was locked. Later a party of soldiers destroyed the door, looted the coffins, scattered the remains, and took skulls and long bones for souvenirs.

The nearest of these McAllister Kamananui sites (other than the fabulous fishpond previously discussed) is site 198 four kilometers NNE.

5.2 Subsequent Archaeological Studies in the Vicinity

Subsequent archaeological studies in the vicinity are shown on Figure 14, summarized in Table 2, and are discussed below in chronological order. No Kamananui Ahupua‘a studies have been previously conducted within the vicinity of the project area; the closest studies are more than 2.5 kilometers away.

Neller (1984) carried out an archaeological reconnaissance survey of the Mokuleia Exploratory Well Site in Kamananui. No finds were reported other than irregular rock structures found just to the north that were possible pre-contact burial platforms.

The most extensive and significant archaeology that has been conducted in the Waialua region was organized by Kirch and Sahlins (1992) in what was called the “Anahulu Valley Research Project”. In 1971, Marshal Sahlins and several staff members of the Bishop Museum began investigating local Hawaiian society and economy in the late prehistoric and early historic periods. Archaeological investigations in the Anahulu Valley were first undertaken in 1974 and 1976. In 1979, Kirch surveyed the Anahulu Valley archaeological remains and excavated two significant habitation sites and in 1974 and 1976, eight more archaeological sites were identified and described, including two burial caves, five overhanging rock shelters, and a terraced habitation complex.

Kirch and Sahlins defined the proto-historic settlement pattern in Waialua District as follows:

> Four main zones of taro irrigation had been developed on these alluvial lands [of Waialua] Handy (1940:85) refers to “large terrace areas along the flatlands between the junction of Helemano and Poamoho Streams and the flatland west of Poamoho.” One of these zones has been totally obliterated by the Waialua Agriculture Company mill and town (Handy and Handy 1972:465). This was the pond field system water by site 208, described by McAllister as “the longest irrigation ditch of which there is any memory” (1933:133; see also Handy 1940:85-86). This ditch or canal, which evidently tapped Kaukonohua Stream about 3 km inland, was later cemented in and used for many years by the plantation. In addition to the main irrigation complexes shown in figure 1.7, there were smaller pond field systems adjacent to the streams as they followed their incised valley courses inland (Kirch and Sahlins, 1992 vol. 1:17)

Kennedy (1991) carried out a surface examination of TMK: 6-7-02:por 27 identifying one rock structure that may be the remains of the Kalakiki/Olohena Heiau described by McAllister as Site 197 (SIHP 50-80-04-197).

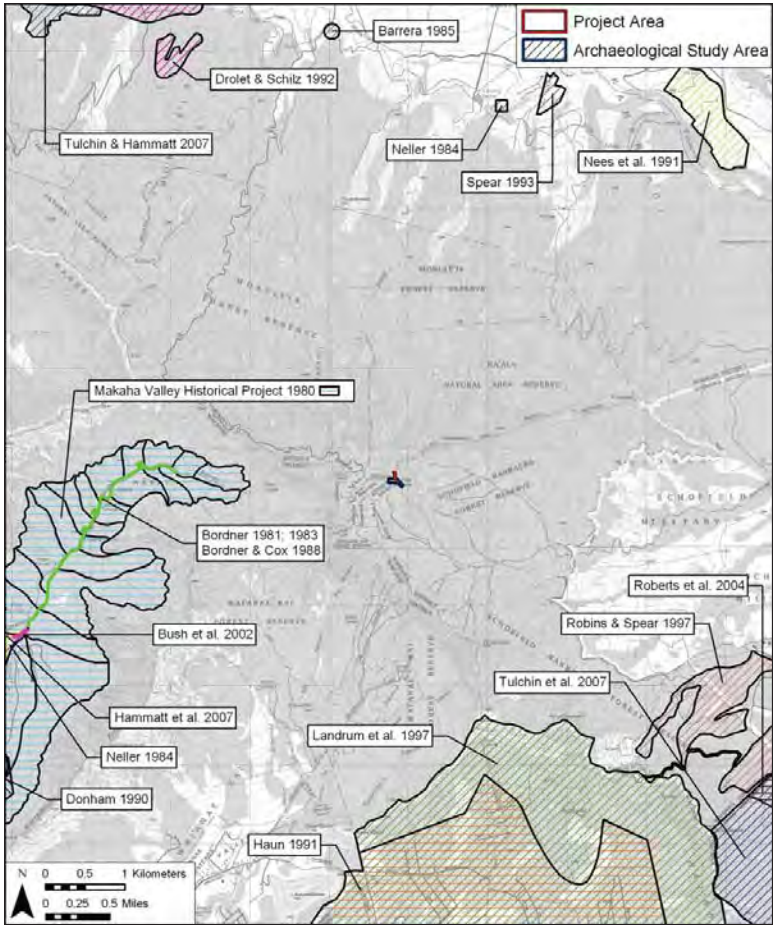

Figure 14. U.S. Geological Survey 7.5-minute series topographic map, Haleiwa (1999) and Schofield Barracks (1998) quadrangles, showing previous archaeological studies in the general vicinity of the project area

Table 2: Archaeological Studies in Kamananui Ahupua‘a and Near the Project Area

Author(s)/ Date	Location	Nature of Work	Findings
McAllister 1933	Kamananui Ahupua‘a	Island-wide survey	Identified 13 sites at Kamananui Ahupua‘a : Site 197 Kalakiki Heiau, Site 198 Burial Cave, Kaumoku Gulch, Site 199 Piles of stones, near the mouth of Kamoku Gulch, Site 200 Cave in Kaumoku Gulch, Site 202 Skeletal remains near Puuiki Station, Site 203 Heiau near Kaukona Stream, Site 205 Akua stone Poloa Grove, Site 206 Kahakahuna Heiau, Site 207 Kawai Heiau, Site 208 Irrigation Ditch, Kamananui, Site 209 Worked stones Poamoho Gulch, Site 210 former habitations, Kaukonahua Gulch and Site 211 Burial Cave
Yent 1981	TMK 6-7-01:51 Across Kaiaka Bay from State Rec Area, coastal Kamananui	Archaeological inspection	An eroding cultural deposit circa 1900 was noted
Neller 1984	Mokuleia Exploratory Well Site	Archaeological Reconnaissance Survey	No finds in specific area but notes possible pre-contact burial platforms just to the north
Kennedy 1991	TMK: 6-7-02:por 27	Surface Examination	Found one rock structure that may be remains of the Kalakiki /Olohena Heiau described by McAllister (Site 50-80-04-197).
Nees et al. 1991	Proposed Kaukonahua Quarry (TMK 6-5-01)	Archaeological Survey and Literature and Document Search	No pre-contact sites found due to sugar cultivation; one pill box and cane irrigation systems were noted
Spear 1993	Hidden Valley Ranch TMK 6-7-03: por. 5 &. 9	Reconnaissance Survey	No significant finds

Author(s)/ Date	Location	Nature of Work	Findings
Moore et al. 2004	TMK 6-7-01:51 & 52	Archaeological Inventory Survey	51 backhoe trenches were excavated. Finds included a previously disturbed collection of osteological remains (SIHP 50-80-04-6532), Waialua Dairy structures (-6533), two WWII pillboxes (-6534), & a reinterment location
Hammatt and Shideler 2006a	Waialua High and Intermediate School, TMK [1] 6-7-02:9	Archaeological Literature Review and Field Check	Identified no concerns, recommended no further work
Hammatt and Shideler 2006b	Kupahu Subdivision, Waialua Town, TMK: [1] 6-7-009:003	Archaeological Field Check and Literature Review	Project area lands very disturbed by decades of agricultural use. The Waialua Sugar Company building was recommended for evaluation by an architectural historian prior to any significant modification of this structure.
Moore and Kennedy 2008	Property Located at TMK (1) 6-6-021:001	Archaeological Assessment Report	No historic properties identified
Vitousek 2010	Waialua Beach Road Guardrail Improvement Project, TMK [1] 6-6-022:004	Inadvertent Discovery of Human Skeletal Remains During Monitoring Activities, SHPD letter report	Addresses single human vertebra encountered in imported beach sand fill

Spear (1993) carried out a reconnaissance survey of a 15-acre parcel (Hidden Valley Ranch) at 200 foot elevation. No historic properties or cultural material were found.

In 1999, Cathleen Dagher a Staff Archaeologist at the State Historic Preservation Division responded to the inadvertent discovery of isolated human skeletal remains on Bishop Estate Land in Hale‘iwa (Kamananui), approximately 7 km northwest of the current project area. The remains consisted of an isolated cranium that was found on the surface of a sand pile. The sand fill contained bits of rusted metal, coral, marine shell, and organic materials, although no other skeletal remains were present. There was no archaeological context for the deposit, however the cranium was identified to be “possible native Hawaiian” and of female gender, over fifty years at the time of death.

As part of an Inter-Island DOE Cesspool Project, CSH (Hammatt and Shideler 2006a) carried out an archaeological literature review and field check at Waialua High and Intermediate School but found no indications of archaeological deposits or burials and recommended no further work.

In 2006, CSH (Hammatt and Shideler 2006b) conducted an archaeological literature review and field inspection within a 26.525-acre project area (TMK [1] 6-7-009:003) on what appeared to be bottom lands of a flood plain on the west side of the Ki‘iki‘i Stream (also known as Kaukonahua Stream). Field observations concluded that the vast majority of the project area was highly disturbed by modern agricultural activities, and was almost entirely under cultivation for cacao (*Theobroma cacao*). No pre-contact cultural remains were identified, however, a number of historic features, largely agricultural features, were noted during the field inspection.

The two previous studies (see Figure 14) shown within Schofield Barracks (Roberts et al. 2004, Robins and Spear 1997) are in Wahiawa District. Of interest and pertaining to the current study is the fact that “historic and modern land use activities, predominately pineapple production, have effectively obliterated the ground surface of a vast majority of the level plateau landform” (Roberts et al. 2004:85).

5.3 Addressing SHPD’s Specific Stated Concerns

The SHPD and the National Register of Historic Places do not list Mt. Ka‘ala as a registered historic property.

According to the SHPD in a letter dated April 5, 2002, a review of their records shows that there are no known historic properties at this location. In addition the SHPD stated that because the proposed action is located within the existing fenced portion of the installation (which was evaluated in the Cultural Resource3 Management Plan for Five Satellite Installations 15th Air Base Wing, Hickam Air Force Base, Hawai‘i, IARII, June 2000), they believe that this project will have “no effect” on archaeological sites or historic buildings. As noted above, construction of the existing facility is understood to date to 1963/1965, but there are believed to have been phases of modification since then.

The Section 6E-8 Historic Preservation Review (Aiu to Unoki, April 8, 2011, Log No 2011.0679, Doc No. 1103RS62) for this project (present Appendix A) asserts:

> Archaeology: SHPD will withhold full comments until development of the EA. Please be advised that our records show multiple archaeological sites with parcel (1) 7-1-001:001 which should be identified in relation to the proposed development.

It seems certain this TMK reference has a typo reporting the wrong Section (7-1-001:001 is a 35 acre parcel adjacent to Wilikina Drive 10 kilometers to the east). It seems highly probable what was meant was TMK Zone 7 Section 7 Plat 001 Parcel 001 (as cited correctly in the letter’s subject line). That Tax Map Key reference [(1) 7-7-001:001] refers to the 10,064 acre federal Schofield Barracks lands extending as far east as Lake Wilson. There are indeed multiple archaeological sites within the 10,064 acre parcel (1) 7-7-001:001 but to the best of our knowledge none of these lie within two kilometers of the present 0.15 acre project area.

5.4 Background Summary and Predictive Model

In Kamananui Ahupua‘a the pattern of residences and burials appear to have been nearer the coast.

Although McAllister identified thirteen sites within Kamananui all of the sites are located some distance away. There have been few archaeological studies in the vicinity upon which to base inferences. Inland studies (Neller 1984, Spear 1993, Nees et al. 1991) have reported no finds other than the irregular rock structures noted by Neller far inland. The majority of documented burials within Kamananui seem to be specific to coastal Jaucas sand deposits.

It seems unlikely any traditional Hawaiian archaeological finds will be made anywhere in the vicinity of Ka‘ala with the possible exception of trail alignments traversing the cliffs.

Section 6 Results of Fieldwork

6.1 Field Inspection

Access to the Ka‘ala summit was via Wahiawa where a good view of the summit is to be had (Figure 16) and the paved Mount Ka‘ala access road. Most of the summit facilities are enclosed within a high chain link and barbed wire topped fence (Figure 17) Ka‘ala is proverbial for good views (Figure 18 and Figure 19) but few signs of human endeavor in the vicinity are to be seen other than the FAA and DAGS facilities. While we were not able to actually enter the enclosure, the immediate area of the modest proposed alterations were clearly visible and had clearly been graded for the contemporary constructions (Figure 20 and Figure 21). The enclosure was encompassed (see track log on Figure 15) and nothing of archaeological interest is believed to be present. A main focus was the short stretch of ridge extending to the north where a replacement antennae and additional conduit are proposed. The ridge is steep, narrow and heavily vegetated (Figure 22). The proposed lower antennae location has been previously modified for an existing dish antennae (Figure 23 to Figure 26). It seems unlikely there ever was any modification of this heavily vegetated ridge (Figure 27) until modern times (major trails follow other more suitable ridges).

Pedestrian inspection of the project area confirmed the findings of the background research. No pre-contact features, were located during the field inspection.

No historic properties, cultural deposits, or cultural material were found within the proposed project area.

Figure 15. Track log of one of two archaeologists’ pedestrian survey route of the project area

Figure 16. General view of FAA installation at the summit of Mount Ka‘ala from Kaukonahua Road, view to northwest

Figure 17. Close-up view of FAA installation enclosure at the summit of Mount Ka‘ala, view to northwest

Figure 18. General view from FAA facility at summit of Mount Ka‘ala toward Waialua, view to northwest

Figure 19. General view from FAA facility at summit of Mount Ka‘ala, view to west

Figure 20. View of existing 25-foot tall tower within FAA facility enclosure (to be replaced with a 50-foot tower)

Figure 21. General area between two small buildings within FAA facility enclosure to be subject to utility trenching

Figure 22. General view of utility corridor route descending from the north side of the FAA facility enclosure to the north, view to north

Figure 23. General view of existing dish near down slope end of proposed utility lines

Figure 24. Close up of cement and basalt boulder terrace for existing dish

Figure 25. Close up of cement and basalt boulder terrace for existing dish

Figure 26. General view of down slope end of proposed utility lines

Figure 27. General view of FAA facility from proposed utility line corridor, view to southeast

Section 7 Consultation

By way of cultural consultation, a draft of this *Archaeological Assessment* report was circulated to seven parties (listed in Table 3 below) on June 6, 2011 by mail with a cover letter (see Appendix B) request for comment. Two weeks later on June 21, follow-up occurred by e-mail. A third effort at consultation was carried out by e-mail on July 9th and July 11th. See Table 3 below for the responses listed within the comments column.

Substantive comments were received from Mr. Thomas Shirai (“I support this necessary upgrade”), Mr. Shad Kane emphasizing the importance of Ka‘ala as the receptacle of Kane's water, "*Wai 'O Kane*", and Mr. Tom Lenchanko – the thrust of which appears to be to raise the issue of the jurisdiction of United States law on Hawaiian Kingdom national lands and to formally requests confirmation of lawful ownership of the subject land.

Table 3. Parties Sent a Draft of this *Archaeological Assessment* with a Request for Comment on the Study and/or Project

Parties Contacted	Background	Comments
Au, Kawika	President, Waialua Hawaiian Civic Club	On 6/21 an email was received requesting CSH to email documents as they had not arrived by mail. CSH responded on 6/21 by e-mail supplying a copy of the cover letter and an electronic link to the *Archaeological Assessment* report as requested. No further response has been received
Ayau, Halealoha	Hui Mālama I Na Kupuna ‘O Hawai`i Nei	No response has been received
Cachola, Fred	Knowledgeable about Historic Sites, Wahipana, Heiau	On 6/21 an email was received explaining the delay in response due to being on vacation and will review the report soon. On 6/25 Mr. Cachola responded that he received the document and will review and respond. No further response has been received
Kāne, Shad	O‘ahu Island Burial Council, Nā Koa ‘O Pālehua, Assocation of Hawaiian Civic Club’s Historic Preservation Committee	Mr. Shad Kane responded on July 10th as follows: Kala mai ia‘u. Just back from Midway Island and away from my email. I have never been to Mt. Ka‘ala and know very little of it. I have reservations about commenting on a place that I have never been to. I have been trying to contact several people I know who may be familiar with Ka‘ala from a cultural perspective however none of them responded. The project seems to be one of renovation with minimal impact and within the previous footprint. I can support it from that perspective however I know very little of its historical significance from a cultural perspective. The fact that Ka‘ala is the recepticle of Kane's water, "Wai 'O Kane", and it resides on a natural elevated platform it would have an enormous amount of cultural significance anciently. I do know that there are efforts to protect its eco system and the native plants and wetlands. It appears from the report that it will be unaffected by the project. The cultural significance again resides in the "Wai 'O Kane" and its elevation. If this project is as I suspect and Ka‘ala is afforded all these protections I can support it. I hope this helps David.

Kekipi, Velma Aloha	Hawaiian Civic Club of Wahiawa	No response has been received
Lenchanko, Tom	Hawaiian Civic Club of Wahiawa, President	Mr. Tom Lenchanko responded on 6/21/2011 by e-mail as follows: Aloha, Thanks for responding... How do we continue to relate that all things are connected to each other on a limited land mass known to be the Hawaiian Archipelago, Ko Hawaii Pae Aina, H.I. Still disconnected to our metaphysical beliefs, practices and traditional comprehension... Pose the query once again: prove Hawaiian Kingdom “exclusive territorial jurisdiction” transferred to any other sovereign entity? Is United States law applicable and mandatory on foreign Hawaiian Kingdom national lands? Mr. Tom Lenchanko responded again on 7/12/2011 by e-mail as follows: Thomas Joseph Lenchanko, Hawaiian national and Private Citizen Spokesperson for Hawaiian Lineal Descendants 931 Uakanikoo Street Wahiawa, Island of O’ahu Ko Hawaii Pae Aina, H.I. (96786) July 12, 2011 Cultural Surveys Hawaii, Inc. PO Box 1114 Kailua, HI 96734 Attention: David Shideler Office of Hawaiian Affairs (OHA) 711 Kapiolani Boulevard Suite 500 Honolulu, Hawaii 96813 Attention: Clyde Namu’o Colette Machado Esther P. Kia’ania and staff

		‘ano ‘ai kakou Hawaiian National lands have never been transferred to United States “exclusive territorial jurisdiction” ‘Aha Kukaniloko/Koa Mana formally requests confirmation of lawful ownership of the subject land, not just title, by obtaining a lawful and complete title search confirming a continuous and rightful chain of ownership, by requesting a perfected, unbroken Chain of Title back to the date of initial ownership recording of said subject land by the Hawaiian Land Commission (from 1846-1855) documenting lawful title as well as ownership of said land. This request is only proper and lawful to eliminate land fraud, which may be occurring throughout the Hawaiian Archipelago. We await a lawful response from both parties listed above... ‘oia ua ‘ike a ‘aia la Thomas Joseph Lenchanko, Hawaiian National kahuaka’i ola ko laila waha olelo ‘Aha Kukaniloko/Koa Mana mea ola kanaka mauli
Shirai, Thomas	OHA-Native Hawaiian Historic Preservation Council, Past Member Oahu Island Burial Council, Lineal Descendant, Cultural and Historical Traditions of Waialua	On 6/21 an email was received thanking CSH for the hardcopy and expressing support for the upgrade and stating he would send in comments. No further response has been received

Section 8 Summary and Recommendations

8.1 Summary

CSH conducted an archaeological inventory survey investigation for the proposed DAGS ICS Radio Facility Project. Per the requirements of Hawai‘i Administrative Rules (HAR) Chapter 13-13-276, the study was conducted to identify, document, and make Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the survey area’s historic properties. Because no historic properties were identified in the survey area, this investigation is termed an archaeological assessment per HAR Chapter 13-13-275-5. This archaeological assessment report was prepared to support the proposed project’s historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and HAR Chapter 13-13-275. This archaeological assessment report was prepared to support the proposed project’s historic preservation review and any other project-related historic preservation consultation.

As part of its archaeological assessment field effort, CSH conducted systematic pedestrian inspection of the project area. No historic properties were identified. Furthermore, virtually the entire project area has been massively impacted by the present facilities. These findings are largely in keeping with expectations for the project area, based on historical and previous archaeological research.

A good faith effort was undertaken at cultural consultation (see Section 7 above). No specific cultural concerns were raised (other than the issue of the jurisdiction of United States law).

8.2 Recommendations

8.2.1 Project Effect

No historic properties, cultural deposits, or cultural material were identified within the proposed project area. Land clearing for existing facilities likely impacted or destroyed any possible surface or subsurface historic properties that may have existed within the project area. Consequently, CSH’s effect recommendation for the proposed project is “no historic properties affected.”

8.2.2 Mitigation Recommendations

CSH recommends no additional archaeological work for the proposed facilities on Mt. Ka‘ala.

Section 9 References Cited

Barratt, Glynn
1988 *Russian View of Honolulu: 1809-26*. Carleton University Press, Ottawa, Canada.

Bingham, Hiram
1847 *Residence of Twenty-One years in the Sandwich Islands; or the Civil, Religious, and Political History of Those Islands...* Praeger Publisher, Hartford, CN, and Huntington, Convers, NY.

Chinen, Jon J.
1958 *The Great Māhele, Hawai‘i’s Land Division of 1848*. University of Hawai‘i Press, Honolulu.

Clark, John R. K.
2007 *Guardian of the Sea: Jizo in Hawai‘i*. University of Hawai‘i Press, Honolulu.

Coulter, John W. and Chee Kwon Chun
1937 *Chinese Rice Farmers in Hawaii*. University of Hawaii, Honolulu.

Dagher, Cathleen
1999 Inadvertent Isolated Human Remains on Bishop Estate land in Hale‘iwa, Hawai‘i, Kamananui, Waialua, O‘ahu. State Historic Preservation Division, Honolulu.

Emerson, Nathaniel B.
1915 *Pele and Hi‘iaka*, Copyright 1993, University of Hawaii at Manoa

Emerson, Oliver Pomeroy
1928 *Pioneer Days in Hawaii*. Doubleday, Doran & Company, Garden City, N.Y.

Foote, Donald E., E.L. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kaua‘i, Oahu, Maui, Molokai and Lanai, State of Hawaii, U.S. Dept. of Agriculture*. U.S. Government Printing Office, Washington, D.C.

Fornander, Abraham
1985 *Collection of Hawaiian Antiquities and Folklore*, T.G. Thrum edit., Memoirs of the Bernice Pauahi Bishop Museum (Vol. VI, Part III) Reprint of 1920 edition., Bishop Museum Press, Honolulu, HI.
1959 *Selections from Hawaiian Antiquities and Folklore*, University of Hawaii Press, Honolulu

Giambelluca, Thomas W., Michael A. Nullet, and Thomas A. Schroeder
1986 *Rainfall Atlas of Hawai‘i*. Department of Land and Natural Resources, Honolulu.

Green, Laura C.S. and Mary Kawena Pukui
1936 *The Legend of Kawelo and other Hawaiian Folk Tales*, Unknown publisher, Honolulu.

Hammatt, Hallett H. and David W. Shideler
2006a *Archaeological Literature Review and Field Check Study of Six DOE Schools, Island of O‘ahu Hawai‘i Inter-Island DOE Cesspool Projec*t. Cultural Surveys Hawai‘i, Kailua, HI.

2006b *Archaeological Field Check and Literature Review for the Kupahu Subdivision (Waialua Town), Kamananui Ahupua‘a, Waialua District, O‘ahu TMK: [1] 6-7-009:003*. Cultural Surveys Hawai‘i, Kailua, HI.

Handy, E. S. Craighill
1940 T*he Hawaiian Planter, Volume 1. His Plants, Methods and Areas of Cultivation*. Bernice P. Bishop Museum Bulletin 161, Bishop Museum Press, Honolulu.

Hawai‘i TMK Service, 222 Vineyards St., Suite 401, Honolulu
1984 Portion of TMK: [1] 6-5-02.

Juvik, Sonia P. and James O. Juvik
1998 *Atlas of Hawaii*, Edition: 3. University of Hawaii Press, Honolulu.

Kalākaua, David
1888 *The Legends and Myths of Hawaii*, Charles L. Webster, (Reprint of three volumes published in 1877-85), Charles L. Webster, New York, NY.

Kamakau, Samuel M.
1992 *Ruling Chiefs of Hawaii*. Kamehameha Schools Press, Honolulu.

Kennedy, Joseph
1991 Surface Examination of TMK: 6-7-02:por 27, Archaeological Consultants of Hawaii, Inc., Haleiwa, HI.

King, Pauline (ed.)
1989 *Journal of Stephen Reynolds: 1823-1829*. Ku Pa‘a, Inc., Honolulu.

Kirch, Patrick V. and Marshall Sahlins
1992 *Anahulu: The Anthropology of History in the Kingdom of Hawaii*, 2 vols. Volume 1. *Historical Ethnography* by Marshall Sahlins. University of Chicago Press, Chicago.

Kuykendall, Ralph
1965 The Hawaiian Kingdom, Volume I. The University Press of Hawaii, Honolulu.
1967 The Hawaiian Kingdom, Volume 3, 2nd printing. University Press of Hawai‘i, Honolulu.

McAllister, J. Gilbert
1933 *Archaeology of O‘ahu*, Bulletin 104. B.P. Bishop Museum, Honolulu.

Moore, James R., Michelle Elmore, and Joseph Kennedy,
2004 *An Archaeological Inventory Survey Report for a Property Located at TMK 6-7-01:51 & 52, Kamananui Ahupua‘a, Waialua District, Island of Oahu*. Archaeological Consultants of Hawaii, Inc., Haleiwa, HI.

Moore, James R., and Joseph Kennedy
2008 *An Archaeological Assessment Report for a Property Located at TMK (1) 6-6-021:001 in Kamananui Ahupua‘a, Waialua District, Island of Oahu*. Archaeological Consultants of the Pacific, Inc., Haleiwa, HI.

Nees, Richard C., Christopher Rundell, Roger Blankfien, and Barry Nakamura
1991 *Archaeological Survey and Literature and Document Search of the Proposed Kaukonahua Quarry, Waialua, Island of O‘ahu (TMK 6-5-01)*. Public Archaeology Section, B, P. Bishop Museum, Honolulu.

Neller, Earl
1984 *An Archaeological Reconnaissance Survey of the Mokuleia Exploratory Well Site, Kamananui, O‘ahu*. On file at SHPD, Kapolei, HI.

Perkins, Robert C
1892-1893 *Transcript of Diary in Papers of George C. Munroe*. B.P. Bishop Museum Archives, Honolulu.

Pratt, Elizabeth Kekaaniau
1920 *History of Keoua Kalanikupuapa-i-kalani-nui, Father of Hawaii Kings, and His Descendants, with Notes on Kamehameha I, First King of All Hawaii*. Territory of Hawaii, Honolulu.

Pukui, Mary Kawena
1983 *‘Ōlelo No‘eau: Hawaiian Proverbs and Poetical Sayings, Bishop Museum Special Publication No.71,* Bishop Museum Press, Honolulu, HI.

Pukui, Mary Kawena and Caroline Curtis
1976 *The Water of Kane and Other Legends of the Hawaiian Islands*, Collected or Suggested by Mary Kawena Pukui, retold by Caroline Curtis, Illustrated by Richard Goings, The Kamehameha Schools Press, Honolulu, HI.

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini
1974 *Place Names of Hawaii*. University of Hawai‘i Press, Honolulu.

Roberts, Alice K.S., Stephen Roberts, Michael Desilets, Amy L. Buffum, and Jennifer J. Robins
2004 *Archaeological Reconnaissance Survey of U.S. Army Schofield Barracks Military Reservation, South Range Land Acquisition, Oahu Island, Hawaii Contract No. DACA83-01-D-0013, Task Order No. 0011 TMK 9-2-05: 2, 13, 14*. Garcia & Associates, Honolulu.

Robins, Jennifer J., and Robert L. Spear
1997 *Research Design for an Intensive Archaeological Survey of Prehistoric Hawaiian Sites for Determination of Eligibility for Listing to the National Register of Historic Places, Schofield Barracks Military Reservation South Range, O‘ahu Island, Hawai‘i*. Scientific Consulting Services, Honolulu.

Schmitt, Robert C.
1977 *Historical Statistics of Hawaii*. University of Hawai‘i Press, Honolulu.

Spear, Robert
1993 *A Reconnaissance Survey of the Hidden Valley Ranch Project, Island of O‘ahu, Waialua, O‘ahu, Hawai‘i [TMK: 6-7-03: Por. 5 and 9]*. Scientific Consultant Services, Honolulu.

Sterling, Elspeth P., and C. C. Summers
1978 *Sites of O‘ahu*. Department of Anthropology, Bernice P. Bishop Museum, Honolulu.

Thrum, Thomas G.
1907 *Hawaiian Folk Tales: A Collection of Native Legends*. A.C. McClurg & Co., Chicago.

1908 *All About Hawaii. The recognized Book of Authentic Information on Hawaii, Combined with Thrum's Hawaiian Annual and Standard Guide*, Retrospect for 1907 (Plantation Matters), 168-186. Honolulu Star-Bulletin, Honolulu.

1923 *More Hawaiian Folk Tales*, Unknown publisher.

Tropic Lightning Museum
2005 Schofield Barracks: A Historic Treasure. http://www.25idl.army.mil/tropic%20lightning%20museum/history.htm.

U.S. Army Map Service
1953 U.S. Army Map Service, 7.5 Minute Series Topographic Map, Haleiwa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1953 U.S. Army Map Service, 7.5 Minute Series Topographic Map, Schofield Barracks Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

U.S. Geological Survey
1928-1929 U.S. Geological Survey 7.5 Minute Series Topographic Map, Schofield Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

U.S. Geological Survey
1928-1929 U.S. Geological Survey 7.5 Minute Series Topographic Map, Wahiawa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1977-1978 U.S. Geological Survey Aerial photograph, Haleiwa. On file at USGS Information Services, Box 25286, Denver, Colorado.

1977-1978 U.S. Geological Survey Aerial photograph, Schofield Barracks. On file at USGS Information Services, Box 25286, Denver, Colorado.

1998 U.S. Geological Survey 7.5 Minute Series Topographic Map, Schofield Barracks Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1999 U.S. Geological Survey 7.5 Minute Series Topographic Map, Haleiwa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

U.S. War Department
1919 U.S. War Department Map, Waianae Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1919 U.S. War Department Map, Wahiawa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1943 U.S. War Department Map, Paalaa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1943 U.S. War Department Map, Schofield Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

Vitousek, Michael
2010 Inadvertent Discovery of Human Skeletal Remains During Monitoring Activities Associated with the Waialua Beach Road Guardrail Improvement Project, Kamananui Ahupua‘a, Waialua District, Island of O‘ahu TMK # (10 6-6-022:004). SHPD

Waihona ‘Aina
2000 The Māhele Database. Electronic document, http://waihona.com.

Yent, Martha
1981 *Archaeological Inspection of Lands Adjacent to Kaiaka State Recreation Area, Waialua, Oahu*. Memo to Roy Sue, Department of Land and Natural Resources, Division of State Parks, Honolulu.

APPENDIX A: SHPD 6E-8 Review

RECEIVED
LAND DIVISION
2011 APR 13 P 3:08

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
KAPUHIHEWA BUILDING
601 KAMOKILA BLVD, KAPOLEI HI 96706

DATE: April 8, 2011 **LOG:** 2011.0679
DOC: 1103RS62

TO: Charlene Unoki
Assistant Administrator
Land Division
State Department of Land and Natural Resources
Post Office Box 621
Honolulu, HI 96809

SUBJECT: **Section 6E-8 Historic Preservation Review / Draft EA Pre-Assessment Consultation DAGS ICSD Communications Upgrades at Mt. Kaala**
Building Owner: State of Hawaii
Location: Mt. Kaala, Oahu
Tax Map Key: (1) 6-7-003:023 and :025; (1) 7-7-001:001

This letter is in response to materials dated March 2, 2011, received by our office on March 7, 2011, re proposed communications equipment upgrades to the Department of Accounting and General Services (DAGS) Information and Communication Services Division (ICSD) facility atop Mt. Kaala. Work includes re-roofing and filling of cracks and leaks to an existing State-owned building, placing new conduit within an existing driveway to connect the building to a nearby generator building, replacement of an existing 25 foot tall tower with a 50 foot tower; installation of additional microwave and whip antennas to the new tower; relocation of existing corner reflector antennas from the building to an existing microwave antenna site located downhill off Kamaohumu and placement of a new camera there, and increasing the number of above ground antenna cables to five from the building to the microwave antenna site. The area of potential effect will be the three parcels listed above.

While no dates have been provided for the construction of these facilities, the fact that a request for comments has been issued for the Pre-Assessment Consultation for a Draft Environmental Assessment leads us to determine that the complex contains structures are over 50 years old. This could make the Mt. Kaala facility eligible as a Cold War facility under Criteria A (Events). We appreciate the submission of maps and photographs as documentation for the request.

Our comments are divided into two sections:

Archaeology: SHPD will withhold full comments until development of the EA. Please be advised that our records show multiple archaeological sites with parcel (1) 7-1-001:001 which should be identified in relation to the proposed development.

Architecture: We do not, in concept, object to these renovations. However, in order to provide any full determination we will need more detailed information as to the proposed placement of these alterations on the existing structures (especially in terms of visual impacts).

Any questions should be addressed to Ross W. Stephenson, SHPD Historian, at (808) 692-8028 (office), (808) 497-2233 (cell) or ross.w.stephenson@hawaii.gov.

Mahalo for the opportunity to comment.

Pua Aiu
Administrator

Appendix B: Consultation Outreach Letter

CULTURAL SURVEYS HAWAI'I
ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL DOCUMENTATION SERVICES SINCE 1982

June 6, 2011

XXX

O'ahu Island
P.O. Box 1114
Kailua, Hawai'i 96734
Ph: (808) 262-9972
Fax: (808) 262-4950

Maui Island
1993 Main Street
Wailuku, Hawai'i 96793
Ph: (808) 243-9082
Fax: (808) 244-1994

Branch Offices:
Hilo, Hawai'i
Kona, Hawai'i

Subject: Consultation for an Information and Communication Services Division (ICSD) Mt. Ka'ala Radio Facility Improvements Project and Project's *Archaeological Assessment*

Aloha XXX:

The Information and Communication Services Division (ICSD) Division of the Department of Accounting and General Services (DAGS), State of Hawai'i proposes certain modest improvements in a Radio Facility Improvements Project on the summit of Mount Ka'ala.

We are writing to invite any comment the Waialua Hawaiian Civic Club may have regarding any historic or cultural issues pertaining to this project on Mt. Ka'ala and/or our draft *Archaeological Assessment* for this project. Other parties being consulted include:

- Mr. Kawika Au and the Waialua Hawaiian Civic Club
- Ms. Velma Aloha Kekipi and the Hawaiian Civic Club of Wahiawa
- Hui Mālama I Nā Kūpuna 'o Hawaii Nei (Mr. Halealoha Ayau)
- Mr. Fred Cachola
- Mr. Shad Kane
- Mr. Tom Lenchanko, Hawaiian Civic Club of Wahiawa
- Mr. Thomas Shirai, OHA Native Hawaiian Historic Preservation Council

A project description is provided below and a copy of our draft *Archaeological Assessment* is attached for your consideration.

If you have any comment, or are likely to have any comment would you please be so kind as to get back to us. We may follow-up to see if you have any comment.

Project Description
Both interior and exterior repairs to the existing State building would be implemented to fix deficiencies. This includes re-roofing to address cracks and leaks and upgrading electrical service for the facility. A new conduit would be installed within the existing driveway to connect the State building with a nearby FAA generator building. Other repairs include replacing security lighting for the building, doors, and locks. Two 90-foot bare copper wires would also be placed above ground on each side of the ridge to serve as an electrical ground in the event the State facility is struck by lightning.

The State's existing 25-foot-tall tower will be replaced with a 50-foot-tall tower within the State's licensed area. Additional microwave and whip antennas will be installed on the new tower along with

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June 6, 2011

relocating existing antennas from the State building. The U.S. Coast Guard will be responsible for demolishing this existing radio tower, and designing and constructing the new taller tower.

A 48-inch-tall, 75-inch-wide corner reflector antenna will be relocated from the State building to the lower mount at the existing antenna site downhill of Kamaohanui Ridge. The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced by DAGS ICSD with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility. There is one existing above ground microwave antenna feed line routed from the Mt. Ka'ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits are planned to be routed above ground from the State's radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai'i for its Hawai'i Interactive Television System (HITS) distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State's critical land mobile radio systems that support public safety and critical government operations. Construction of these improvements are planned to start in the Fall of 2012 and be completed by the end of 2013.

Minimal excavations within the previously graded existing State compound is anticipated in association with trenching for a utility conduit and erection of a short (50-foot tower). The project area per se is approximately 0.15 acres. The archaeological study area [TMK: (1) 6-7-003:023 & :025 (State) and (1) 7-7-001:001 Federal)] is approximately 2.37 acres – conforming to the entire chain link fence enclosure as well as the short run to the proposed lower elevation antenna.

If you have any comment, or are likely to have any comment would you please be so kind as to respond by e-mail, fax, telephone or letter soon. *Mahalo* for your consideration of this matter.

Sincerely,

David W. Shideler

David W. Shideler

Cultural Surveys Hawai'i
tel 262-9972, fax 262-4950, e-mail dshideler@culturalsurveys.com, P.O. Box 1114 Kailua Hawaii 96734

Attachment: draft *Archaeological Assessment for the Information and Communication Services Division (ICSD) Mt. Ka'ala Radio Facility Improvements Project, Kamananui Ahupua'a, Waialua District, O'ahu Island [TMK: (1) 6-7-003:023 por. & :025 por. (State) and (1) 7-7-001:001 por. (Federal)]*

Consultation For an Information and Communication Services Division (ICSD) Mt. Ka'ala Radio Facility Improvements Project and Project's *Archaeological Assessment*

ATTACHMENT C

State Historic Preservation Division Comment Letters

CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
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OFC. OF ENVIRONMENTAL QUALITY CONTROL

April 5, 2002

LOG NO: 29537
DOC NO: 0204EJ01

J. M. Waller Associates, Inc
Attn: Mr. Carl Woehrle
459 N. Kalaheo
Kailua, Hawaii 96734

Dear Mr. Woehrle:

SUBJECT: **Chapter 6E-8 Historic Preservation Review – Environmental Assessment for Licensing of Additional Land for the Replacement of a 25-foot Tower with the Construction of a 50-foot Telecommunications Tower at Mount Kaala, O'ahu**
Kaala, Wai'anae Uka, O'ahu, TMK: 6-7-003

Thank you for the opportunity to comment on the EA for additional land for the replacement of a 25-foot tower with a 50-foot tower at Mount Kaala. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project areas. We received notification of this undertaking on March 15, 2002.

The State of Hawaii, Department of Accounting and General Services, Information and Communication Services Division, proposes the licensing of additional space to allow for a 50-ft. replacement tower, "correct property descriptions in the existing license, and add two rights-of-way that were omitted from previously property descriptors". A review of our records shows that there are no known historic sites at this location. A cultural resources management plan prepared for the U. S. Air Force (*Cultural Resource Management Plan for Five Satellite Installations 15th Air Base Wing, Hickam Air Force Base, Hawai'i*, IARII, June 2000) reported that there are no previously identified archaeological or historic buildings within the fenced portion of the installation. Because the proposed actions are located within the existing fenced portion of the installation, we believe that this project will have "no effect" on archaeological sites or historic buildings.

We do, however, recognize that the summit of Mount Kaala is probably eligible as a traditional cultural property. The mountain has a number of legendary associations, associations with Hawaiian deities, and was the location of Luakini Fishpond (State Site 50-80-04-212 on the mountain's summit). It is unlikely that these concerns were reviewed when the initial

development of the satellite installation occurred. It may well be that the native Hawaiian community would consider additional development on the mountain top to be an adverse effect on this traditional place, either directly or indirectly (such as an adverse visual effect). Given this information, before we can agree that "no historic properties will be affected" by the undertaking, we believe that consultation with the native Hawaiian community must occur – on the importance of the mountain and the impacts of the proposed undertaking. We recommend that DAGS consult with native Hawaiian organizations including the Office of Hawaiian Affairs who may have an interest in Mount Kaala. Once consultation is concluded, we will then need to see the results of the consultation in order to conclude our review.

Should you have any questions about archaeology, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027 Should you have any questions about cultural matters, please feel free to contact Nathan Napoka at 587-0040

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

EJ:amk

c. Glenn M. Okimoto, State Comptroller, DAGS
Genevieve Salmonsen, Director, Office of Environmental Quality Control

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 14, 2011

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HELBER, HASTERT & FEE PLANNERS

Helber, Hastert & Fee Planners, Inc.
733 Bishop Street Suite 2590
Honolulu, Hawaii 96813

Attention: Mr. Ronald A. Sato, AICP

Ladies and Gentlemen:

Subject: Pre-Assessment Consultation for Draft Environmental Assessment for the Mt. Ka'ala Radio Facility Improvements Project

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

The Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0414. Thank you.

Sincerely,

Charlene Unoki
Assistant Administrator

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GOVERNOR OF HAWAII

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2011 APR 13 P 3:08
NATURAL RESOURCES
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
KAHUHIHEWA BUILDING
601 KAMOKILA BLVD, KAPOLEI HI 96706

DATE: April 8, 2011

LOG: 2011.0679
DOC: 1103RS62

TO: Charlene Unoki
Assistant Administrator
Land Division
State Department of Land and Natural Resources
Post Office Box 621
Honolulu, HI 96809

SUBJECT: **Section 6E-8 Historic Preservation Review / Draft EA Pre-Assessment Consultation DAGS ICSD Communications Upgrades at Mt. Kaala**
Building Owner: State of Hawaii
Location: Mt. Kaala, Oahu
Tax Map Key: (1) 6-7-003:023 and :025; (1) 7-7-001:001

This letter is in response to materials dated March 2, 2011, received by our office on March 7, 2011, re proposed communications equipment upgrades to the Department of Accounting and General Services (DAGS) Information and Communication Services Division (ICSD) facility atop Mt. Kaala. Work includes re-roofing and filling of cracks and leaks to an existing State-owned building; placing new conduit within an existing driveway to connect the building to a nearby generator building; replacement of an existing 25 foot tall tower with a 50 foot tower; installation of additional microwave and whip antennas to the new tower; relocation of existing corner reflector antennas from the building to an existing microwave antenna site located downhill off Kamaohanui and placement of a new camera there; and increasing the number of above ground antenna cables to five from the building to the microwave antenna site. The area of potential effect will be the three parcels listed above.

While no dates have been provided for the construction of these facilities, the fact that a request for comments has been issued for the Pre-Assessment Consultation for a Draft Environmental Assessment leads us to determine that the complex contains structures are over 50 years old. This could make the Mt. Kaala facility eligible as a Cold War facility under Criteria A (Events). We appreciate the submission of maps and photographs as documentation for the request.

Our comments are divided into two sections.

Archaeology: SHPD will withhold full comments until development of the EA. Please be advised that our records show multiple archaeological sites with parcel (1) 7-1-001:001 which should be identified in relation to the proposed development.

Architecture: We do not, in concept, object to these renovations. However, in order to provide any full determination we will need more detailed information as to the proposed placement of these alterations on the existing structures (especially in terms of visual impacts).

Any questions should be addressed to Ross W. Stephenson, SHPD Historian, at (808) 692-8028 (office), (808) 497-2233 (cell) or ross.w.stephenson@hawaii.gov.

Mahalo for the opportunity to comment.

Pua Aiu
Administrator

Section 106 Comment Letters Received

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF: OCCL; AJR

COR: OA-12-134

NOV 23 2011

Ronald A. Sato
C/o Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop St., Suite 2590
Honolulu, HI 96813

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NOV 28 2011
HELBER, HASTERT & FEE
PLANNERS

SUBJECT: Mt. Ka'ala Radio Facility Improvements
TMKs: (1) 6-7-003:023 &:025; (1) 7-7-001:001
Wahiawa, Waialua, Honolulu County, Hawaii

Dear Mr. Sato

The Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) is in receipt of your letter regarding the proposal to conduct improvements at the Information and Communication Services Division (ICSD) State Radio Building, located within the Conservation District Protective Subzone.

According to the information provided the proposal includes the repair of the existing State Radio Building (SRB) antenna tower, interior and exterior building repairs, upgrade of existing air conditioning appliances and the construction of a new conduit line and one new antenna dish outside of the main facility area.

1. Pursuant to Hawai'i Administrative Rules (HAR) §13-5-22, P-6, **PUBLIC PURPOSE USES** (D-1), *Land uses undertaken by the State of Hawaii or the counties to fulfill a mandated governmental function, activity or service for public benefit and in accordance with public policy and the purpose of the conservation district. Such land uses may include transportation systems, water systems, communication systems and recreational facilities*;

2. This action will require the filing of a Conservation District Use Application (CDUA) and all required attachments for a **Board Permit**, including an Environmental Assessment (EA). To allow, modify or deny this use would be at the discretion of the Board of Land and Natural Resources (BLNR); and

3. Pursuant to HAR §13-5-40 *Hearings (a) Public hearings shall be held: (3) on applications requiring a Board Permit in the protective subzone*; Therefore a public hearing will be required.

The OCCL suggests the following comments be addressed in Final Environmental Assessment (FEA):

- *Fuel Tank*: The applicant shall discuss specific Best Management Practices (BMP) for the storage of fuel on-site, transport of fuel to the site and maintenance/safety of the on-site fuel tank.

- *Runoff*: The applicant shall discuss specific BMP to control runoff and reduce sedimentation during construction; this may include planting of approved vegetation or the emplacement of silt fencing.

Should you have any further questions, please contact Alex J. Roy of the Office of Conservation and Coastal Lands at 808-587-0316

Sincerely,

Samuel J. Lemmo, Administrator
Office of Conservation of Coastal Lands

CC: ODLO
C&C; DPP
DAGS

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD11/5602B

November 7, 2011

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PLANNERS

Ronald A. Sato, Associate
Helber, Hastert & Fee
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawai'i 96813

Re: National Historic Preservation Act Section 106 Consultation
Mount Ka'ala Radio Facility Improvements Project
Island of O'ahu

Aloha e Ronald A. Sato,

The Office of Hawaiian Affairs (OHA) is in receipt of your October 12, 2011 letter with enclosures initiating consultation pursuant to Section 106 of the National Historic Preservation Act of 1966 as amended (NHPA). The State of Hawai'i-Department of Accounting and General Services, Information and Communication Services Division (DAGS) is proposing improvements at an existing 1, 161 square foot radio facility (the undertaking) which is situated within the 2.37 acre Mount Ka'ala U.S. Air Force Site (AFS) located at the summit of Mount Ka'ala (Ka'ala) on the Island of O'ahu.

Undertaking activities will consist of interior and exterior repairs and renovations to an existing building at the DAGS radio facility (facility), installation of an electrical conduit to connect to an adjacent Federal Aviation Administration building situated within the AFS, removal of an existing 25-foot tall telecommunications tower (tower), construction of a new 50-foot tall tower, the relocation of a variety of antennas onto mounts which will be installed on the new tower, installation of two above ground copper lines to mitigate lightning strikes and installation of five antenna lines and conduits extending approximately 230 feet from the facility to connect with an existing microwave antenna site located outside of the AFS on Kamoahanui Ridge.

Upon completion, the undertaking will provide improvements to and upgrades at the facility which will contribute to the conversion of State and federal telecommunications to a digital microwave system, support the University of Hawai'i distance learning system and improve the telecommunications infrastructure for a variety of agencies, including State Civil Defense and others involved in emergency and rescue operations. OHA looks forward to seeing the undertaking completed in compliance with applicable laws.

Your letter describes the use of federal funds from the United States Coast Guard (USCG) to support this undertaking as the regulatory "trigger" for the requirements of the NHPA. Helber, Hastert & Fee is also preparing a draft environmental assessment (DEA) pursuant to the requirements of Chapter 343, Hawaii Revised Statutes and the National Environmental Policy Act to support this undertaking. By letter dated March 21, 2011, OHA provided you with preliminary comments ahead of the DEA, which we look forward to reviewing when it is completed.

Your letter indicates that the USCG has delegated the responsibility for initiating NHPA consultation for this undertaking to DAGS. OHA agrees that NHPA implementing regulations (36 CFR) allow for compliance responsibilities to be delegated to the State of Hawai'i (State), but we respectfully assert that federal agencies (in this case the USCG) retain ultimate responsibility and jurisdiction over an undertaking, even when certain responsibilities have been delegated to the State.

DAGS has determined that this undertaking will result in "no historic properties affected". OHA notes that the terminology used in this determination is consistent with Chapter §13-275-7, Hawaii Administrative Rules (HAR) as opposed to the NHPA. The correct determination pursuant to 36 CFR §800.5 should be "no adverse effect".

While OHA agrees that a "no adverse effect" determination (determination) is appropriate for this undertaking, we would like to offer several comments on the archaeological assessment[1] (assessment) prepared by Cultural Surveys Hawai'i, Inc. (CSH) and used to support this determination:

General

OHA views the assessment as contributing to the identification of historic properties, but we note that as a "stand alone" document, the assessment does not complete the level of effort required by 36 CFR §800.4. A review of the assessment as a part of the NHPA consultation process becomes problematic because it is readily apparent to a reviewer and subsequently confirmed by CSH[2] that the assessment was prepared to be in compliance with only Chapter 6E, Hawaii Revised Statutes (HRS) as a supporting document for the use of State funds or lands, or permits and approvals necessary to facilitate the undertaking. While the NHPA and Chapter 6E, HRS have certain procedural similarities, there are also distinct differences in regulatory requirements, especially when it comes to consultation with Native Hawaiian Organizations (NHO) as a component to the identification of historic properties and an assessment of adverse effects.

In this particular instance, the circumstances related to this undertaking do not result in OHA having any fundamental objections to the assessment being prepared to be only in compliance with Chapter 6E, HRS. For future undertakings however, OHA urges caution in the USCG and DAGS allowing your contracted consultants to utilize this approach as a different set of circumstances could result in OHA questioning whether the NHPA process has been properly initiated.

Chapter 6E-8, HRS

The assessment references an April 8, 2011 letter from the Department of Land and Natural Resources (DLNR)-State Historic Preservation Division (SHPD)[3] included as an attachment to your letter (Attachment C) as evidence that the project has undergone a required Chapter §6E-8, HRS review. OHA disagrees with this conclusion in the assessment because the letter referenced clearly states (paragraph 4) that the SHPD "*will withhold full comments until the development of the EA*".

---

[1] Hammet, Hallett H. and Shideler, David W. *Archaeological Assessment for the Information and Communications Services Division Mt. Ka'ala Radio Facility Improvements Project, Kamananui Ahupua'a, Waialua District, O'ahu Island.* Cultural Surveys Hawai'i, Inc., August 2011. Prepared for Helber, Hastert & Fee.

[2] Ibid, page 58. "*This archaeological assessment report was prepared to support the proposed project's historic preservation review under Hawaii Revised Statutes (HRS) Chapter 6E-8 and HAR Chapter 13-13-275*".

[3] Letter dated April 8, 2011 from Pua Aiu, SHPD Administrator to Charlene Unoki, DLNR-Land Division Assistant Administrator.

Identification of historic properties

Section 6.1 of the assessment concludes that no historic properties were found within the proposed project area. This conclusion highlights the differences between the Chapter 6E, HRS and NHPA processes because it discounts the general recognition that the summit area of Ka'ala is a traditional cultural property[4] (TCP) which may be eligible for inclusion in the National Register of Historic Places (NRHP). The April 5, 2002 SHPD letter[5] which is also included as an attachment with your letter (also Attachment C) previously recognized that the myriad of traditional accounts associated with the Ka'ala summit area emphasize it's importance as a potential TCP as both a location associated with the traditional beliefs of the Native Hawaiian people and as a location where Native Hawaiian religious practitioners have historically gone, and are known or thought to go today. For the purposes of the NHPA, a TCP is a historic property[6] which if identified, must be considered during the consultation process and an assessment of adverse effects.

Section 5.3 of the assessment correctly summarizes that the April 5, 2002 SHPD letter concluded that the undertaking will have "no effect" on archaeological resources, but does not acknowledge the SHPD's previous recognition in that same letter that the summit area of Ka'ala may qualify as a TCP and be eligible for inclusion in the NRHP.

To be clear, OHA does assign cultural and religious significance to the summit area of Ka'ala and we agree with the SHPD's 2002 recognition of this area as a potential TCP which may be eligible for inclusion in the NRHP. The statement in 5.3 of the assessment that the NRHP does not currently "list Mt. Ka'ala as a registered historic property" is irrelevant because the NHPA requires consideration be afforded to historic properties both included and eligible for inclusion in the NRHP.

CSH seems to exert an unusual amount of effort in attempting to dismiss the possibility that a contributing element to the Ka'ala TCP ever existed. The April 5, 2002 SHPD letter identified the Ka'ala summit as the location of Luakini Fishpond (Statewide Inventory of Historic Places Number 50-80-04-212). The description of this site is taken from J. Gilbert McAllister's 1933 publication[7] which details:

> *According to Hookala, his father often obtained fish from the fresh-water pond. In it were found many shore fish, hinalea, wuwoa, a kind of mullet, and others. Kamaoha was the moo or goddess of the pond. There is now only a swamp at the site.*

This historical account of the presence of marine fish species at the Ka'ala summit is described as "inconceivable" (page 29) and "fabulous" (page 40) by CSH in the assessment. CSH goes on to question the "curious account" (page 34) recorded by Abraham Fornander[8] in a chant composed by Kapaahulani and his younger brother Kamakaaulani for the celebrated chief Kualii which includes the line "ka elemihi ula i ka luna o Kaala-la". This line has been translated to reference "the red crab on the top of Kaala".[9]

[4] See National Register Bulletin 38. *Guidelines for Evaluating and Documenting Traditional Cultural Properties.* Prepared by the U.S. Department of Interior-National Park Service, Interagency Resources Division.
[5] Letter dated April 5, 2002 from Don Hibbard, SHPD Administrator to Carl Woehrle, J.M. Waller Associates, Inc.
[6] As defined by 36 CFR §800.16(l).
[7] McAllister, J. Gilbert. *Archaeology of O'ahu.* Bernice Pauahi Bishop Museum Bulletin 104. 1933. Page 133.
[8] Fornander, Abraham. *Collection of Hawaiian Antiquities and Folklore.* Memoirs of the Bernice Pauahi Bishop Museum, Volume 4. 1986 Kraus Reprint. Page 386.
[9] Following his death in 1887, Fornander's collection of manuscripts were purchased by Charles Reed Bishop and subsequently turned over to the Bernice Pauahi Bishop Museum where they were translated under the supervision of W.D. Alexander.

CSH is so dismissive of the possible existence of pond containing marine species identified by Fornander and McAllister at the Ka'ala summit that despite being identified by an informant in the first systematic archaeological study of Kamananui Ahupua'a by McAllister in 1930's, Luakini Fishpond is not afforded the respect of being included in the "Previous Archaeological Research" section (Section 5) of the assessment. Instead, the discussion on Luakini Fishpond is within the " 'Olelo No'eau" section (Section 4.1) of the assessment where CSH offers their own interpretations of traditional proverbs and poetical sayings associated with Ka'ala. The discussion in this section of the assessment affords CSH with an opportunity to share their own belief that rather than being a reality, Luakini Fishpond and marine species at Ka'ala are veiled poetic references.

OHA understands why traditional and historical accounts which identify a pond containing marine species at the highest point (4,025 feet above mean sea level) on the Island of O'ahu could be difficult to conceive from certain perspectives. It is important to note that the knowledge of our ancestors often extends beyond the consciousness of modern thought and transcends from the mundane to the profound. OHA urges caution in the CSH's approach in attempting to analyze and assess the accounts of Luakini Fishpond absent input received during the consultation process directly from individuals and organizations with demonstrated knowledge and expertise in this subject.

OHA advocates that Fornander's reference and McAllister's publication be viewed for what they are, accounts which describe the presence of a pond containing marine species at the Ka'ala summit. If modern archaeological studies and field surveys have been unable to verify the location or existence of this pond, it is acceptable to say so, but this does not provide conclusive evidence which would allows for the earlier accounts to be dismissed. At a fundamental level, these accounts, like the others described in Section 4 of the assessment (which were not subject to the same level of scrutiny by CSH) serve the simple purpose of describing contributing elements which emphasize the importance of Ka'ala as a potential TCP of cultural and religious significance to the Native Hawaiian people.

OHA believes DAGS and the USCG failed to identify Ka'ala as a potential TCP which is eligible for inclusion in the NRHP which then resulted in the failure to conduct an appropriate significance assessment and assessment of adverse effects. However, the scope of the undertaking activities described in your letter will not alter the characteristics of Ka'ala that qualify it for inclusion in the NRHP.[10] Thus, the "no adverse effect" determination is still appropriate.

Consultation with NHO

The April 5 2002 SHPD letter encouraged DAGS to consult with NHO, including OHA on the importance of Ka'ala and any possible adverse effects of the undertaking. Section 7 of the assessment includes details the individuals and NHO who were consulted in its preparation.

OHA notes that despite being specifically identified in the April 5, 2002 SHPD letter as an NHO which should be consulted and cited as an example of an NHO in the NHPA,[11] we were not consulted during the preparation of the assessment. OHA does appreciate that efforts were made to consult with the individuals and other NHO identified in the assessment which resulted in valuable thoughts relative to Ka'ala as a receptacle of "Wai o Kane" and the importance of implementing necessary protections being expressed.

[10] See National register Bulletin 15. How to Apply the National Register Criteria for Evaluation. Prepared by the U.S. Department of the Interior, National Park Service, National Register of Historic Places staff.
[11] See 16 U.S.C 470w(18).

As we have already mentioned, an issue which is concerning to OHA is that CSH expressed conclusions and interpretations relative to Luakini Fishpond and certain 'olelo no'eau associated with Ka'ala that seems to be based on the authors of the assessment's own opinions as opposed to information gained during consultation with NHO with demonstrated expertise and knowledge of these issues. OHA cautions the USCG and DAGS in allowing your contracted consultants to utilize this approach in the future.

NHPA implementing regulations require that agency officials acknowledge that NHO possess special expertise in assessing the NRHP eligibility of historic properties which may be of religious or cultural significance.[12] The Advisory Council on Historic Preservation (ACHP) has published guidance which addresses the misconceptions of whether contracted consultants possess the expertise to determine the significance of historic properties to the Native Hawaiian people:

> *Many agencies assume that agency or contract archaeologists can identify which properties are of significance to Native Hawaiian organizations when they conduct archaeological surveys. However, unless an archaeologist has been specifically authorized by a Native Hawaiian organization to speak on its behalf on the subject, it should not be assumed that the archaeologist possesses the appropriate expertise to determine what properties are or are not of significance to a native Hawaiian organization*[13]

OHA views this ACHP guidance as applicable to this undertaking and we urge the USCG and DAGS consider it in the future.

Area of potential effect

The assessment describes the area of potential effect (APE) for this undertaking as consisting of only the 0.15 acres which encompass the "footprint" of the facility and conduit alignment to Kamaohanui Ridge. OHA believes that the APE has been incorrectly defined and fails to take visual affects the 50-foot tall tower which will be constructed could cause.

It is unclear whether the USCG has established a policy on how to account for any visual affects constructed towers could cause. OHA is aware that the Federal Communications Commission has prepared guidance[14] which establishes that the APE for the construction of tower sites (sites) is within a half mile of the site if it is less than 200 feet or less in overall height. OHA views the FCC's guidance as establishing an appropriate starting point for determining the appropriate APE for this undertaking, since it involves the construction of a new tower less than 200 feet in overall height. Even with this expanded APE, OHA believes your "no adverse effect" determination is still appropriate.

Conclusion

OHA sincerely hopes that the USCG and DAGS will consider our comments as the development of future undertakings in the State of Hawai'i move forward. OHA requests specific confirmation from Helber, Hastert & Fee that this letter has been transmitted to the appropriate USCG and DAGS staffers for their consideration.

---

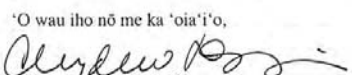
[12] 36 CFR §800.4(c)(1).

[13] Consultation *with Native Hawaiian Organizations in the Section 106 Review Process: A Handbook*. Prepared by the Advisory Council on Historic Preservation. June 2011. Page 13.

[14] Stipulation VI.(C). Nationwide Programmatic Agreement for Review of effects on historic properties for certain undertakings approved by the Federal Communications Commission. Executed between the Federal Communication Commission, Advisory Council on Historic Preservation and National Conference of State Historic Preservation Officers in September 2004.

Thank you for initiating consultation and the opportunity to provide comments. Should you have any questions or concerns, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,



Clyde W. Nāmu'o
Chief Executive Officer

CWN:kl

C: William Aila, Jr., State of Hawai'i Historic Preservation Officer
Pua Aiu, State Historic Preservation Division Administrator
Cultural Surveys Hawai'i, Inc.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAHUHIHEWA BUILDING
601 KAMOKILA BLVD, KAPOLEI HI 96707

October 24, 2011

Mr. Ronald A. Sato, AICP
Helber Hastert & Fee Planners, Inc.
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

This letter is in response to your letter dated October 12, 2011 regarding planned improvements to the Department of Accounting and General Services (DAGS) Information and Communication Services Division (ICSD) atop Mt. Ka'ala, the highest point on the island of Oahu. The improvements, which include: doubling the high of the main antenna tower on the facility from to 25 feet to 50 feet, the installation of additional microwave whip antennas on said tower, repairing the roof on the main shelter on the site, relocation of corner reflector antennas from the building to an existing microwave antenna site located downhill of Kamaohanui, the placement of a new camera on the downhill site, and increasing the number of microwave antennas from the building to the microwave antenna site. Given the dearth of population and above ground resources in the area, it is unlikely that significant historical view sheds would be affected and thus the State Historic Preservation Division concurs that the Area of Potential Effect (APE) is the project area, roughly 0.15 acres.

Thank you for providing the extra materials requested in SHPD's letter dated April 8, 2011[L2011.0679 D1103RS62]. In response to your request for pre-assessment consultation, this division asked that you provide maps and photographs documenting the site in its current state and clarifying the improvements to be made. After considering these materials, it should be noted that the facility will very likely be eligible for the National Register of Historic Places under criteria A (Events) for its association with Cold War era communications.

With regard to archaeology, our records show multiple archaeological sites in parcel (1) 7-1-001:001 but the proposed communications equipment upgrades to the DAGS Information and Communication Services Division radio facility atop Mt. Ka'ala is 1,161 sq. feet in size and is located within the larger property owned by the U.S. Army as part of the Schofield Barracks Military Reservation. Our records show that there are no known historic properties within or near to the 1,161 sq. feet licensed radio facility as the site has already been disturbed for similar activities. It is unlikely that any archaeological or historic resources exist. However, there are oral histories linking the mountain and its top to Hawaiian deities, thus Mt. Ka'ala could be a traditional cultural property significant to native Hawaiians. In future undertakings this possibility should be researched and taken into consideration.

Given that the nature of the improvements does not alter the main historical function of the facility and there are no known archaeological concerns with this undertaking, SHPD finds that this project presents no adverse effect.

Any questions should be addressed to Mike Gushard, SHPD Architectural Historian, at 692-8026 or michael.j.gushard@hawaii.gov.

Sincerely,

for WILLIAM J. AILA, JR.
Chairperson

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

PETER B. CARLISLE
MAYOR

DAVID K. TANOUE
DIRECTOR

JIRO A. SUMADA
DEPUTY DIRECTOR

2011/ELOG-2349(WA)

January 9, 2011

RECEIVED
JAN 10 2011
HELBER, HASTERT & FEE
PLANNERS

Mr. Ronald A. Saito, Senior Planner
Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Saito:

Subject: Telecommunications Tower Improvements Projects
Mt. Ka'ala Radio Facility
Tax Map Keys 6-7-3: Portion of 25 and 7-7-1: Portion of 1

This is in response to your request received October 13, 2011, for comments regarding the proposed replacement of an existing telecommunications tower with a new one for the Mt. Ka'ala Radio Facility located at the Mt. Ka'ala Air Force Station in the Waianae Mountain Range.

The project site is in the State Conservation District and zoned P-1 Restricted Preservation District, and it is not within the Special Management Area. Land uses and development standards in the State Conservation District are under the jurisdiction of the State of Hawaii Department of Land and Natural Resources. The City and County of Honolulu has no zoning jurisdiction over the site. Therefore, the City and County Department of Planning and Permitting will not be providing comments on the proposed project.

Please contact William J. Ammons of our staff at 768-8025 if you have any questions.

Very truly yours,

Elizabeth Ce

for David K. Tanoue, Director
Department of Planning and Permitting

DKT:rk

2011 ELOG-2349 Helber Hastert Fee.doc

Thomas Joseph Lenchanko, Hawaiian National and Private Citizen
Spokesperson for Hawaiian Lineal Descendants
931 Uakanikoo Street
Wahiawa, Island of O'ahu
Ko Hawaii Pae Aina, H.I. (96786)

October 16, 2011 Certified Mail 7010 1870 0000 2485 9572

UNITED STATES FEDERAL GOVERNMENT, et al
Department of the Army
United States Army Installation Management Command, Pacific Region
Headquarters, United States Army Garrison-Hawaii
851 Wright Avenue, Wheeler Army Airfield
Schofield Barracks Military Reservation, Hawaii 96587-5000

Helber, Hastert and Fee Planners, Inc.
Ronald A. Sato, AICP
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

STATE OF HAWAII, et al
Neil Abercrombie, Governor
State Capitol 5th floor
415 Beretania Street
Honolulu, Hawaii 96813

Department of Land and Natural Resources
William J. Aila, State Historic Preservation Officer
Charlene Unoki, Assistant Administrator, Land Division
PO Box 621
Honolulu, Hawaii 96809

Pua Aiu, Administrator, State Historic Preservation Division
Historic Preservation Division
Kakuhihewa Building
601 Kamokila Boulevard
Kapolei, Hawaii 96706

Office of Hawaiian Affairs (OHA)
Colette Machado, Chairperson and the Board of Trustees
Clyde Namu'o, Chief Executive Officer
Esther P. Kia'aina, Chief Advocate and staff
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

LAWFUL NOTICE:
TO CEASE AND DESIST UNLAWFUL ACTIONS BY THE FOREIGN UNITED STATES FEDERAL GOVERNMENT, UNITED STATES ARMY, de facto STATE OF HAWAII, de facto CITY AND COUNTY OF HONOLULU, de facto COUNTY OF HAWAII, de facto COUNTY OF MAUI AND de facto COUNTY OF KAUAI, THEIR SUBORDINATE ENTITIES, et al, including public and private parties acting in their behalf, ON FOREIGN HAWAIIAN NATIONAL AINA AND IN OUTRIGHT DEFIANCE OF CULTURAL RIGHTS AND PRACTICES OF HAWAIIAN NATIONALS;
DELIBERATE VIOLATION OF THE UNITED STATES GOVERNMENT "PROXMIRE ACT" "THE GENOCIDE CONVENTION IMPLEMENTATION ACT OF 1987" CHAPTER 50A OF THE UNITED STATES CODE, TITLE 18

SUB-SECTION 1091, MALICIOUS DESTRUCTION OF (TRADITIONAL) CULTURAL SITES (PROPERTIES) AND IWI SITES;
AND THE BLATANT VIOLATION OF THE "UNITED NATIONS GENOCIDE CONVENTION OF 1948"...

REGARDING:
CONFIRMATION OF AN UNBROKEN "CHAIN OF TITLE" AND LAWFUL OWNERSHIP SHALL BE ESTABLISHED BACK TO THE ENACTMENT OF "THE GREAT MAHELE" (PORTIONING, DIVISION) OF 1848;
ENDANGERED SPECIES MITIGATION PLAN, ENDANGERED SPECIES HABITAT CONSERVATION PLAN AND AN INCIDENTAL TAKE PERMIT FOR THE SUBJECT AREA OF THIS FEDERAL UNDERTAKING...

Douglas S. Mulbury
Colonel, United States Army
Commanding

ho'ohewahewa mauliauhonua malama o pa 'oe

Correspondence to compel your agents who have said responsibility, of their continued failure to report to us directly, to reveal and affirm your organization's alleged claim to own and/or control as PROPERTY OF THE UNITED STATES FEDERAL GOVERNMENT, our Hawaiian Kingdom National Government lands throughout the Hawaiian Archipelago, Ko Hawaii Pae Aina, H.I. and to prove transfer of "exclusive territorial jurisdiction" of said lands to any entity, for the sake of an example, the United States Army, de facto State of Hawaii, their subordinate entities, et al, to include public and private parties acting in their behalf.

WANT OF JURISDICTION OVER HAWAIIAN NATIONALS AND OUR AINA

JURISDICTION HAS NOT BEEN PROVEN IN THIS MATTER: The UNITED STATES FEDERAL GOERNMENT, et al, and the de facto STATE OF HAWAII, et al, has asserted by their actions a questionable claim of jurisdiction which claim of jurisdiction has not been revealed or proven. Jurisdiction over the land (in rem) and in personum (Private Citizen) must be proven in writing, not just assumed, not just stated, and not just claimed without proof and written evidence of law. Jurisdiction, when challenged as in this instant, must be responded to IN WRITING AND PROVEN, AS REQUIRED BY LAW.

Judges of the de facto STATE OF HAWAII are jurisdictionally limited having taken an oath to honor United States laws and the United States Constitution as United States "citizens". That being the case STATE judges must respect the following United States court determinations regarding jurisdiction of face liability for fraud and personal abuse of law ad justice.

Once challenged, jurisdiction cannot be 'assumed' it must be proven to exist. (Stuck v. Medical Examiners, 94 CA2d 751211 P2s 389);

Jurisdiction, once challenged, cannot be assumed and must be decided. (Main v. Thiboutot, 100S Ct.250);

The law requires proof of jurisdiction to appear on the record of the administrative agency and all administrative proceedings. (Hagans v. Lavine, 415 U.S. 533);

If any tribunal finds absence of proof of jurisdiction over person and subject matter, the case must be dismissed. (Louisville R.R. v. Motley, 211 U.S. 149, 29S. Ct. 42); et al.

As United States Commander on Hawaiian National soil, you are well aware and knowledgeable of United States fact of law.

We await a lawful response to resolve and redress from all of the above named parties.

Truth is the highest goal and aloha is the greatest truth of all... Halemakua

mauna ka'ala
'a'e ku ua 'a'e lakou i luna o kahi la'a
'oia ua 'ike a 'aia la

Thomas Joseph Lenchanko, Hawaii National 10/16/2011

Thomas Joseph Lenchanko, Hawaiian National
kahuaka'i ola ko laila waha olelo 'Aha Kukaniloko/Koa Mana mea ola kanaka mauli

Ronald Sato

From: hanaleirivermichael@gmail.com
Sent: Friday, October 14, 2011 12:05 PM
To: Tom Lenchanko; underwater2web@gmail.com; Lesisko@aol.com; Ronald Sato
Cc: Laurel Douglass; Jo-Lin Kalimapau
Subject: Re: FW: ICSD Mt. Kaala Radio Facility Improvements - Section 106 Consultation

Follow Up Flag: Follow up
Flag Status: Completed

Categories: Priority

Please advise if a ENDANGERED SPECIES MITIGATION PLAN has been created and a Habitat Conservation plan for the Endangered Species living in the subject area, and whether an INCIDENTAL TAKE PERMIT has been applied for on this project...Michael Guard Sheehan

On Fri, Oct 14, 2011 at 12:52 AM, Tom Lenchanko <TLENCHANKO1@hawaii.rr.com> wrote:

fyi... is it happening on mauna Waialeale too...

From: Tom Lenchanko [mailto:TLENCHANKO1@hawaii.rr.com]
Sent: Friday, October 14, 2011 12:42 AM
To: 'Glen Kila'; 'Alika Silva'; 'Deludek001@hawaii.rr.com'; 'Robert Oliveira Jr.'
Cc: 'David Au'; 'Keale'; 'Mikahala Roy'; 'Mahealani Cypher'; 'lcruz'; 'Michael Lee'; 'OhanaNazara'; 'amelia gora'; 'johnfdesoto@aol.com'
Subject: FW: ICSD Mt. Kaala Radio Facility Improvements - Section 106 Consultation

'oia ua 'ike a

Please consider a response to their deliberate and careless disregard of our family's traditional

comprehension for mauna ka'ala a me O'ahu a La'ila'i...

'aia la

From: Mahealani Cypher [mailto:malamapono@aol.com]
Sent: Thursday, October 13, 2011 9:59 AM
To: tlenchanko1@hawaii.rr.com; ggkhi@aol.com

Cc: kalimapau@hotmail.com; eauwae@yahoo.com; johnfdesoto@aol.com
Subject: Fwd: ICSD Mt. Kaala Radio Facility Improvements - Section 106 Consultation

Aloha mai kakou,

Consultation regarding impact on Mt. Kaala - please review and let me know if you have any concerns.

Tommy - you may wish to respond directly - up to you.

Mahalo,

Mahealani

-----Original Message-----
From: Ronald Sato <rsato@hhf.com>
To: malamapono <malamapono@aol.com>
Sent: Thu, Oct 13, 2011 9:34 am
Subject: ICSD Mt. Kaala Radio Facility Improvements - Section 106 Consultation

Aloha Ms. Cypher,

Enclosed for your organization's review is a pdf file with Section 106 documentation supporting a "no historic properties affected" determination proposed at this time for this project.

A Draft Environmental Assessment for this project is being prepared and should be published next month for public review. This environmental document will also include this Section 106 information, and used to solicit comments from agencies and the general public under the Section 106 process.

If you would like a hard copy of this 106 documentation being emailed, please let me know what address to send it to, and we can mail a set. If you have any questions regarding this, please contact me at the address below.

Thanks

Ronald A. Sato, AICP

Associate

rsato@hhf.com

Helber Hastert & Fee Planners, Inc.

733 Bishop Street, Suite 2590

Honolulu, Hawaii 96813

808.545.2055

www.hhf.com

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USCG Section 106 Determination
(March 6, 2012)

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
United States Coast Guard
Civil Engineering Unit Honolulu

300 Ala Moana Blvd., Suite 8-134
Honolulu, HI 96850
Staff Symbol: es
Phone: (808) 535-3460
Fax: (808) 535-3479
Email:

5758

MAR 6 2012

Mr. William Aila, Jr., Director
Department of Land and Natural Resources
State of Hawai'i
1151 Punchbowl Street
Honolulu, Hawai'i 96813

Subject: ICSD Mt. Ka'ala Radio Facility Improvements Projects
Wahiawā, Waialua, O'ahu, Hawaii
Section 106 Concurrence Request – No Adverse Effect Determination

Dear Mr. Aila, Jr.:

The State of Hawai'i, Department of Accounting and General Services (DAGS), Information and Communication Services Division (ICSD) and the USCG are proposing to implement repair and renovation improvements to their existing building used as a radio facility, a telecommunications tower, a downhill antenna site along with conduit lines serving it, and other accessory electrical improvements located on Mt. Ka'ala on the island of O'ahu. This project is referred to as the "ICSD Mt. Ka'ala Radio Facility Improvements Project".

The proposed replacement of an existing telecommunications tower with a new one will involve the use of Federal funds from the United States Coast Guard (USCG), and the project is thus subject to Section 106 consultation under the National Historic Preservation Act, as amended (NHPA) (16 U.S.C. 470(f)). Therefore, the USCG has conducted Section 106 consultation for this project with the assistance of the State DAGS, and has determined this project would have "no adverse effect" on historic properties.

Initial consultations with various organizations and agencies had proposed a preliminary "no historic properties affected" finding. A consultation package was distributed in October 2011 to solicit comments on this. Section 106 consultation was also conducted for this project in conjunction with a Draft Environmental Assessment document published in the State Office of Environmental Quality Control's *The Environment Notice* in November 2011.

Although there were no historic sites found within the project area, the summit of Mt. Ka'ala is likely eligible for inclusion in the National Register of Historic Places (NRHP) as a traditional cultural property due to the prominence of legendary and cultural associations, Hawaiian deities, and the location of the former Luakini Fishpond.

Based upon comments received from these consultation efforts and the assessment of project effects, we have determined this project would have "no adverse effect" on historic properties. This determination is consistent with comments received from both the Office of Hawaiian Affairs and State Historic Preservation Division as included in the attached documentation.

We would greatly appreciate your written concurrence to this determination within 30 days of receipt of this letter, or sooner if possible.

If you need additional information, please contact Dr. Dennis Mead by phone at (808) 535-3464, or by email at dennis.j.mead@uscg.mil.

Sincerely,

A. J. WRIGHT
Lieutenant Commander
U.S. Coast Guard

Enclosures: Mt. Ka'ala Section 106 Determination

UNITED STATES COAST GUARD, CIVIL ENGINEERING UNIT HONOLULU
U.S. DEPARTMENT OF HOMELAND SECURITY

Section 106 Finding of No Adverse Effect Determination For Information and Communication Services Division Mt. Kaʻala Radio Facility Improvements Project

March 2012

The State of Hawaiʻi, Department of Accounting and General Services (DAGS), Information and Communication Services Division (ICSD) is proposing to implement repair and renovation improvements to an existing building used as a radio facility, a telecommunications tower, a downhill antenna site along with appurtenant conduit, and other accessory electrical improvements located at the Mt. Kaʻala Air Force Station on the island of Oʻahu. This project is referred to as the "ICSD Mt. Kaʻala Radio Facility Improvements Project."

The proposed replacement of an existing telecommunications tower with a new one will involve the use of Federal funds from the United States Coast Guard (USCG). This improvement is considered a Federal "undertaking" and the project is therefore subject to Section 106 consultation under the National Historic Preservation Act, as amended (NHPA) (16 U.S.C. 470(f)).

The State DAGS served as the Agency Official initiating Section 106 consultation for this project which included the publication of a Draft Environmental Assessment (EA) for public review. The USCG has reviewed and evaluated comments received under Section 106 consultation efforts and the published Draft EA. As the Federal agency responsible for this Section 106 process, the USCG, Civil Engineering Unit Honolulu (CEUH), has determined that the proposed project would have "no adverse effect" on historic properties based upon the documentation provided.

A. DESCRIPTION OF UNDERTAKING

Project Location and Land Ownership

The State's licensed radio facility structure is 1,161 square feet in size and located within the larger 6.6-acre Mt. Kaʻala Air Force Station (AFS) site situated at the summit of Mt. Kaʻala. Mt. Kaʻala is at the northern end of the Waiʻanae Mountain Range, and is the highest peak on the island of Oʻahu at an elevation of 4,025 feet above mean sea level (msl). The Mt. Kaʻala AFS is located where the districts of Wahiawā, Waialua, and Waiʻanae all converge at the mountain's summit. The State's radio facility is situated within the Wahiawā district and electrical conduit improvements would extend slightly down Kamaohanui Ridge into the Waialua district to an

existing microwave antenna site. Project location maps showing the community plan districts and project site are included in Appendix A (Figures).

The majority of the land on which Mt. Ka‘ala AFS is constructed is owned by the U.S. Army as part of their Schofield Barracks Military Reservation. This Federal property is identified as Tax Map Key (TMK) (1) 7-07-001: portion of 001 (see Figure 2, Appendix A). This installation is fenced for security, and other government agencies have telecommunication facilities within the fence line. This installation site is jointly permitted to the U.S. Air Force and the Federal Aviation Administration (FAA) by the U.S. Army. The U.S. Air Force maintains tenant agreements with the State ICSD for its site and with other Federal agencies present there.

The western portion of the Mt. Ka‘ala AFS includes two parcels owned by the State of Hawai‘i, identified as TMK (1) 6-07-003: 023 and a portion of 025 (see Figure 2). These areas of the station are leased to the U.S. Air Force by the State of Hawai‘i. This State property is designated as being a part of the Mt. Ka‘ala Natural Area Reserve and is under the management jurisdiction of the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW).

Project Background and Objectives

The DAGS ICSD is the central organization within the State of Hawai‘i that carries out the responsibilities for statewide data processing, information systems, and telecommunications. As a result, the ICSD owns and operates the State’s telecommunications systems and supporting infrastructure as part of its responsibilities. The ICSD provides services to all agencies in the State of Hawai‘i. The ICSD plans, coordinates, organizes, directs, and administers services to ensure the efficient and effective development of systems. Major components of the State’s system include microwave radios, land mobile radio systems, antenna systems, towers, and the building at the Mt. Ka‘ala AFS.

Exhibit 1
Photo of Existing State Building and Tower

Over the years, there have been tremendous advances in technology and an increased reliance on telecommunications and computers in the workplace. The ICSD is leading the way to implement cost-effective and efficient information and communication services. The proper application and installation of these technologies continues to be a key component towards the accomplishment of agency missions relating to public safety, emergency services, disaster response, and essential government operations.

To meet this agency’s responsibilities effectively, improvements are needed to the State’s radio facility to repair building deficiencies and increase reliability of the equipment. This building is shown in Exhibit 1.

Proposed Project Improvements

Interior and exterior repairs to the existing State building would be implemented to fix deficiencies. This includes re-roofing to address cracks and leaks. A new electrical conduit would be installed within the existing driveway to connect the State building with a nearby generator building. Additional electrical and communication conduit connections between the State building and adjacent FAA building would also be implemented. Two bare copper lines about 90 feet each in length would be placed above ground down the ridge from the State building to serve as mitigation in the event of a lightning strike. Appendix A includes a conceptual site plan for this project.

An existing 25-foot-tall telecommunications tower needs to be replaced with a 50-foot-tall tower. This aspect of the overall project is being funded by the USCG. Additional microwave and whip antennas will be installed on the new tower along with relocating existing antennas from the State building. This is needed because there has been a change of the State/Federal Rainbow analog microwave system to a new digital microwave in the lower gigahertz (GHz) band. Replacement microwave links all operate in this lower GHz microwave band that forces the use of heavy, large-diameter, high-performance, solid microwave dish antennas that are too large of a structural load for the existing tower. The existing tower was designed for lighter grid dishes used on the original higher GHz band frequencies.

Second, in reaction to heightened security requirements, the FAA and U.S. Air Force installed a 13-foot-tall perimeter fence around the Mt. Ka‘ala AFS facility. Two sections of the fence blocked portions of the signal path of two existing digital microwave radio antennas resulting in their temporary relocation on top of the State building. The weight of these antennas has contributed to some of the damage to the roof. The temporary roof antenna mounting structure is not strong enough to withstand wind speeds above 80 mph. To achieve a permanent acceptable path clearance, these antennas must be permanently raised and relocated to a taller replacement tower. There is also a need for additional microwave capacity to the island of Kaua‘i, new links, and additional land mobile radio services. The USCG will be responsible for demolishing the existing radio tower, and designing, and constructing the new taller tower.

An existing microwave antenna site located downhill off Kamaohanui Ridge (see Exhibit 2) has two antenna mounting structures. A 48-inch wide, 75-inch tall VHF corner reflector antenna needs to be relocated from its current location on the State’s facility building roof to the lower of the two antenna mounts. Relocation of this antenna is needed to lower the radio frequency energy emitted from its existing site on the building roof. The corner reflector is needed to provide State Civil Defense with emergency siren control. Additional conduit lines routed from the State building to the antenna site are also required to improve reliability.

The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced by ICSD with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility.

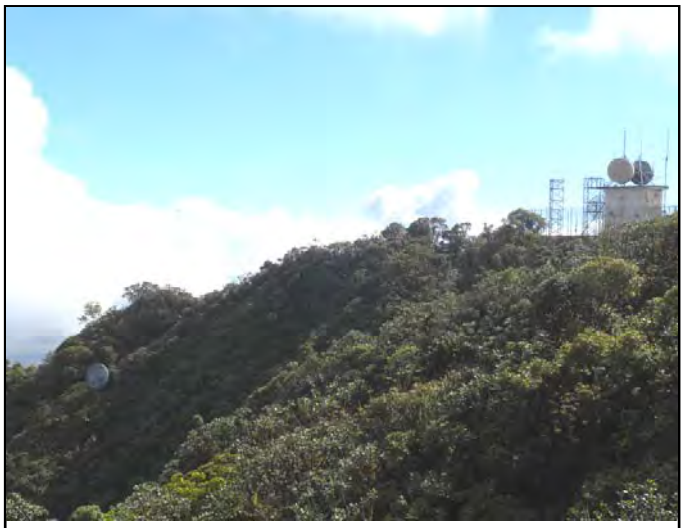


Exhibit 2.
Photo of Radio Facility and Downhill Antenna Site on Kamaohanui Ridge

There is one existing above-ground microwave antenna feed line routed from the Mt. Ka‘ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits are planned to be routed above ground from the State’s radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) generally following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai‘i for its Hawai‘i Interactive Television System (HITS) distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State’s critical land mobile radio systems that support public safety and critical government operations. Construction of these improvements are planned to start in the Fall of 2012 and be completed by the end of 2013.

B. IDENTIFICATION AND DESCRIPTION OF HISTORIC PROPERTIES

The identification of historic properties was established based upon an archaeological inventory survey conducted for this project and comments obtained as part of Section 106 consultation efforts. These also included comments obtained as part of pre-assessment consultation efforts and comments received on a Draft EA published for public review.

An archaeological inventory survey investigation for the project was conducted by Cultural Surveys Hawai‘i, Inc. (CSH). The study was conducted to identify, document, and make Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the survey area’s historic properties per the requirements of Chapter 13-13-276, Hawai‘i Administrative Rules (HAR). Because no historic properties were identified in the survey area,

this investigation is termed an archaeological assessment per Chapter 13-13-275-5, HAR. A copy of this report is included in Appendix B.

Area of Potential Effect

The project area is estimated to be about 0.15 acres (6,534 square feet) and includes building repairs, electrical improvements, and conduit improvements to the antenna dish site along Kamaohanui Ridge. The archaeological study area was approximately 2.37 acres because it included the entire Mt. Ka‘ala AFS facility. The project area and archaeological study area is shown on Figure 4 of Appendix A.

The “area of potential effect” (APE) on historic sites was established based upon the improvements planned and consists of the project area. This APE includes the area within which the project may directly or indirectly cause alterations to the use of a historic property. Based on available information, the project will not have visual, auditory, or other environmental impacts to any known archaeological historic properties located either inside or outside the project area. Therefore, the APE is the same as the project area of about 0.15 acre.

Visual effects from the replacement tower were evaluated, and the area of potential visual effect was assessed from a distance of about one-half mile from the tower site. This area of visual effect extends from the installation partially down the slopes of Mt. Ka‘ala, some of which are particularly steep from the west to north and southeast. As a result, views of the tower from most of these areas are difficult due to the existing terrain. These areas are not easily accessible to the public, and those who would have an opportunity for viewing in this direction would primarily consist of hikers to the summit following established trails.

Scope of Archaeological Investigation

The scope of the archaeological investigation included historical research of archival sources, historic maps, Land Commission Awards and previous archaeological reports, to construct a history of land use and to determine if archaeological sites have been recorded on or near this property. A field inspection of the project area was performed to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. Cultural consultation with several individuals was also conducted to solicit input on cultural issues and concerns with the project.

Results of Background Research

The State and National Register of Historic Places (NRHP) do not list Mt. Ka‘ala as a registered historic property. A study of Kamananui was conducted by J. Gilbert McAllister in the 1930s. McAllister consulted with knowledgeable informants about both physical and legendary sites of this district. This study identified 13 sites within the Kamananui *Ahupua‘a*, but, all of these sites are located over two miles from the project site. In the Kamananui *Ahupua‘a*, the pattern of

residences and burials appear to have been nearer to the coastline. There have been few archaeological studies in the vicinity of the Mt. Ka‘ala AFS, and it appeared unlikely any traditional Hawaiian archaeological finds would occur anywhere in the vicinity.

McAllister did identify a site referred to as the Luakini Fishpond (Site 212), which was once located on the summit of Mt. Ka‘ala, based upon information provided by the informant Hookala. It was reported that fish were obtained from the fresh-water pond that has since become a swamp. Legends have also referenced the mountain peak of Mt. Ka‘ala as being symbolic of the Wai‘anae Range, serving as a forest resource, and having associations with a goddess emphasizing the wetness of the summit.

Consultation with the SHPD was conducted in 2002 as part of a previous project for the currently proposed State tower replacement at this facility. However, the project did not move forward at that time due to funding issues. A comment letter received from SHPD dated April 5, 2002 (included in Appendix C) as part of consultation efforts determined that a review of their records showed there were no known historic properties at this project location. A cultural resource management plan prepared by the U.S. Air Force also reported that there were no previously identified archaeological or historic buildings within the fenced portion of this installation. SHPD also noted that they believed the tower replacement project would have “no effect” on archaeological sites or historic buildings because the proposed action was located within the existing fenced portion of the installation.

A letter from SHPD dated April 8, 2011 (included in Appendix C) as part of consultation efforts for the current project, provided additional comments. One comment suggested the Mt. Ka‘ala AFS buildings possibly being eligible for the NRHP as a Cold War facility. However, the facility is not yet 50 years old because it became operational in 1965, and the existing Federal buildings are located outside the project’s APE. The State building within this facility received approval of its construction plans in November 1988, well short of a 50-year-old milestone.

Results of Fieldwork

Most of the summit telecommunication facilities were enclosed within a high chain link and barbed wire topped fence. Mt. Ka‘ala is proverbially known for good views, but few signs of human endeavor in the vicinity were seen other than the government facilities within the installation. The area planned for improvements within the installation is clearly visible and was graded for the contemporary construction of existing facilities. Nothing of archaeological interest is believed to be present within the installation.

A focus of the fieldwork was the short stretch of ridge extending down to where the replacement antennae and additional conduit are proposed. The ridge was steep, narrow and heavily vegetated. The proposed downhill antenna site has been previously modified for the existing dish antenna. It seems unlikely there ever was any modification of this heavily vegetated ridge until modern times. Major trails to the summit follow other more suitable ridges.

The pedestrian inspection of the project area confirmed the findings of the background research. No pre-contact features were located during the field inspection. No historic properties, cultural deposits, or cultural material were found within the proposed project area.

Although there were no historic sites found within the project area, the summit of Mt. Ka‘ala is likely eligible for inclusion in the National Register of Historic Places (NRHP) as a traditional cultural property due to the prominence of legendary and cultural associations, Hawaiian deities, and the location of the former Luakini Fishpond as described in the archaeological assessment study in Appendix B (Criterion E). The Office of Hawaiian Affairs (OHA) assigns cultural and religious significance to the summit of Mt. Ka‘ala (November 7, 2011 letter in Appendix C). The SHPD has also stated that the summit is probably eligible for inclusion in the NRHP as a traditional cultural property in their April 5, 2002 letter.

C. EFFECTS ON HISTORIC PROPERTIES

The summit of Mt. Ka‘ala is likely eligible for inclusion in the NRHP as a traditional cultural property as expressed by both OHA and SHPD due to the summit’s cultural and religious significance. Therefore, an assessment was conducted to evaluate the project’s effects on the summit of Mt. Ka‘ala. Input obtained as part of Section 106 consultation efforts along with comments received on the published Draft EA were used in evaluating the project’s effects on the summit of Mt. Ka‘ala.

Assessment of Effect on Mt. Ka‘ala Summit

The assessment focused primarily on the visual impact associated with the replacement tower because other repair and renovation improvements would occur to existing facilities within the Mt. Ka‘ala AFS and along an existing conduit route to an existing downhill antenna site. These other improvements would not adversely affect the summit of Mt. Ka‘ala or have significant visual impacts. Most of the improvements would occur within the existing State building or underground within paved areas of the installation. Best management practices during temporary construction activities would be implemented by the contractor in conformance with design plans that are reviewed and approved by pertinent government agencies.

From a distance of about one-half mile from the tower site, views of the replacement tower are problematic from many areas due to the existing rugged and steep terrain and mountain cliffs. Most areas are not easily accessible to the public, and individuals who reach the area would mainly consist of hikers to the summit following established trails. Hikers use of the Mt. Ka‘ala Access Road is also prohibited because it is for official use only.

The replacement tower would be 50 feet tall in comparison to the existing 25-foot tall tower. This new tower will be situated within the existing installation that already has several other telecommunication towers and antennas of similar height (50 feet). Therefore, the replacement tower should not have a significant visual impact because views toward the tower would be

difficult from a half-mile to several miles away, from public roadways and highways along the coastline.

The replacement tower would not introduce visual elements that are out of character with the existing Mt. Kaʻala AFS or alter the setting of this telecommunications installation at the summit of Mt. Kaʻala. This installation has several telecommunication towers of similar height, radar tracking equipment, support buildings, and a 13-foot-tall barbed wire security fence around the facility. Therefore, the replacement tower would be of a similar design and character to these other existing utilities. The tower would also not isolate the summit of Mt. Kaʻala from its surrounding character or significantly alter the character of the summit's setting. The replacement tower location would be next to the State's building within the fenced area of the installation.

The tower will not physically damage the summit because it will be situated in the same location of the existing tower and would not require significant site disturbance. The Luakini Fishpond mentioned (McAllister) is no longer present, and the tower would not be located within the nearby bog or have significant impacts to it. Best management practices during temporary construction activities would also be implemented by the contractor in conformance with approved design plans.

The prominence of legendary, symbolic, and cultural associations with the summit being the highest point of the Waiʻanae Range and the island of Oʻahu would not be changed. Other legendary associations emphasizing the wetness of the summit and the general wildness of the area would similarly continue with the replacement tower because it is located within the existing installation. Therefore, the replacement tower should not have an adverse effect on the property, character, setting, and legendary associations connected with the summit of Mt. Kaʻala.

Results of Consultations As Part of Archaeological Study

Consultation with several individuals or representatives of Native Hawaiian organizations was conducted by CSH to solicit input and comments on the project relative to cultural issues associated with Mt. Kaʻala. A draft of their archaeological assessment report was provided to seven representatives of organizations in June 2011 with a request for comment. Follow-up efforts were also made with these representatives to solicit their comments. The organizations are listed below.

1. Hui Mālama I Na Kupuna ʻO Hawaiʻi Nei;
2. President, Waialua Hawaiian Civic Club;
3. Individual knowledgeable about historic sites, wahi pana, and Heiau;
4. Individual on the Oʻahu Island Burial Council, Nā Koa ʻO Pālehua, and Association of Hawaiian Civic Club's Historic Preservation Committee;
5. President, Hawaiian Civic Club of Wahiawā;
6. Individual with Hawaiian Civic Club of Wahiawā;

7. Individual with OHA-Native Hawaiian Historic Preservation Council, past member of Oʻahu Island Burial Council, lineal descendant, and cultural and historical traditions of Waialua.

Substantive comments were received from three of these individuals, and are summarized below.

1. Generally supportive of the necessary upgrade.
2. Comments that raised the issue of the jurisdiction of United States law on Hawaiian Kingdom national lands, and request for confirmation of lawful ownership of the subject land.
   Discussion: Portions of the property associated with the Mt. Kaʻala AFS are owned by both the U.S. Department of Army and State of Hawaiʻi.
3. Comments that Mt. Kaʻala was the receptacle of Kaneʻs water, "Wai ʻO Kane," and it resides on a natural elevated platform that would make it have an enormous amount of cultural significance anciently. The project seemed to be one of renovation with minimal impact and within the previous footprint. Improvements can be supported provided efforts are implemented to protect its ecosystem, the native plants, and wetlands.
   Discussion: The project consists of repair of and renovation work to existing State facilities, and best management practices will be implemented to minimize temporary effects on the surrounding environment from construction activities. Biological studies have been conducted and determined the improvements should not negatively affect threatened and endangered plants, avifauna, mammals, and invertebrate. Once completed, there should be no long-term effect because the State radio facility is un-manned.

Results of Consultations

Letters with supporting documentation on the project were distributed to several organizations and individuals on October 12, 2011 for review and comments as part of the Section 106 consultation process. Comments received on the Draft EA document and these Section 106 consultation efforts were considered in evaluating the project's effect determination on historic properties. No substantive new comments, which were already addressed as part of the October 2011 Section 106 consultation packages, were received on the Draft EA.
Comments were received from a total of six organizations or individuals as indicated by "»" next to them, and copies are included in Appendix C.

- State Department of Land and Natural Resources (DLNR), Director
- » Historic Preservation Division, DLNR, Administrator
- History and Culture, Historic Preservation Division, DLNR, Branch Chief
- » Office of Hawaiian Affairs, Administrator
- Historic Hawaiʻi Foundation, Executive Director
- Hui Mālama I Nā Kūpuna ʻO Hawaiʻi Nei

- Division of Forestry and Wildlife, DLNR, Administrator
- Division of State Parks, DLNR, Administrator
- » Office of Conservation and Coastal Lands (OCCL), DLNR, Administrator
- Oʻahu Island Burial Council, Chair
- » City Department of Planning and Permitting (DPP), Director
- Wahiawā Neighborhood Board No. 26, Chair
- Waiʻanae Coast Neighborhood Board No. 24, Chair
- North Shore Neighborhood Board No. 27, Chair
- Oʻahu Council of the Association of Hawaiian Civic Clubs, President
- Waialua Hawaiian Civic Club, President
- » Hawaiian Civic Club of Wahiawā, President
- Nā Koa ʻO Pālehua
- Office of Hawaiian Affairs, Native Hawaiian Historic Preservation Council, Representative
- Mr. Fred Cachola
- » Mr. Michael Sheehan (*Note: information provided by others*)

A summary of comments received along with discussion addressing them is provided.

1. SHPD commented that the installation will likely be eligible for the National Register of Historic Places (NRHP) under Criteria A (events) for its association with the Cold War era communications. Their records show no known historic properties within or near the State radio facility site that has already been disturbed for similar activities. It is unlikely that any archaeological or historic resources exist, however, Mt. Kaʻala could be a traditional cultural property significant to native Hawaiians. SHPD believes the project presents no adverse effect.

   <u>Discussion:</u> *The results of the archaeological assessment confirmed that no archaeological or historic sites will be impacted by the project, and the summit of Mt. Kaʻala are addressed as a traditional cultural property.*

2. OHA commented that they look forward to seeing the project completed in compliance with applicable laws. They would like Federal agencies to retain ultimate responsibility and jurisdiction over the Section 106 process when certain responsibilities are delegated to the State. OHA believes that a no adverse effect determination is appropriate for this project. OHA does assign cultural and religious significance to the summit of Mt. Kaʻala and believes it qualifies as a traditional cultural property. An area of potential visual effect from the replacement tower should be evaluated from a distance of a half-mile, but the no adverse effect determination should still be appropriate. Other comments were related to the archaeological assessment study conducted, and OHA would like confirmation that these comments are transmitted to both the State DAGS and USCG for their review.

   <u>Discussion:</u> *The USCG retains ultimate responsibility for the Section 106 process, and this agency has been fully involved during consultation efforts. Comments received under the 106 process have been provided to both State DAGS and the*

USCG for their review and consideration. The summit of Mt. Kaʻala will be addressed as a traditional cultural property, and a half-mile will be used to evaluate visual effects from the project. Revisions have been incorporated into the archaeological assessment study to address OHA's comments.

3. OCCL commented that the project is considered a public purpose use under their rules (§13-5-22, HAR), and will require a Board Permit and public hearing. Other comments concerned a fuel tank and runoff.

   Discussion: A Conservation District Use Permit (CDUP) application will be submitted for processing and approval by the Land Board (Board Permit) which will include a public hearing. The 50-foot tower will not be included in the request for a CDUP because of federal supremacy associated with this Federally-owned property. The existing fuel tank is owned by the FAA and the project will not impact or involve its use. Best management practices will be incorporated in agency approved design plans for implementation by the contractor.

4. DPP commented that the project is within the State Conservation District, is zoned P-1, Restricted Preservation, and is not within the Special Management Area. The City has no zoning jurisdiction over the site and will not be providing comments on the project.

   Discussion: The land use information was noted.

5. Individual comments raised the issue of the jurisdiction of United States law on Hawaiian Kingdom national lands, and requested confirmation of lawful ownership of the subject land.

   Discussion: The Federal property associated with the installation and surrounding area is owned by the U.S. Army as discussed in this document and the Draft EA published. In addition, portions of the property associated with the Mt. Kaʻala AFS are owned by both the U.S. Department of Army and State of Hawaiʻi.

6. Inquiry if an endangered species mitigation plan and habitat conservation plan have been created, and whether an incidental take permit has been applied for this project.

   Discussion: Consultation with the FWS determined that an endangered species mitigation plan, habitat conservation plan, and an incidental take permit are not required.

Proposed Project Effect and Determination

The project consists of repair of and renovation work to existing State facilities, and best management practices will be implemented to minimize temporary effects on the surrounding environment from construction activities. Biological studies have been conducted and determined the improvements should not negatively affect threatened and endangered plants, avifauna, mammals, or invertebrates. Once completed, there should be no long-term effect because the State radio facility is un-manned.

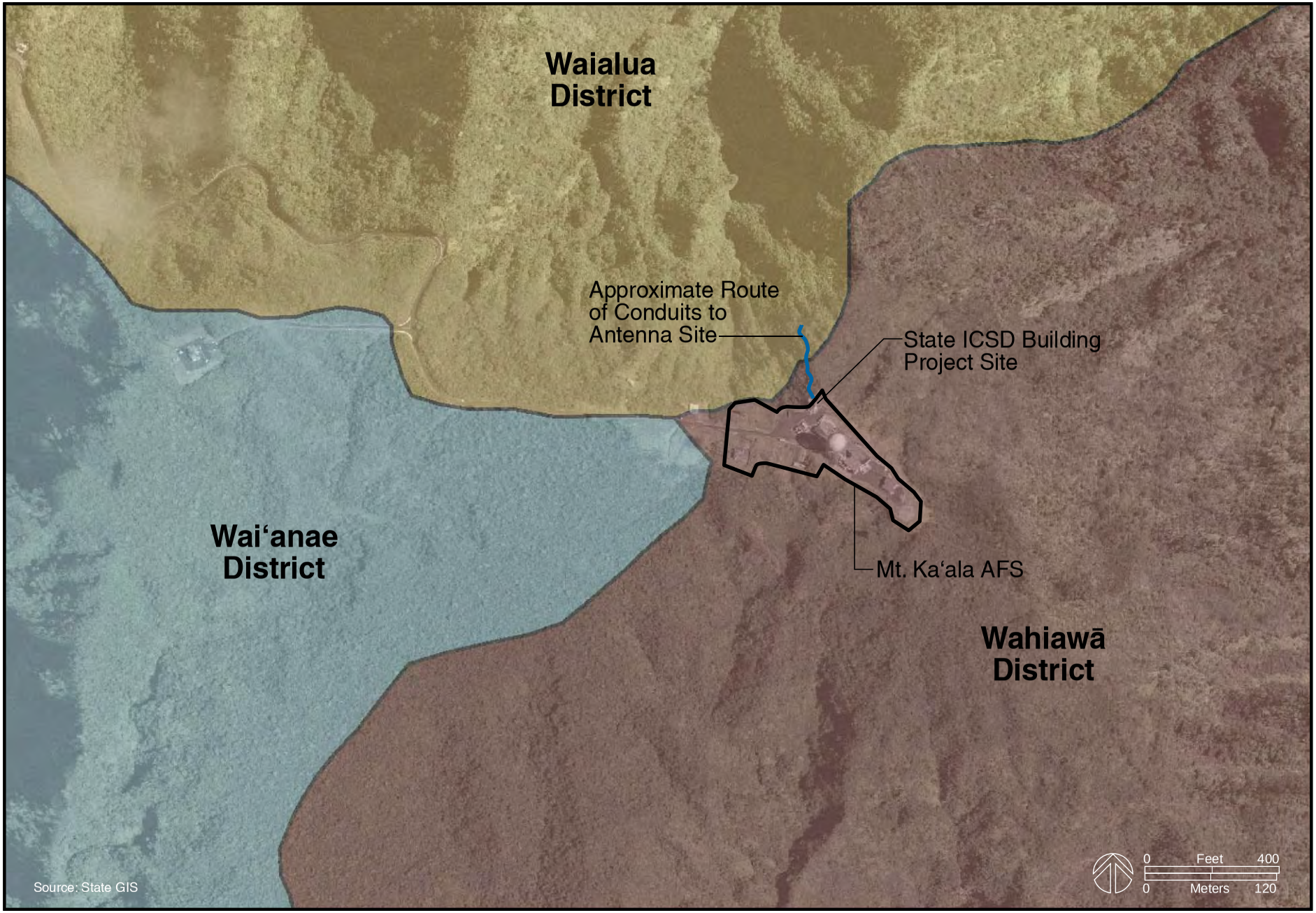
No historic properties, cultural deposits, or cultural materials were identified within the area of potential effect. The systematic pedestrian inspection conducted of the project area did not identify any historic properties being present. These findings are generally consistent with expectations for the project area based on historical and previous archaeological research. Land clearing for existing facilities likely impacted or eliminated any possible surface or subsurface historic properties that may have existed within the project area.

An assessment of the summit of Mt. Ka‘ala, which is likely eligible for inclusion in the NRHP as a traditional cultural property, also determined that the project should not have an adverse effect on the property, character, or setting. The prominence of legendary, symbolic, and cultural associations with the summit being the highest point of the Wai‘anae Range and the island of O‘ahu would not be changed. Other legendary associations emphasizing the wetness of the summit and the general wildness of the area would similarly continue with the replacement tower because it is located within the existing installation.

Consequently, after conducting this assessment and evaluating comments received, the effect determination proposed for the project is “no adverse effect” on historic properties.

APPENDIX A

Figures



Regional Districts Map

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Figure 1

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

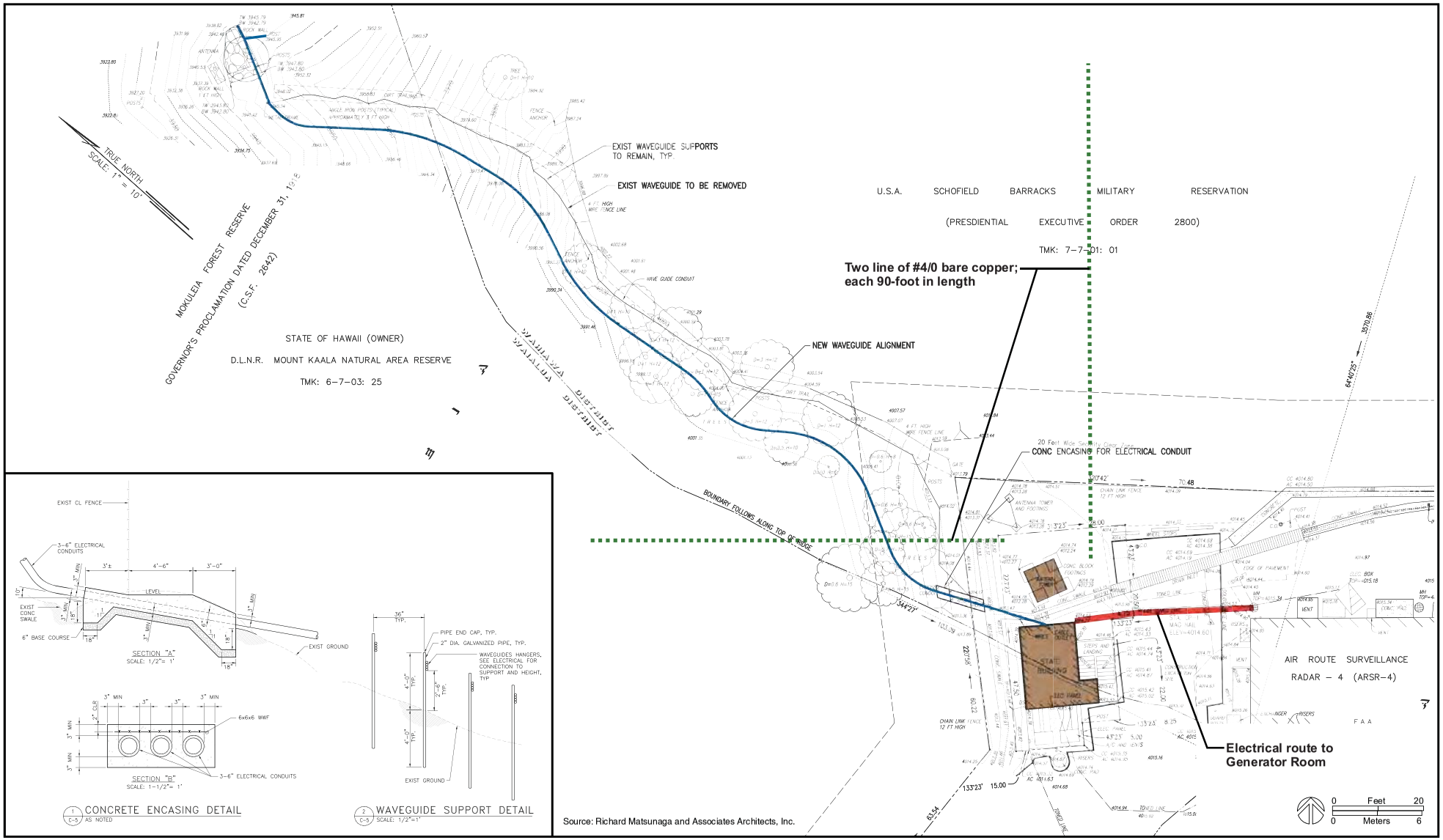
Tax Map Key Map Based Upon State GIS Data

Figure 2

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division



Source: Richard Matsunaga and Associates Architects, Inc.

Site Plan and Details for Downhill Antenna Site

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Figure 3

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Source: Cultural Surveys Hawaii (July 2011)

Archaeological Study Project Area

Figure 4

ISCD Mt. Kaala Radio Facility Improvements Project

Wahiawa and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

APPENDIX B

Archaeological Assessment Report

Refer to Appendix F
of Final EA for Report Copy

APPENDIX C

Section 106 Consultation

Refer to Appendix A-2
of Final EA for
Copies of Response Letters

Appendix A-3

Draft EA Comments and Responses

Ronald Sato

From: Mansker, Michelle L USA CIV (US) [michelle.l.mansker.civ@mail.mil]
Sent: Wednesday, December 21, 2011 1:15 PM
To: Ronald Sato
Cc: Scott Ezer; daniel.jandoc@hawaii.gov; Herbl@RMAIA-ARCHITECTS.com; Kawelo, Hilary K USA CIV (US)
Subject: FW: comments on the Draft EA for Mt. Kaala Radio Faciltity Improvements Project (UNCLASSIFIED)

Categories: Priority

Aloha Ron,
See comments below!

Michelle

PLEASE NOTE THE NEW PHONE AND FAX NUMBERS AS OF 11/7/11

Michelle Mansker
Chief, Compliance Branch
Environmental Division
Directorate of Public Works
U.S. Army Garrison, Hawaii

Phone (808) 656-5301
Cell (808) 864-1005
Fax (808) 656-1039

Service is our job! Excellence is our goal!
Your comments are important to us. Logon to:
http://ice.disa.mil/index.cfm?fa=card&service provider id=83121&site id=83121&site id=48&service category id=5

-----Original Message-----
From: Kawelo, Hilary K USA CIV (US)
Sent: Wednesday, December 21, 2011 1:11 PM
To: Mansker, Michelle L USA CIV (US)
Subject: comments on the Draft EA for Mt. Kaala Radio Faciltity Improvements Project (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Aloha MM, Well I'm just in under the gun. My comments are below. Not sure if you want to submit these formally? Let me know.

1) p 1-20 a 20 foot wide corridor seems like a major impact. This is the only place in the EA where the width of the corridor is cited. There is mention later in the document about minimizing vegetation clearing and that is excellent but is a 20-ft corridor listed here just to be conservative. Recommend putting the actual width of clearing with the minimization if possible.
2) 2-2 the first full paragraph discusses the fence around the radio

facility. Concerned about turn around spots as Oahu Army crews doing natural resource work sometimes use the driveway to the radio facility to turn around. It can get congested during volunteer service trips to turn around and the fence may limit this further.
3) 2-8 From one to five 3 inch conduits certainly is an increase in forest impact-not sure this project really can be considered upgrades and renovation of existing facilities if there is also going to be expansion. Should just represent that clearly in project description.
4) 3-4 last sentence of bullet. This statement does not seem consistent with the description. If the substrate is impermeable clay below then run-off would be high.
5) 3-39 wastewater facilities. Is a cesspool atop Mt. Kaala in a bog and a watershed legal? Seems an upgrade to septic would be in order.\
6) 3-41 recreation section. The Oahu Army natural Resource Program and the State NARs program conduct regular service projects to the top of Mt. Kaala which should be consider. Recognize that the public gets up to Kaala in other ways than via the hiking trails. Address the added congestion from more vehicles and crew and the fence around the radio tower restricting possible turn around spots.
7) 4-2 soils and 4-8 water quality. Address the temporary increase in soil runoff from the downhill antennae corridor clearing and installation activities.
8) 4-9 proposed action second paragraph. Back fill activites sometimes involved brining soil from off site. If this will be conducted, rigorous screening of this material for new weed seeds is essential as well as follow up monitoring and control of any weeds found.
9) 5-7 and 6-13 #8. Using native plants for restoration are a great thought but need to be executed carefully. Note that most of the trees at Mt. Kaala are decades old and restoring that will take as long so clearing of trees should be carefully considered! Also introduced pests can hitchhike along in potted plants. Restoration plants should come from a "clean" nursery facility to avoid doing more harm than good in restoration work. Also the source of seed/cuttings for this restoration should be Mt. Kaala not from elsewhere in the Hawaiian Islands. Native plants time to grow.
10) General botanical resource/critical habitat comment: There are two known locations of Schiedea trinervis (Alsinodendron trinerve) near your proposed corridor to the antennae off of Kamaohanui. These data are sensitive so please do not make them public. [redacted]. It is unclear to me what "occupied critical habitat" but this information should be mentioned for a complete and accurate presentation of the affects.

Coming over the turn in my cel phone now.
Aloha Kapua

PLEASE NOTE MY NEW EMAIL ADDRESS

H. Kapua Kawelo
Biologist, Environmental Division
Directorate of Public Works, USAG-HI

Office: 808-655-9178
FAX: 808-655-9177
E-mail: Hilary.K.Kawelo.civ@mail.mil

"Ho'okahi Kakou: We are One"

ICE Comments (How Are We Doing?):
http://ice.disa.mil/index.cfm?fa=card&service_provider_id=83121&site_id=46&service_category_id=5

Classification: UNCLASSIFIED
Caveats: FOUO

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3071.2

Ms. Hilary K. Kawelo
Biologist
Environmental Division
Directorate of Public Works
U.S. Army Garrison, Hawai'i
Via Email Address

Dear Ms. Kawelo:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your email sent on December 21, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project. Our responses are numbered to correspond to your comments.

1. The 20-foot-wide corridor for the conduit route down Kamaohanui Ridge was a conservatively large corridor used primarily for impact assessment purposes. The actual corridor affected during the above-ground conduits' installation should probably be less than half this total (10 feet or less). However, the actual width would be dependent upon existing site conditions and available area along the steep ridge. Also, vegetation would not be cleared, but the bushes cut to allow for the two-inch diameter pipes with waveguide hangers to be installed to support the conduit. This will be clarified in the Final EA.

2. Coordination with the Federal Aviation Administration (FAA) and the U.S. Air Force will be conducted to ensure the availability of space within the installation for vehicles to maneuver and turn around.

3. The additional conduits are needed to provide improved reliability with the antenna dishes, and will be clarified in the project description.

4. The information represented is from the Soil Conservation Service's soil study; however, your comments on the description are noted.

5. Your comments on the on-site cesspool system are noted.

6. The information on the O'ahu Army Natural Resource Program and the State Natural Area Reserves (NARS) program will be incorporated.

7. Additional information will be provided to address the project's effects on soils and water quality as requested.

8. Back-fill activities for improvements conducted within the installation would not require bringing in off-site material.

9. The sections will be revised to clarify that clearing of trees is not anticipated for the installation of conduit with supporting waveguides down the ridge. Coordination with the State NARS program would be conducted to implement procedures for addressing where plants should come from and to minimize the introduction of pests from plants used for any restoration work that is required.

10. We appreciate the information on the presence of rare plants in the general vicinity of the project which will be mentioned in the Final EA. These populations should not be affected by the project since the proposed work would be away from those plant populations. Specific location information for these plants in your email will also be eliminated as requested.

A copy of your email and this response will be included in the Final EA prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Western-Pacific Region
Real Estate and Utilities Group

P. O. Box 50109
Honolulu, HI 96850-5000

December 22, 2011

Mr. Ronald A. Sato, AICP, Associate
Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

Your letter of November 18, 2011, forwarded for the Federal Aviation Administration (FAA) review and comment the "Draft Environmental Assessment (EA) of the Information and Communication Services Division Mt. Kaala Radio Facility Improvements Project", dated November 2011.

Please find the FAA's comments to the subject Draft EA, (see enclosure (1)).

We appreciate this opportunity to provide our comments. If there are any questions, please contact me at 541-1236 or by email at darice.b.young@faa.gov

Sincerely,

Darice B. N. Young
Realty Contracting Officer

Enclosure

cc: (with enclosure)

Mr. Daniel Jandoc, Project Manager
State of Hawaii
Department of Accounting and General Services
1151 Punchbowl Street, Room 427
Honolulu, HI 96813

Comments to ICSD Mt Kaala Draft Environmental Assessment

Para 1.1: Is the USCG planning to add to their existing equipment/facilities/services in the current State of Hawaii building? If so, they will need to provide details on their intent to the Air Force and the FAA.

Table 1.1: The land of the Mt Kaala Air Force Station is owned by the Army. But it is maintained by the Air Force and the FAA. It is also used for radar and air-ground communications for air traffic control and air defense purposes.

Para 1.3: "Licensed"? Not sure what that means.

Para 1.3.1, first paragraph, third sentence: Please replace this sentence with the following, "Because of their similar needs for air traffic control, the Federal Aviation Administration and the U. S. Air Force, with its augmentee, the Hawaii Air National Guard (HIANG) jointly developed the site in April 1962."

Para 1.3.1, second paragraph, second sentence: Please replace this sentence with the following, "This facility site is jointly permitted to the U.S. Air Force and the FAA by the U.S. Army."

Para 1.3.1, second paragraph, third sentence: Please replace this sentence with the following, "The U. S. Air Force maintains tenant agreements with the State ICSD for its site and with other Federal agencies for communications facilities located in the U.S. Army's building (formerly the FAA's ARSR-3 building).

Para 1.3.1, second paragraph, last sentence: The Joint Use Coordinating Committee does not include State agencies. The JUCC is composed of three (3) members, the U.S. Air Force, the HIANG, and the FAA.

Para 1.3.1, third paragraph: Please replace this paragraph with the following, "The installation is co-operated by the FAA and the HIANG. As indicated on Figure 1.4, the HIANG and the FAA share a building in the middle of the site that is used as an administrative center for each of their operations. The FAA operates and maintains the onsite ARSR-4 radar for air traffic control purposes. Radar tracking information is shared with the HIANG for air defense purposes as part of the Hawaii Region Air Operations Center. The U.S. Air Force maintains a building used by various Federal agencies for communications purposes (the former FAA ARSR-3 building). The State of Hawaii has a communications building used by ICSD for their communications operations. The U. S. Navy maintains a building to the west and outside of the Kaala AFS. The Mount (Mt.) Kaala Access Road traverses over lands leased to the FAA from the State of Hawaii, Dole Food Company, Incorporated, and Pioneer Hi-Bred International properties. Use of the Mt. Kaala Access Road shall be coordinated with the FAA.

Fig 1.4: Please see annotations.

Encl (1)

Para 1.3.2, first paragraph, fourth sentence: The Federal agency that owns the (makai) tower below the State of Hawaii building is the U. S. Navy.

Para 1.3.3, third paragraph: Please add at the end of this paragraph that, "Hikers using the hiking trail are prohibited from using the Mt. Kaala Access Road as the road is for official use only. "

Para 1.4, third sentence: Lease is concurrently to the FAA and the U.S. Air Force, and the U. S. Air Force maintains the tenant agreements (see comment above for Para. 1.3.1, second paragraph, third sentence).

Para 2.1.1, third paragraph: Please add at the end of this third paragraph that, "The boundary fence is a FAA/U.S. Air Force installed fence. Any damage to this installed fence during the State project shall be repaired or replaced to the FAA's satisfaction by the State and/or its contractor. Once the project is complete, FAA Security shall be consulted to ensure applicable security standards are met. Any security deficiency shall be corrected to the FAA's satisfaction by the State. Additionally, the Air Force through the HIANG is responsible for the physical security of the site since the installation is classified as an AFS. The project and its contractors shall comply with the applicable physical security requirements.

Para 2.2.2, fourth paragraph: Has the State begun any negotiations with the U.S. Air Force (Licensor) and the FAA to expand the area currently occupied by the ICSD facility and establish new rights of way?

Para 2.2.3, second paragraph: Why is a camera that provides a view of the North Shore part of a telecommunications upgrade?

Para. 3.13.2, third paragraph: Please add at end of this paragraph that, ""Hikers using the hiking trail are prohibited from using the Mt. Kaala Access Road as the road is for official use only."

Para 3.13.3: The HIANG and the FAA will provide no water or waste facilities for construction use. The State and its contractors will be required to provide their own water, waste facilities, and communications services. Any damage to the water catchment system by the State and/or its contractors shall be fixed to the FAA and HIANG's satisfaction by the State. There is no solid waste dumpster. The State and its contractors shall be responsible for their own waste disposal. Only four (4) wheel drive or compound geared vehicles are allowed on the FAA controlled Mt. Kaala Access Road. Violations of road rules could result in road privileges being denied. Hunting is not permitted within ¼ mile from the centerline of the Mt. Kaala Access Road. The HIANG is responsible for the physical security of the site, not the FAA or the Army.

Please note that since the site is considered Federal property, the Honolulu Police Department has no jurisdiction and will need to be escorted to the site. The Honolulu

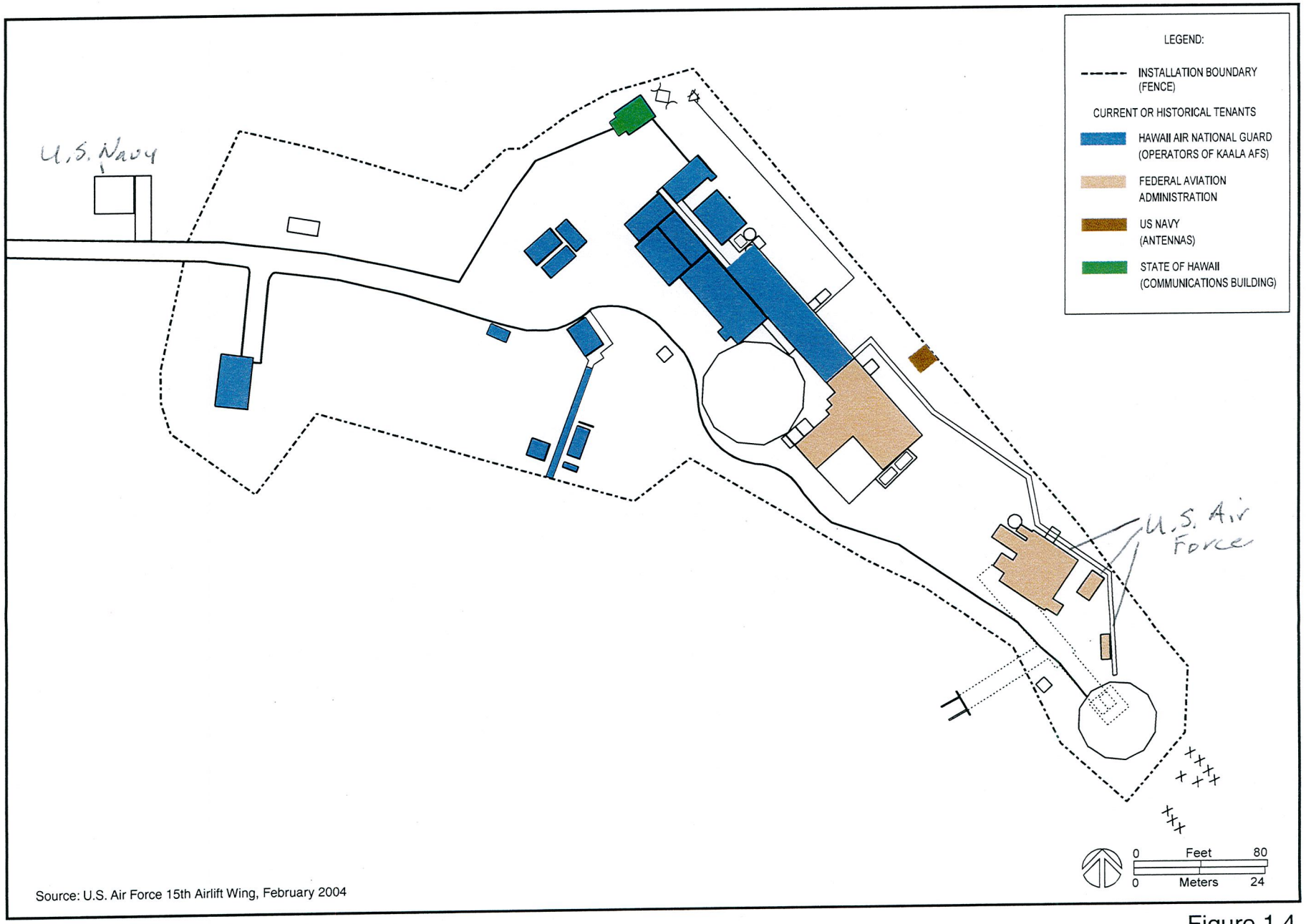
Fire Department similarly does not have access to the site and will need to be escorted. Emergency power is provided by the FAA on a reimbursable basis. Any request for emergency power will need to be approved by the FAA.

Para 4.1.3: There have been floods at the summit of Mt. Kaala. A previous flood washed away portions of the site and resulted in the Army Corp of Engineers reinforcing the site. Any damage to the site due to water runoff during the construction shall be repaired to the FAA and HIANG's satisfaction by the State.

Para 4.7: Construction shall not be permitted between the hours of dusk and dawn. Due to safety reasons, the State and its contractors shall traverse the Mt. Kaala Access Road during daylight hours only.

4.13.1: There is no solid waste dumpster. The State and its contractors shall be responsible for their own waste disposal. Due to the limited amount of parking at the site, the State and its contractors shall minimize the number of vehicles using the Mt. Kaala Access Road. All Mt. Kaala Access Road usage shall be approved by and coordinated with the FAA. Due to the sharp turns on the Mt. Kaala Access Road, vehicles longer than 20 ft will not negotiate the turns and shall not use the road.

Appendices: The written approval from the JUCC is missing.



Source: U.S. Air Force 15th Airlift Wing, February 2004

Mt. Ka'ala Air Force Station Site Plan

ICSD MT. KA'ALA RADIO FACILITY IMPROVEMENTS PROJECT

WAHIAWĀ AND WAIALUA, O'AHU

Figure 1.4

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3070.2

Ms. Darice B.N. Young
Realty Contracting Officer
Western-Pacific Region, Real Estate and Utilities Group
Federal Aviation Administration
U.S. Department of Transportation
P.O. Box 50109
Honolulu, Hawai'i 96850-5000

Dear Ms. Young:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawā, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 22, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project. Our responses are numbered to correspond to your various comments.

1. Section 1.1. The U.S. Coast Guard has no plans to add to their existing equipment/facilities/services within the current State building under this project. Should they decide to do so in the future, they will be advised to provide details on their intent to the Air Force and the Federal Aviation Administration (FAA).

2. Table 1.1. Thank you for confirming that the Mt. Ka'ala Air Force Station (AFS) property is owned by the U.S. Army. This information will be incorporated into Section 1.3.1 of the Final EA.

3. Section 1.3. The term "licensed" will be clarified as the State has authorization from the Air Force to operate their building within this installation.

4. Section 1.3.1. The five separate comments suggesting revisions to this section will be incorporated in the Final EA.

5. Figure 1.4. This figure will be revised as noted.

6. Section 1.3.2. We appreciate being notified that the U.S. Navy owns the other tower located below the State's tower, and will incorporate this information in the Final EA.

7. Section 1.3.3. We will incorporate your comment that Mt. Ka'ala Access Road is for official use only.

8. Section 1.4. We will add that Mt. Ka'ala AFS property is also leased to the FAA as noted.

9. Section 2.1.1. The information for this section concerning the security fence will be added.

10. Section 2.2.2. The State Information and Communication Services Division (ICSD) plans to initiate negotiations soon with the U.S. Air Force and the FAA to expand the boundary area used by their facilities.

11. Section 2.2.3. The camera added on top of the downhill antenna dish is intended to provide the ICSD with real time information on existing weather and coastline conditions to support efforts monitoring natural hazards and planning of maintenance activities.

12. Section 3.13.2. We will incorporate your comment that Mt. Ka'ala Access Road is for official use only.

13. Section 3.13.3. The contractor will be notified that they need to provide their own water, waste facilities, and communication services. The other restrictions and conditions noted will be communicated to the contractor in the construction contract to follow. We don't expect the Honolulu Police and Fire Departments to be necessary for construction activities, but will have them escorted if required. Any emergency power required for this project will be coordinated with the FAA for approval.

14. Section 4.1.3. Any damage to the installation from construction related storm water runoff will be repaired to conditions that existed prior to construction that is also subject to review by the FAA and the Hawaii Air National Guard (HIANG).

15. Section 4.7. Construction of improvements will be scheduled to occur during normal working daylight hours which includes traversing Mt. Ka'ala Access Road.

16. Section 4.13.1. The contractor will be made responsible for their own waste disposal, minimizing the number of vehicles, and obtaining the FAA approval for access on Mt. Ka'ala Access Road.

17. Appendices. The State ICSD is coordinating with the Joint Use Coordinating Committee (JUCC) for approval of this project. Once obtained, the FAA will be provided with a copy of this approval.

A copy of your letter and this response will be included in the Final EA prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

NEIL ABERCROMBIE
GOVERNOR

MAJOR GENERAL DARRYLL D. M. WONG
DIRECTOR OF CIVIL DEFENSE

VICTOR G. GUSTAFSON
INTERIM VICE DIRECTOR OF CIVIL DEFENSE

PHONE (808) 733-4300
FAX (808) 733-4287

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE DIRECTOR OF CIVIL DEFENSE
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

RECEIVED
DEC 2 2 2011
HELBER, HASTERT & FEE
PLANNERS

December 21, 2011

Mr. Ronald A. Sato, AICP, Associate
Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

Draft Environmental Assessment Statement Review
Mt. Ka'ala Radio Facility Improvement

Thank you for the opportunity to comment on this development. We strongly endorse this project, as this type of facility provides critical services for public safety communications.

If you have any questions, please call Ms. Fay Alailima-Rose, State Civil Defense Assistant Telecommunications Officer, at (808) 733-4300, ext. 531.

Sincerely,

GEORGE F. BURNETT
Acting Vice Director of Civil Defense

c: Daniel Jandoc, Project Manager, DAGs

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3073.2

Mr. Doug Mayne
Vice Director
Office of the Director of Civil Defense
Department of Defense
State of Hawai'i
3949 Diamond Head Road
Honolulu, Hawai'i 96816-4495

Dear Mr. Mayne:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 21, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We greatly appreciate your endorsement for this project as these facilities provide critical services for public safety communications.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

NEIL ABERCROMBIE
GOVERNOR

KATHRYN S. MATAYOSHI
SUPERINTENDENT

STATE OF HAWAI`I

DEPARTMENT OF EDUCATION

P.O. BOX 2360

HONOLULU, HAWAI`I 96804

OFFICE OF THE SUPERINTENDENT

RECEIVED
DEC 16 2011
HELBER, HASTERT & FEE
PLANNERS

December 15, 2011

Mr. Ronald A. Sato, AICP
Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

Subject: Draft Environmental Assessment for the Information and Communication Services Division Mt. Ka`ala Radio Facility Improvement Project

The Department of Education (DOE) has reviewed the Draft Environmental Assessment for the Mt. Ka`ala Radio Facility Improvement Project.

The DOE has no comment regarding this project.

Thank you for the opportunity to provide comments. If you have any questions, please call Roy Ikeda of the Facilities Development Branch at 377-8301.

Very truly yours,

Kathryn S. Matayoshi
Superintendent

KSM:to

c: Daniel Jandoc, State of Hawaii, Department of Accounting and General Services
Randolph Moore, Assistant Superintendent, OSFSS

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3074.2

The Honorable Kathryn S. Matayoshi
Superintendent
Department of Education
State of Hawai'i
P.O. Box 2360
Honolulu, Hawai'i 96804

Dear Superintendent Matayoshi:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 15, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We note that your department did not have any comments regarding this project.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD/CWB

11027PDCL.11

November 29, 2011

RECEIVED
NOV 30 2011
HELBER, HASTERT & FEE
PLANNERS

Mr. Ronald A. Sato, AICP
Associate
Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

SUBJECT: Comments on Draft Environmental Assessment (DEA) for the Information and Communication Services Division Mt. Ka'ala Radio Facility Improvements Project Wahiawa, Waialua, Island of Oahu, Hawaii

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers these comments on your project. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

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

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

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

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

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for an NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. This includes areas used for a construction base yard and the storage of any construction related equipment, material, and waste products. An NPDES permit is required before the start of the construction activities.

b. Hydrotesting water.

You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

3. For other types of wastewater not listed in Item No. 2 above or wastewater discharging into Class 1 or Class AA waters, an NPDES individual permit will need to be obtained. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at http://hawaii.gov/health/environmental/water/cleanwater/forms/environmental/water/cleanwater/forms/indiv-index.html.

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

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

Sincerely,

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

DCL:ml

c: Mr. Daniel Jandoc, DAGS

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3075.2

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

Dear Mr. Wong:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated November 29, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project. The project will comply with the applicable permits identified under your branch's standard comments. We have the following responses to your branch's project specific comments submitted.

1. Project improvements should comply with the State's antidegradation policy as the work consists primarily of repair and renovation of existing State telecommunication facilities. Thus, any effects would be associated with short-term construction related activities. The Final EA will provide further discussion addressing this. Information addressing the classification of water uses and water quality criteria were addressed in pertinent sections of the Draft EA.

2. If necessary, an individual National Pollutant Discharge Elimination System (NPDES) permit for discharges of storm water runoff will be obtained prior to the start of construction activities. Hydrotesting water would not be required for this project. The project's design team will appropriately coordinate with your branch regarding this permit as part of the project's design process.

3. The contractor will be required to comply with the State's water quality standards as noted.

A copy of your letter and this response will be included in the Final EA prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

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NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:
EPO-247

November 28, 2011

RECEIVED
NOV 30 2011
HELBER, HASTERT & FEE
PLANNERS

Mr. Ronald A. Sato, AICP, Associate
Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

SUBJECT: Draft Environmental Assessment for Information and Communication Services Division Mt. Kaala Radio Facility Improvements Project Wahiawa, Waialua, Oahu, Hawaii TMK: (1)6-07-003: portions of 023 and 025; 7-07-001: portion of 001

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have no comments at this time, but reserve the right to future comments. We strongly recommend that you review all of the Standard Comments on our website: www.hawaii.gov/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this application should be adhered to.

The same website also features a Healthy Community Design Smart Growth Checklist (Checklist). The Hawaii State Department of Health, Built Environment Working Group, recommends that State and county planning departments, developers, planners, engineers and other interested parties apply the healthy built environment principles in the Checklist whenever they plan or review new developments or redevelopments projects. We also ask you to share this list with others to increase community awareness on healthy community design.

If there are any questions about these comments please contact the Environmental Planning Office at 586-4337.

Sincerely,

Genevieve Salmonson

GENEVIEVE SALMONSON, Acting Manager
Environmental Planning Office

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3076.2

Ms. Genevieve Salmonson
Acting Manager
Environmental Planning Office
Department of Health
State of Hawai'i
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

Dear Ms. Salmonson:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated November 28, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We note that your department has no comments at this time. We appreciate the information provided in your department's standard comments as referenced, and the project will comply with pertinent regulations and requirements identified. Pertinent information identified was already provided in the Draft EA such as waterbody type and class.

Thank you for the information on the Healthy Community Design Smart Growth Checklist. However, this project involves repair and renovation work to existing State facilities, therefore, the checklist principles would not apply to the improvements proposed.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 22, 2011

Helber Hastert & Fee, Planners
Attention: Mr. Ronald A. Sato, AICP, Associate via email: rsato@hhf.com
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

SUBJECT: Draft Environmental Assessment for DAGS, ICSD's Mt. Ka'ala Radio Facility Improvements Project located at Wahiawa, Wailua, Island of Oahu; TMK: (1) 6-7-003:pors. 023 and 025; and (1) 7-7-001:por. 001

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 (a) Engineering Division; (b) Division of Forestry & Wildlife; (c) Office of Conservation & Coastal Lands; and (d) Land Division – Oahu District on the subject matter. Should you have any questions, please feel free to call Darlene Nakamura at 587-0417. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosures
cc: DAGS
Attention: Mr. Daniel Jandoc (via email: Daniel.Jandoc@hawaii.gov

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

RECEIVED
LAND DIVISION
2011 DEC 20 P 2:26
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 6, 2011

MEMORANDUM

'11 DEC 08 PM02:24 ENGINEERING

TO: **DLNR Agencies:**
X Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment for DAGS, ICSD's Mt Ka'ala Radio Facility Improvements Project
LOCATION: Wahiawa, Wailua, Island of Oahu; TMK: (1) 6-7-003:pors. 023 and 025; and (1) 7-7-001:por. 001
APPLICANT: Helber & Hastert & Fee Planners, Inc. on behalf of DAGS, ICSD

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by December 20, 2011.

Only one (1) copy of the document is available for your review in Land Division office, Room 220.

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 Darlene Nakamura at 587-0417. Thank you.

Attachments

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

Signed: _____
Date: 12/16/11

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

DL/DarleneNakamura
REF.:DEAKaalaRadioFacilityImprovementsDAGS
Oahu.868

COMMENTS

(X) **We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X.**

( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone____.

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

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

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

( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting..

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

( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.

( ) Ms. Wynne Ushigome at (808) 241-4890 of the County of Kauai, Department of Public Works.

( ) The applicant should include water demands and infrastructure required to meet project needs. Please note that projects within State lands requiring water service from the Honolulu Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

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

( ) Additional Comments: _____

( ) Other: _____

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 12/19/11

→ For Section

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 6, 2011

MEMORANDUM

RECEIVED
LAND DIVISION
2011 DEC 20 A 10: 58
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

TO: **DLNR Agencies:**
X Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment for DAGS, ICSD's Mt Ka'ala Radio Facility Improvements Project
LOCATION: Wahiawa, Wailua, Island of Oahu; TMK: (1) 6-7-003:pors. 023 and 025; and (1) 7-7-001:por. 001
APPLICANT: Helber & Hastert & Fee Planners, Inc. on behalf of DAGS, ICSD

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by December 20, 2011.

Only one (1) copy of the document is available for your review in Land Division office, Room 220.

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 Darlene Nakamura at 587-0417. Thank you.

Attachments

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

Signed: Paul J Conry
Date: 12/16/11

cc: Central Files

FYI Re OA 12-134

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

RECEIVED
OFFICE OF CONSERVATION
AND COASTAL LANDS
2011 DEC -7 P 3:43

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

December 6, 2011

MEMORANDUM

RECEIVED
LAND DIVISION
2011 DEC -9 P 2:42
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

TO: **DLNR Agencies:**
X Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment for DAGS, ICSD's Mt Ka'ala Radio Facility Improvements Project
LOCATION: Wahiawa, Wailua, Island of Oahu; TMK: (1) 6-7-003:pors. 023 and 025; and (1) 7-7-001:por. 001
APPLICANT: Helber & Hastert & Fee Planners, Inc. on behalf of DAGS, ICSD

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by December 20, 2011.

Only one (1) copy of the document is available for your review in Land Division office, Room 220.

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 Darlene Nakamura at 587-0417. Thank you.

Attachments
COR: OA-12-134
OCCL

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

Signed: [signature]
Date: 12-9-2011

cc: Central Files

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

GUY H. KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
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

OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF: OCCL; AJR

COR: OA-12-134

NOV 2 3 2011

Ronald A. Sato
C/o Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop St., Suite 2590
Honolulu, HI 96813

SUBJECT: Mt. Ka'ala Radio Facility Improvements
TMKs: (1) 6-7-003:023 &:025; (1) 7-7-001:001
Wahiawa, Waialua, Honolulu County, Hawaii

Dear Mr. Sato

The Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) is in receipt of your letter regarding the proposal to conduct improvements at the Information and Communication Services Division (ICSD) State Radio Building, located within the Conservation District Protective Subzone.

According to the information provided the proposal includes the repair of the existing State Radio Building (SRB) antenna tower, interior and exterior building repairs, upgrade of existing air conditioning appliances and the construction of a new conduit line and one new antenna dish outside of the main facility area.

1. Pursuant to Hawai'i Administrative Rules (HAR) §13-5-22, P-6, **PUBLIC PURPOSE USES** (D-1), *Land uses undertaken by the State of Hawaii or the counties to fulfill a mandated governmental function, activity or service for public benefit and in accordance with public policy and the purpose of the conservation district. Such land uses may include transportation systems, water systems, communication systems and recreational facilities*;

2. This action will require the filing of a Conservation District Use Application (CDUA) and all required attachments for a **Board Permit**, including an Environmental Assessment (EA). To allow, modify or deny this use would be at the discretion of the Board of Land and Natural Resources (BLNR); and

3. Pursuant to HAR §13-5-40 *Hearings (a) Public hearings shall be held: (3) on applications requiring a Board Permit in the protective subzone*; Therefore a public hearing will be required.

The OCCL suggests the following comments be addressed in Final Environmental Assessment (FEA):

- *Fuel Tank*: The applicant shall discuss specific Best Management Practices (BMP) for the storage of fuel on-site, transport of fuel to the site and maintenance/safety of the on-site fuel tank.

- *Runoff*: The applicant shall discuss specific BMP to control runoff and reduce sedimentation during construction; this may include planting of approved vegetation or the emplacement of silt fencing.

Should you have any further questions, please contact Alex J. Roy of the Office of Conservation and Coastal Lands at 808-587-0316

Sincerely,

Samuel J. Lemmo, Administrator
Office of Conservation of Coastal Lands

CC: ODLO
C&C; DPP
DAGS

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 6, 2011

MEMORANDUM

TO: **DLNR Agencies:**
X Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment for DAGS, ICSD's Mt Ka'ala Radio Facility Improvements Project
LOCATION: Wahiawa, Wailua, Island of Oahu; TMK: (1) 6-7-003:pors. 023 and 025; and (1) 7-7-001:por. 001
APPLICANT: Helber & Hastert & Fee Planners, Inc. on behalf of DAGS, ICSD

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by December 20, 2011.

Only one (1) copy of the document is available for your review in Land Division office, Room 220.

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 Darlene Nakamura at 587-0417. Thank you.

Attachments

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

Signed: _____
Date: 12/9/2011

cc: Central Files

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3072.2

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

Dear Mr. Tsuji:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 22, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

Engineering Division

We confirm the proposed project is located within Zone X according to the Flood Insurance Rate Map.

Division of Forestry and Wildlife

We note this division has no objections to this project.

Office of Conservation and Coastal Lands

We confirm the proposed project is considered a public purpose use under the §13-5-22, Hawai'i Administrative Rules, and a Conservation District Use Permit (CDUP) application will need to be filed to obtain a Board Permit. A public hearing will be required during the processing of this CDUP application.

The existing fuel tank within the Mt. Ka'ala Air Force Station installation is owned by the Federal Aviation Administration (FAA), and this project will not impact or involve its use. The FAA implements their own operational and maintenance activities associated with this tank.

Information addressing potential best management practices to control storm water runoff and reduce sedimentation, such as silt fencing, was discussed in sections of the Draft EA. Additional information will be incorporated in the Final EA as appropriate. However, specific measures would be developed during the project's design phase as part of the final construction plans prepared. Such plans would also be submitted to pertinent agencies for ministerial review and approval.

Land Division – O'ahu District

We note this division had no comments.

A copy of your letter and this response will be included in the Final EA prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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DEPUTY DIRECTOR - WATER

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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAHUHIHEWA BUILDING
601 KAMOKILA BLVD, KAPOLEI HI 96707

DATE: December 16, 2011

LOG: 2011.3121
DOC: 1112MG05

TO: Helber, Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishops Street, Suite 2590
Honolulu, HI 96813

SUBJECT: **Chapter 6E-42 Historic Preservation Review**
Project: Mt. Kaala Radio Facility Improvements
Owner: Department of Accounting and General Services
Location: Mt. Kaala, Oahu
Tax Map Key: (1) 6-7-003:023

This letter is in response to a request for comment dated November 18, 2011 and received by the State Historic Preservation Division (SHPD) on November 23, 2011. In this request Helber Hastert & Fee, agents for the Hawaii Department of Accounting and General Services (DAGS) asked for comment by SHPD on the document: *Draft Environmental Assessment – Information and Communication Services Division: Mt. Kaala Radio Facility Improvements Project.* The proposed project described by the document would improve the communications infrastructure atop Mt. Kaala, the highest peak on the island of Oahu. The Area of Potential Effect (APE) described in the document is the 0.15 acres directly affected by the project.

SHPD first commented on the project proposed in the environmental assessment on April 8, 2011[L2011.0679 D1103RS62] requesting more specific information about the site and its current condition. After DAGS provided this information SHPD responded again on October 18, 2011 [L2011.2780 D1110MG01]. In the later letter SHPD highlighted the impending eligibility of those communications facilities dating to the Cold War era that share a tax map key number with APE. That said, the project as described in the environmental assessment and the October 18, 2011 letter would not alter the historic function of any structure on the parcel nor would it impact archaeological resources. **After considering potentially eligible properties nearby SHPD previously concluded that this particular project presented no adverse effect on historic properties. SHPD maintains this position.**

Any questions should be addressed to Mike Gushard, SHPD Architectural Historian at (808) 692-8026 or michael.j.gushard@hawaii.gov

Mahalo for the opportunity to comment,

Angie Westfall
Architecture Branch Chief, Hawaii Historic Preservation Division

Cc
Mr. Daniel Jandoc
State of Hawaii
Department of Accounting and General Services
1151 Punchbowl Street, Rm 427
Honolulu, HI 96813

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3079.2

Ms. Angie Westfall
Chief
Architecture Branch
Historic Preservation Division
Department of Land and Natural Resources
State of Hawai'i
Kahuhihewa Building
601 Kamokila Boulevard
Kapolei, Hawai'i 96707

Dear Ms. Westfall:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 16, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We confirm your determination that the project would not alter the historic function of any structure at the Mt. Ka'ala Air Force Station installation nor would it impact archaeological resources. We concur that this project should have no adverse effect on historic properties.

Based upon input received on the Section 106 process initiated for this project, a proposed "no adverse effect" has been determined by the U.S. Coast Guard that is consistent with your department's position.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

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

IN REPLY REFER TO:
STP 8.0678

December 16, 2011

Mr. Ronald A. Sato, AICP, Associate
Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

Subject: Information and Communication Services Division (ICSD)
Mt. Kaala Radio Facility Improvements Project
Draft Environmental Assessment (DEA)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project. DOT understands the State Department of Accounting and General Services (DAGS), Information and Communication Services Division (ICSD), is proposing to implement repair and renovation improvements to their existing radio facility, a telecommunications tower, a downhill antenna site along with conduit lines serving it, and other accessory electrical improvements located on Mt. Kaala. Access to the project is from Farrington Highway.

DOT does not anticipate any significant adverse impacts to the State transportation facilities. However, the DAGS is required to obtain a permit from DOT Highways Division, if any oversize and overweight equipment/loads for the subject project will be transported on State highways facilities.

DOT appreciates the opportunity to provide comment. If there are any questions or the need to meet with DOT staff, please contact Mr. Elton Teshima of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7978.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Mr. Daniel Jandoc, Department of Accounting and General Services (DAGS)

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3077.2

The Honorable Glenn Okimoto, Ph.D.
Director
Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

Dear Dr. Okimoto:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 16, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We concur that the project should not have a significant impact on State highway facilities. If required, a permit will be obtained if any oversized and overweight equipment/loads need to be transported on State highways facilities.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

RECEIVED
DEC 2 0 2011
HELBER, HASTERT & FEE PLANNERS

HRD11/5602C

December 12, 2011

Daniel Jandoc, Project Manager
State of Hawai'i-Department of Accounting and General Services
1151 Punchbowl Street, Room 427
Honolulu, Hawai'i 96813

Re: Draft Environmental Assessment
Mount Ka'ala Radio Facility Improvements Project
Island of O'ahu

Aloha e Daniel Jandoc,

The Office of Hawaiian Affairs (OHA) is in receipt of a November 18, 2011 request for comments on a draft environmental assessment (DEA) which has been prepared to support the Mount Ka'ala Radio Facility Improvements Project (project) proposed by the State of Hawai'i-Department of Accounting and General Services, Information and Communication Services Division (DAGS). The DAGS Mount Ka'ala Radio Facility (facility) is situated on 1,161 square feet of land within the larger 6.6 acre Mount Ka'ala Air Force Station (AFS) at the summit of Mount Ka'ala on the Island of O'ahu.

Project activities will consist of interior and exterior repairs and renovations to an existing building at the facility, installation of an electrical conduit to connect to an adjacent Federal Aviation Administration building situated within the AFS, removal of an existing 25-foot tall telecommunications tower (tower), construction of a new 50-foot tall tower, the relocation of a variety of antennas onto mounts which will be installed on the new tower, installation of two above ground copper lines to mitigate lightning strikes and installation of five antenna lines and conduits extending approximately 230 feet from the facility to connect with an existing microwave antenna site located outside of the AFS on Kamoahanui Ridge.

Upon completion, the project will provide improvements to and upgrades at the facility which will contribute to the conversion of State and federal telecommunications to a digital microwave system, support the University of Hawai'i distance learning system and improve the telecommunications infrastructure for a variety of agencies involved in emergency and rescue operations, including State Civil Defense, United States Coast Guard (USCG) and others. OHA looks forward to seeing the project completed.

Partial USCG funding will be utilized to support this project. The combined use of State of Hawai'i and federal lands and funds require compliance with a variety of laws. The DEA has been prepared to be in compliance with Chapter 343, Hawaii Revised Statutes (HRS) and the National Environmental Policy Act (NEPA). OHA has no objections to the anticipated "finding of no significant impact" determination within the DEA pursuant to Chapter 343, HRS and the NEPA.

OHA notes that by letter dated November 7, 2011, we provided substantive comments to the DEA preparer (Helber, Hastert & Fee) as a component of the National Historic Preservation Act-Section 106 (NHPA) consultation for this project. This letter is attached for your reference. You will see that while OHA agreed that a "no adverse effect" determination (determination) pursuant to NHPA implementing regulations (36 CFR) was appropriate for this project, OHA had significant concerns relative to a archaeological assessment which was prepared to support the determination. We had requested specific confirmation from Helber, Hastert & Fee that our NHPA consultation letter would be transmitted to the DAGS and the USCG for consideration in the planning and consultation for future projects.

Thank you for initiating consultation and the opportunity to provide comments. Should you have any questions or concerns, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

CWN:kl

Attachments (1): November 7, 2011 OHA NHPA consultation letter

C: Ronald Sato- Helber, Hastert & Fee
Dennis Mead- USCG District 14- Civil Engineering Unit, Honolulu

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD11/5602B

November 7, 2011

Ronald A. Sato, Associate
Helber, Hastert & Fee
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawai'i 96813

Re: National Historic Preservation Act Section 106 Consultation
Mount Ka'ala Radio Facility Improvements Project
Island of O'ahu

Aloha e Ronald A. Sato,

The Office of Hawaiian Affairs (OHA) is in receipt of your October 12, 2011 letter with enclosures initiating consultation pursuant to Section 106 of the National Historic Preservation Act of 1966 as amended (NHPA). The State of Hawai'i-Department of Accounting and General Services, Information and Communication Services Division (DAGS) is proposing improvements at an existing 1, 161 square foot radio facility (the undertaking) which is situated within the 2.37 acre Mount Ka'ala U.S. Air Force Site (AFS) located at the summit of Mount Ka'ala (Ka'ala) on the Island of O'ahu.

Undertaking activities will consist of interior and exterior repairs and renovations to an existing building at the DAGS radio facility (facility), installation of an electrical conduit to connect to an adjacent Federal Aviation Administration building situated within the AFS, removal of an existing 25-foot tall telecommunications tower (tower), construction of a new 50-foot tall tower, the relocation of a variety of antennas onto mounts which will be installed on the new tower, installation of two above ground copper lines to mitigate lightning strikes and installation of five antenna lines and conduits extending approximately 230 feet from the facility to connect with an existing microwave antenna site located outside of the AFS on Kamoahanui Ridge.

Upon completion, the undertaking will provide improvements to and upgrades at the facility which will contribute to the conversion of State and federal telecommunications to a digital microwave system, support the University of Hawai'i distance learning system and improve the telecommunications infrastructure for a variety of agencies, including State Civil Defense and others involved in emergency and rescue operations. OHA looks forward to seeing the undertaking completed in compliance with applicable laws.

Your letter describes the use of federal funds from the United States Coast Guard (USCG) to support this undertaking as the regulatory "trigger" for the requirements of the NHPA. Helber, Hastert & Fee is also preparing a draft environmental assessment (DEA) pursuant to the requirements of Chapter 343, Hawaii Revised Statutes and the National Environmental Policy Act to support this undertaking. By letter dated March 21, 2011, OHA provided you with preliminary comments ahead of the DEA, which we look forward to reviewing when it is completed.

Your letter indicates that the USCG has delegated the responsibility for initiating NHPA consultation for this undertaking to DAGS. OHA agrees that NHPA implementing regulations (36 CFR) allow for compliance responsibilities to be delegated to the State of Hawai'i (State), but we respectfully assert that federal agencies (in this case the USCG) retain ultimate responsibility and jurisdiction over an undertaking, even when certain responsibilities have been delegated to the State.

DAGS has determined that this undertaking will result in "no historic properties affected". OHA notes that the terminology used in this determination is consistent with Chapter §13-275-7, Hawaii Administrative Rules (HAR) as opposed to the NHPA. The correct determination pursuant to 36 CFR §800.5 should be "no adverse effect".

While OHA agrees that a "no adverse effect" determination (determination) is appropriate for this undertaking, we would like to offer several comments on the archaeological assessment[1] (assessment) prepared by Cultural Surveys Hawai'i, Inc. (CSH) and used to support this determination:

General

OHA views the assessment as contributing to the identification of historic properties, but we note that as a "stand alone" document, the assessment does not complete the level of effort required by 36 CFR §800.4. A review of the assessment as a part of the NHPA consultation process becomes problematic because it is readily apparent to a reviewer and subsequently confirmed by CSH[2] that the assessment was prepared to be in compliance with only Chapter 6E, Hawaii Revised Statutes (HRS) as a supporting document for the use of State funds or lands, or permits and approvals necessary to facilitate the undertaking. While the NHPA and Chapter 6E, HRS have certain procedural similarities, there are also distinct differences in regulatory requirements, especially when it comes to consultation with Native Hawaiian Organizations (NHO) as a component to the identification of historic properties and an assessment of adverse effects.

In this particular instance, the circumstances related to this undertaking do not result in OHA having any fundamental objections to the assessment being prepared to be only in compliance with Chapter 6E, HRS. For future undertakings however, OHA urges caution in the USCG and DAGS allowing your contracted consultants to utilize this approach as a different set of circumstances could result in OHA questioning whether the NHPA process has been properly initiated.

Chapter 6E-8, HRS

The assessment references an April 8, 2011 letter from the Department of Land and Natural Resources (DLNR)-State Historic Preservation Division (SHPD)[3] included as an attachment to your letter (Attachment C) as evidence that the project has undergone a required Chapter §6E-8, HRS review. OHA disagrees with this conclusion in the assessment because the letter referenced clearly states (paragraph 4) that the SHPD "*will withhold full comments until the development of the EA*".

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[1] Hammet, Hallett H. and Shideler, David W. *Archaeological Assessment for the Information and Communications Services Division Mt. Ka'ala Radio Facility Improvements Project, Kamanamui Ahupua'a, Waialua District, O'ahu Island.* Cultural Surveys Hawai'i, Inc., August 2011. Prepared for Helber, Hastert & Fee.

[2] Ibid, page 58. "*This archaeological assessment report was prepared to support the proposed project's historic preservation review under Hawaii Revised Statutes (HRS) Chapter 6E-8 and HAR Chapter 13-13-275*".

[3] Letter dated April 8, 2011 from Pua Aiu, SHPD Administrator to Charlene Unoki, DLNR-Land Division Assistant Administrator.

Identification of historic properties

Section 6.1 of the assessment concludes that no historic properties were found within the proposed project area. This conclusion highlights the differences between the Chapter 6E, HRS and NHPA processes because it discounts the general recognition that the summit area of Ka'ala is a traditional cultural property[4] (TCP) which may be eligible for inclusion in the National Register of Historic Places (NRHP). The April 5, 2002 SHPD letter[5] which is also included as an attachment with your letter (also Attachment C) previously recognized that the myriad of traditional accounts associated with the Ka'ala summit area emphasize it's importance as a potential TCP as both a location associated with the traditional beliefs of the Native Hawaiian people and as a location where Native Hawaiian religious practitioners have historically gone, and are known or thought to go today. For the purposes of the NHPA, a TCP is a historic property[6] which if identified, must be considered during the consultation process and an assessment of adverse effects.

Section 5.3 of the assessment correctly summarizes that the April 5, 2002 SHPD letter concluded that the undertaking will have "no effect" on archaeological resources, but does not acknowledge the SHPD's previous recognition in that same letter that the summit area of Ka'ala may qualify as a TCP and be eligible for inclusion in the NRHP.

To be clear, OHA does assign cultural and religious significance to the summit area of Ka'ala and we agree with the SHPD's 2002 recognition of this area as a potential TCP which may be eligible for inclusion in the NRHP. The statement in 5.3 of the assessment that the NRHP does not currently "list Mt. Ka'ala as a registered historic property" is irrelevant because the NHPA requires consideration be afforded to historic properties both included and eligible for inclusion in the NRHP.

CSH seems to exert an unusual amount of effort in attempting to dismiss the possibility that a contributing element to the Ka'ala TCP ever existed. The April 5, 2002 SHPD letter identified the Ka'ala summit as the location of Luakini Fishpond (Statewide Inventory of Historic Places Number 50-80-04-212). The description of this site is taken from J. Gilbert McAllister's 1933 publication[7] which details:

> *According to Hookala, his father often obtained fish from the fresh-water pond. In it were found many shore fish, hinalea, wuwoa, a kind of mullet, and others. Kamaoha was the moo or goddess of the pond. There is now only a swamp at the site.*

This historical account of the presence of marine fish species at the Ka'ala summit is described as "inconceivable" (page 29) and "fabulous" (page 40) by CSH in the assessment. CSH goes on to question the "curious account" (page 34) recorded by Abraham Fornander[8] in a chant composed by Kapaahulani and his younger brother Kamakaaulani for the celebrated chief Kualii which includes the line "ka elemihi ula i ka luna o Kaala-la". This line has been translated to reference "the red crab on the top of Kaala".[9]

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[4] See National Register Bulletin 38. *Guidelines for Evaluating and Documenting Traditional Cultural Properties.* Prepared by the U.S. Department of Interior-National Park Service, Interagency Resources Division.
[5] Letter dated April 5, 2002 from Don Hibbard, SHPD Administrator to Carl Woehrle, J.M. Waller Associates, Inc.
[6] As defined by 36 CFR §800.16(l).
[7] McAllister, J. Gilbert. *Archaeology of O'ahu.* Bernice Pauahi Bishop Museum Bulletin 104. 1933. Page 133.
[8] Fornander, Abraham. *Collection of Hawaiian Antiquities and Folklore.* Memoirs of the Bernice Pauahi Bishop Museum, Volume 4. 1986 Kraus Reprint. Page 386.
[9] Following his death in 1887, Fornander's collection of manuscripts were purchased by Charles Reed Bishop and subsequently turned over to the Bernice Pauahi Bishop Museum where they were translated under the supervision of W.D. Alexander.

CSH is so dismissive of the possible existence of pond containing marine species identified by Fornander and McAllister at the Ka'ala summit that despite being identified by an informant in the first systematic archaeological study of Kamananui Ahupua'a by McAllister in 1930's, Luakini Fishpond is not afforded the respect of being included in the "Previous Archaeological Research" section (Section 5) of the assessment. Instead, the discussion on Luakini Fishpond is within the " 'Olelo No'eau" section (Section 4.1) of the assessment where CSH offers their own interpretations of traditional proverbs and poetical sayings associated with Ka'ala. The discussion in this section of the assessment affords CSH with an opportunity to share their own belief that rather than being a reality, Luakini Fishpond and marine species at Ka'ala are veiled poetic references.

OHA understands why traditional and historical accounts which identify a pond containing marine species at the highest point (4,025 feet above mean sea level) on the Island of O'ahu could be difficult to conceive from certain perspectives. It is important to note that the knowledge of our ancestors often extends beyond the consciousness of modern thought and transcends from the mundane to the profound. OHA urges caution in the CSH's approach in attempting to analyze and assess the accounts of Luakini Fishpond absent input received during the consultation process directly from individuals and organizations with demonstrated knowledge and expertise in this subject.

OHA advocates that Fornander's reference and McAllister's publication be viewed for what they are, accounts which describe the presence of a pond containing marine species at the Ka'ala summit. If modern archaeological studies and field surveys have been unable to verify the location or existence of this pond, it is acceptable to say so, but this does not provide conclusive evidence which would allows for the earlier accounts to be dismissed. At a fundamental level, these accounts, like the others described in Section 4 of the assessment (which were not subject to the same level of scrutiny by CSH) serve the simple purpose of describing contributing elements which emphasize the importance of Ka'ala as a potential TCP of cultural and religious significance to the Native Hawaiian people.

OHA believes DAGS and the USCG failed to identify Ka'ala as a potential TCP which is eligible for inclusion in the NRHP which then resulted in the failure to conduct an appropriate significance assessment and assessment of adverse effects. However, the scope of the undertaking activities described in your letter will not alter the characteristics of Ka'ala that qualify it for inclusion in the NRHP.[10] Thus, the "no adverse effect" determination is still appropriate.

Consultation with NHO

The April 5 2002 SHPD letter encouraged DAGS to consult with NHO, including OHA on the importance of Ka'ala and any possible adverse effects of the undertaking. Section 7 of the assessment includes details the individuals and NHO who were consulted in its preparation.

OHA notes that despite being specifically identified in the April 5, 2002 SHPD letter as an NHO which should be consulted and cited as an example of an NHO in the NHPA,[11] we were not consulted during the preparation of the assessment. OHA does appreciate that efforts were made to consult with the individuals and other NHO identified in the assessment which resulted in valuable thoughts relative to Ka'ala as a receptacle of "Wai o Kane" and the importance of implementing necessary protections being expressed.

---

[10] See National register Bulletin 15. How to Apply the National Register Criteria for Evaluation. Prepared by the U.S. Department of the Interior, National Park Service, National Register of Historic Places staff.
[11] See 16 U.S.C 470w(18).

As we have already mentioned, an issue which is concerning to OHA is that CSH expressed conclusions and interpretations relative to Luakini Fishpond and certain 'olelo no'eau associated with Ka'ala that seems to be based on the authors of the assessment's own opinions as opposed to information gained during consultation with NHO with demonstrated expertise and knowledge of these issues. OHA cautions the USCG and DAGS in allowing your contracted consultants to utilize this approach in the future.

NHPA implementing regulations require that agency officials acknowledge that NHO possess special expertise in assessing the NRHP eligibility of historic properties which may be of religious or cultural significance.[12] The Advisory Council on Historic Preservation (ACHP) has published guidance which addresses the misconceptions of whether contracted consultants possess the expertise to determine the significance of historic properties to the Native Hawaiian people:

> *Many agencies assume that agency or contract archaeologists can identify which properties are of significance to Native Hawaiian organizations when they conduct archaeological surveys. However, unless an archaeologist has been specifically authorized by a Native Hawaiian organization to speak on its behalf on the subject, it should not be assumed that the archaeologist possesses the appropriate expertise to determine what properties are or are not of significance to a native Hawaiian organization*[13]

OHA views this ACHP guidance as applicable to this undertaking and we urge the USCG and DAGS consider it in the future.

Area of potential effect

The assessment describes the area of potential effect (APE) for this undertaking as consisting of only the 0.15 acres which encompass the "footprint" of the facility and conduit alignment to Kamaohanui Ridge. OHA believes that the APE has been incorrectly defined and fails to take visual affects the 50-foot tall tower which will be constructed could cause.

It is unclear whether the USCG has established a policy on how to account for any visual affects constructed towers could cause. OHA is aware that the Federal Communications Commission has prepared guidance[14] which establishes that the APE for the construction of tower sites (sites) is within a half mile of the site if it is less than 200 feet or less in overall height. OHA views the FCC's guidance as establishing an appropriate starting point for determining the appropriate APE for this undertaking, since it involves the construction of a new tower less than 200 feet in overall height. Even with this expanded APE, OHA believes your "no adverse effect" determination is still appropriate.

Conclusion

OHA sincerely hopes that the USCG and DAGS will consider our comments as the development of future undertakings in the State of Hawai'i move forward. OHA requests specific confirmation from Helber, Hastert & Fee that this letter has been transmitted to the appropriate USCG and DAGS staffers for their consideration.

---

[12] 36 CFR §800.4(c)(1).

[13] Consultation *with Native Hawaiian Organizations in the Section 106 Review Process: A Handbook*. Prepared by the Advisory Council on Historic Preservation. June 2011. Page 13.

[14] Stipulation VI.(C). Nationwide Programmatic Agreement for Review of effects on historic properties for certain undertakings approved by the Federal Communications Commission. Executed between the Federal Communication Commission, Advisory Council on Historic Preservation and National Conference of State Historic Preservation Officers in September 2004.

Thank you for initiating consultation and the opportunity to provide comments. Should you have any questions or concerns, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

CWN:kl

C: William Aila, Jr., State of Hawai'i Historic Preservation Officer
Pua Aiu, State Historic Preservation Division Administrator
Cultural Surveys Hawai'i, Inc.

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3078.2

Mr. Richard Pezzulo
Interim Chief Executive Officer
Office of Hawaiian Affairs
State of Hawai'i
711 Kapi'olani Boulevard, Suite 500
Honolulu, Hawai'i 96813

Dear Mr. Pezzulo:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 12, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project. We greatly appreciate the Office of Hawaiian Affair's (OHA) support in seeing the project completed, and indicating no objections to the "finding of no significant impact" determination proposed for the project under the Draft EA.

The OHA comment letter, dated November 7, 2011, received as part of the Section 106 consultation process has been reviewed, and it has been transmitted to both the State Department of Accounting and General Services and the U.S. Coast Guard for their consideration in the planning and consultation associated with future projects.

Based upon input received on the Section 106 process, a proposed "no adverse effect" has been determined by the U.S. Coast Guard which is consistent with OHA's position. The comments associated with the archaeological assessment are being addressed, and that report will be revised and included in the Final EA. In general, suggested revisions to the report will be incorporated and Mt. Ka'ala will be better addressed as a traditional cultural property. Specific comments related to OHA's November letter will be addressed separately under the Section 106 process.

A copy of your letter and this response will be included in the Final EA prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

PETER B. CARLISLE
MAYOR

COLLINS D. LAM, P.E.
DIRECTOR

LORI M. K. KAHIKINA, P.E.
DEPUTY DIRECTOR

December 8, 2011

Mr. Ronald A. Sato, AICP Associate
Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 967813

Dear Mr. Sato:

Information and Communication Services Division Mt. Ka'ala
Radio Facility Improvements Project

Thank you for the opportunity to review and comment on this project. The Department of Design and Construction has no comments.

Should there be any questions, please contact me at 768-8480.

Sincerely,

for Collins D. Lam, P.E.
Director

CDL:pg(442585)

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3080.2

Mr. Collins Lam, P.E.
Director
Department of Design and Construction
City and County of Honolulu
650 South Beretania Street, 11th Floor
Honolulu, Hawai'i 96813

Dear Mr. Lam:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 8, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We note that your department does not have any comments to offer at this time.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

DEPARTMENT OF EMERGENCY MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET HONOLULU, HAWAII 96813
PHONE: (808)523-4121 FAX: (808)524-3439 WORLDWIDE WEB: www.oahudem.org

PETER B. CARLISLE
MAYOR

MELVIN N. KAKU
DIRECTOR

December 29, 2011

Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813
Mr. Ronald A. Sato, AICP, Associate

Dear Mr. Sato:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE MT. KA'ALA RADIO FACILITY IMPROVEMENTS PROJECT

The City and County of Honolulu's Department of Emergency Management has no comments for the Environmental Assessment for the Information and Communication Services Division Mt. Ka'ala Radio Facility Improvements Project, Oahu.

Should you have any questions, please call Deputy Director Mr. Peter Hirai at 723-8960 or e-mail phirai@honolulu.gov. Thank you for your support of public safety programs.

Sincerely,

MELVIN N. KAKU
Director

cc: Mr. David Tanoue, Director of Planning and Permitting

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3081.2

Mr. Melvin N. Kaku
Director
Department of Emergency Management
City and County of Honolulu
650 South King Street
Honolulu, Hawai'i 96813

Dear Mr. Kaku:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated December 29, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We note that your department does not have any comments to offer at this time.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

PETER B. CARLISLE
MAYOR

DAVID K. TANOUE
DIRECTOR

JIRO A. SUMADA
DEPUTY DIRECTOR

2011/ELOG-2349(WA)

January 9, 2011

RECEIVED
JAN 10 2011
HELBER, HASTERT & FEE
PLANNERS

Mr. Ronald A. Saito, Senior Planner
Helber Hastert & Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Saito:

Subject: Telecommunications Tower Improvements Projects
Mt. Ka'ala Radio Facility
Tax Map Keys 6-7-3: Portion of 25 and 7-7-1: Portion of 1

This is in response to your request received October 13, 2011, for comments regarding the proposed replacement of an existing telecommunications tower with a new one for the Mt. Ka'ala Radio Facility located at the Mt. Ka'ala Air Force Station in the Waianae Mountain Range.

The project site is in the State Conservation District and zoned P-1 Restricted Preservation District, and it is not within the Special Management Area. Land uses and development standards in the State Conservation District are under the jurisdiction of the State of Hawaii Department of Land and Natural Resources. The City and County of Honolulu has no zoning jurisdiction over the site. Therefore, the City and County Department of Planning and Permitting will not be providing comments on the proposed project.

Please contact William J. Ammons of our staff at 768-8025 if you have any questions.

Very truly yours,

Elizabeth Ch

for David K. Tanoue, Director
Department of Planning and Permitting

DKT:rk

2011 ELOG-2349 Helber Hastert Fee.doc

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3082.2

Mr. David K. Tanoue
Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawai'i 96813

Dear Mr. Tanoue:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated January 9, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We confirm that the project site is within the State Conservation District, is zoned P-1 Restricted Preservation District, and is not within the Special Management Area. As a result, land uses and development standards fall under the jurisdiction of the State Department of Land and Natural Resources.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

PETER B. CARLISLE
MAYOR

KENNETH G. SILVA
FIRE CHIEF

EMMIT A. KANE
DEPUTY FIRE CHIEF

December 13, 2011

Mr. Ronald Sato, AICP
Helber Hastert & Fee, Planners, Inc.
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Sato:

Subject: Draft Environmental Assessment
Information and Communication Services Division
Mount Ka'ala Radio Facility Improvements Project
Wahiawa, Waialua, Oahu, Hawaii
Tax Map Keys: (1) 6-07-003: Portions of 023 and 025;
7-07-001: Portion of 001

In response to your letter of November 18, 2011, regarding the above-mentioned subject, the Honolulu Fire Department reviewed the material provided and determined that there will be no significant impact to fire department services.

Should you have any questions, please contact Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151 or sbratakos@honolulu.gov.

Sincerely,

KENNETH G. SILVA
Fire Chief

KGS/SY:bh

cc: Daniel Jandoc, Department of Accounting
and General Services

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3083.2

Mr. Kenneth G. Silva
Fire Chief
Honolulu Fire Department
City and County of Honolulu
636 South Street
Honolulu, Hawai'i 96813

Dear Mr. Silva:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated January 9, 2011, providing comments on the Draft Environmental Assessment (EA) published for the subject project.

We confirm that the project will not have a significant impact on the fire department's services.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

Thomas Joseph Lenchanko, Hawaiian National and Private Citizen
Spokesperson for Hawaiian Lineal Descendants
931 Uakanikoo Street
Wahiawa, Island of O'ahu
Ko Hawaii Pae Aina, H.I. (96786)

RECEIVED
NOV 23 2011
HELBER, HASTERT & FEE PLANNERS

November 22, 2011

STATE OF HAWAII, et al
Department of Accounting and General Services
1151 Punchbowl Street, Room 427
Honolulu, Hawaii 96813
Attention: Daniel Jandoc, Project Manager

Helber Hastert and Fee Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813
Attention: Ronald A. Sato, AICP, Associate

LAWFUL NOTICE:
TO CEASE AND DESIST UNLAWFUL ACTIONS BY THE FOREIGN UNITED STATES FEDERAL GOVERNMENT, et al, AND THE DE FACTO STATE OF HAWAII, et al, ON FOREIGN HAWAIIAN NATIONAL AINA, MAUNA KA'ALA ISLAND OF O'AHU FOR THE SAKE OF AN EXAMPLE, AND IN OUTRIGHT DEFIANCE OF CULTURAL RIGHTS AND PRACTICES OF HAWAIIAN NATIONALS...

Daniel Jandoc
Project Manager
Department of Accounting and General Services

ho'ohewahewa mauliauhonua malama o pa 'oe

'Aha Kukaniloko/Koa Mana Hawaiian Lineal Descendants responding to your received document dated November 18, 2011 regarding subject matter mauna ka'ala and WANT OF JURISDICTION OVER HAWAIIAN NATIONALS AND OUR AINA. Again please lawfully respond to our initial correspondence date October 16, 2011 to Ronald A. Sato, attached hereto.

Truth is the highest goal and aloha is the greatest truth of all... Halemakua

mauna ka'ala
'a'e ku ua 'a'e lakou i luna o kahi la'a
'oia ua 'ike a 'aia la

Thomas Joseph Lenchanko, Hawaiian National

Thomas Joseph Lenchanko, Hawaiian National 11/22/2011
kahuaka'i ola ko laila waha olelo 'Aha Kukaniloko/Koa Mana mea ola kanaka mauli

Helber Hastert & Fee
Planners, Inc

November 18, 2011

Dear Participant:

Attached for your review is a Draft Environmental Assessment that was prepared pursuant to the State of Hawai'i EIS law (Chapter 343, Hawaii Revised Statutes,) and the EIS rules (Title 11, Chapter 200, Hawai'i Administrative Rules).

TITLE OF PROJECT:	Information and Communication Services Division Mt. Ka'ala Radio Facility Improvements Project
LOCATION:	Wahiawā, Waialua, O'ahu, Hawaii
TAX MAP KEY NO.:	(1) 6-07-003: portions of 023 and 025; 7-07-001: portion of 001
PROPOSING AGENCY:	State of Hawai'i, Department of Accounting and General Services
ADDRESS:	1151 Punchbowl Street, Room 427 Honolulu, Hawai'i 96813
CONTACT:	Mr. Daniel Jandoc, Project Manager
PHONE:	(808) 586-0476

YOUR COMMENTS MUST BE RECEIVED OR POSTMARKED BY <u>DECEMBER 22, 2011</u>. COMMENTS SHOULD BE SENT TO THE FOLLOWING:

CONSULTANT:	Helber Hastert & Fee, Planners
ADDRESS:	Pacific Guardian Center, Makai Tower 733 Bishop Street, Suite 2590 Honolulu, Hawai'i 96813
CONTACT:	Ronald A. Sato, AICP, Associate Email: rsato@hhf.com
PHONE:	(808) 545-2055

COPY SENT TO:

APPROVING AGENCY:	State of Hawai'i, Department of Accounting and General Services
ADDRESS:	1151 Punchbowl Street, Room 427 Honolulu, Hawai'i 96813
CONTACT:	Mr. Daniel Jandoc, Project Manager
PHONE:	(808) 586-0476

Thank you for your participation in the Environmental Assessment review process. We look forward to receiving your comments.

SUB-SECTION 1091, MALICIOUS DESTRUCTION OF (TRADITIONAL) CULTURAL SITES (PROPERTIES) AND IWI SITES;
AND THE BLATANT VIOLATION OF THE "UNITED NATIONS GENOCIDE CONVENTION OF 1948"...

REGARDING:
CONFIRMATION OF AN UNBROKEN "CHAIN OF TITLE" AND LAWFUL OWNERSHIP SHALL BE ESTABLISHED BACK TO THE ENACTMENT OF "THE GREAT MAHELE" (PORTIONING, DIVISION) OF 1848;
ENDANGERED SPECIES MITIGATION PLAN, ENDANGERED SPECIES HABITAT CONSERVATION PLAN AND AN INCIDENTAL TAKE PERMIT FOR THE SUBJECT AREA OF THIS FEDERAL UNDERTAKING...

Douglas S. Mulbury
Colonel, United States Army
Commanding

ho'ohewahewa mauliauhonua malama o pa 'oe

Correspondence to compel your agents who have said responsibility, of their continued failure to report to us directly, to reveal and affirm your organization's alleged claim to own and/or control as PROPERTY OF THE UNITED STATES FEDERAL GOVERNMENT, our Hawaiian Kingdom National Government lands throughout the Hawaiian Archipelago, Ko Hawaii Pae Aina, H.I. and to prove transfer of "exclusive territorial jurisdiction" of said lands to any entity, for the sake of an example, the United States Army, de facto State of Hawaii, their subordinate entities, et al, to include public and private parties acting in their behalf.

<u>WANT OF JURISDICTION OVER HAWAIIAN NATIONALS AND OUR AINA</u>

JURISDICTION HAS NOT BEEN PROVEN IN THIS MATTER: The UNITED STATES FEDERAL GOERNMENT, et al, and the de facto STATE OF HAWAII, et al, has asserted by their actions a questionable claim of jurisdiction <u>which claim of jurisdiction has not been revealed or proven.</u> Jurisdiction over the land (in rem) and in personum (Private Citizen) must be proven in writing, <u>not just assumed, not just stated,</u> and <u>not just claimed</u> without proof and written evidence of law. Jurisdiction, when challenged as in this instant, must be responded to IN WRITING AND PROVEN, AS REQUIRED BY LAW.

Judges of the de facto STATE OF HAWAII are jurisdictionally limited having taken an oath to honor United States laws and the United States Constitution as United States "citizens". That being the case STATE judges must respect the following United States court determinations regarding jurisdiction or face liability for fraud and personal abuse of law and justice.

Once challenged, jurisdiction cannot be 'assumed' it must be proven to exist. (Stuck v. Medical Examiners, 94 CA2d 751211 P2s 389);

Jurisdiction, once challenged, cannot be assumed and must be decided. (Main v. Thiboutot, 100S Ct.250);

The law requires proof of jurisdiction to appear on the record of the administrative agency and all administrative proceedings. (Hagans v. Lavine, 415 U.S. 533);

If any tribunal finds absence of proof of jurisdiction over person and subject matter, the case must be dismissed. (Louisville R.R. v. Motley, 211 U.S. 149, 29S. Ct. 42); et al.

As United States Commander on Hawaiian National soil, you are well aware and knowledgeable of United States fact of law.

We await a lawful response to resolve and redress from all of the above named parties.

Truth is the highest goal and aloha is the greatest truth of all... Halemakua

mauna ka'ala
'a'e ku ua 'a'e lakou i luna o kahi la'a
'oia ua 'ike a 'aia la

Thomas Joseph Lenchanko, Hawaiian National 10/16/2011

Thomas Joseph Lenchanko, Hawaiian National
kahuaka'i ola ko laila waha olelo 'Aha Kukaniloko/Koa Mana mea ola kanaka mauli

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
ACTING COMPTROLLER

JAN S. GOUVEIA
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

MAR 22 2012

PM-3084.2

Mr. Thomas Lenchanko
931 Uakanikoo Street
Wahiawai, Hawai'i 96786

Dear Mr. Lenchanko:

Subject: State ICSD Mt. Ka'ala Radio Facilities Improvement Project
Draft Environmental Assessment
Waialua, Wahiawa, O'ahu, Hawai'i
TMK (1) 7-07-001: portion of 001; (1) 6-07-003: portions of 023 & 025

Thank you for your letter dated November 22, 2011 providing comments on the Draft Environmental Assessment (EA) published for the subject project.

Your letter references an October 16, 2011 response letter submitted as part of Section 106 consultation efforts associated with this project. A separate response letter has been provided for that letter. Your comments are in reference to concerns over the legal ownership and jurisdiction of property by the U.S. Department of Army and the State of Hawai'i. The properties associated with the project area are owned by either the U.S. Department of Army or the State of Hawai'i as discussed in the Draft EA. Consultation with the U.S. Fish and Wildlife Service has also determined that an endangered species mitigation plan, habitat conservation plan, and an incidental take permit are not required for this project.

A copy of your letter and this response will be included in the Final Environmental Assessment prepared for this project. Thank you for your participation in this process.

Sincerely,

Dean H. Seki
Acting State Comptroller

c: Dennis Mead – USCG
Robert Hlivak – DAGS, ICSD

Appendix A-4

Section 7 Consultation

Section 7 Consultation Letter to FWS (October 20, 2011)

Rana Biological Consulting, Inc.

October 20,, 2011

Dr. Loyal Mehrhoff, Field Supervisor
U.S. Department of the Interior
Pacific Islands Fish and Wildlife Office
300 Ala Moana Blvd., Room 3-122, Box 50088
Honolulu, Hawaii 96850

Dear Dr. Mehrhoff:

Subject: Information and Communication Services Division (ICSD), Mt. Kaʻala Radio Facility Improvements Project - Section 7 Consultation - Request for Concurrence with "NLAA" Determination

The State of Hawaiʻi, Department of Accounting and General Services, Information and Communication Services Division (ICSD), with the assistance of the U.S. Coast Guard (USCG) is proposing to implement repair and renovation improvements to their existing building used as a radio facility, a telecommunications tower, and other accessory electrical improvements located on Mt. Kaʻala. The USCG is seeking concurrence from the USFWS that the project will "Not Likely Adversely Affect (NLAA)" any listed threatened or endangered species, or any federally delineated Critical Habitat discussed below.

Project Overview

The State is proposing to undertake both interior and exterior repairs to the existing State building. This includes re-roofing the building to address cracks and leaks. A new conduit would be installed within the existing driveway to connect the State building with a nearby generator building (Figure 1).

The State's existing 25-foot-tall tower will be replaced with a 50-foot-tall tower within the State's licensed area. Additional microwave and whip antennas will be installed on the new tower along with the antennas relocated from the State building. The U.S. Coast Guard will be responsible for demolishing this existing State radio tower, and designing and constructing the new taller tower.

A 48-inch-tall, 75-inch-wide corner reflector antenna will be relocated from the State building to the lower mount at an existing antenna site downhill of Kamaohanui Ridge. The lower mount will also be used to support a future camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility.

P.O. Box 1371, Kailua, Kona, Hawaii 964745

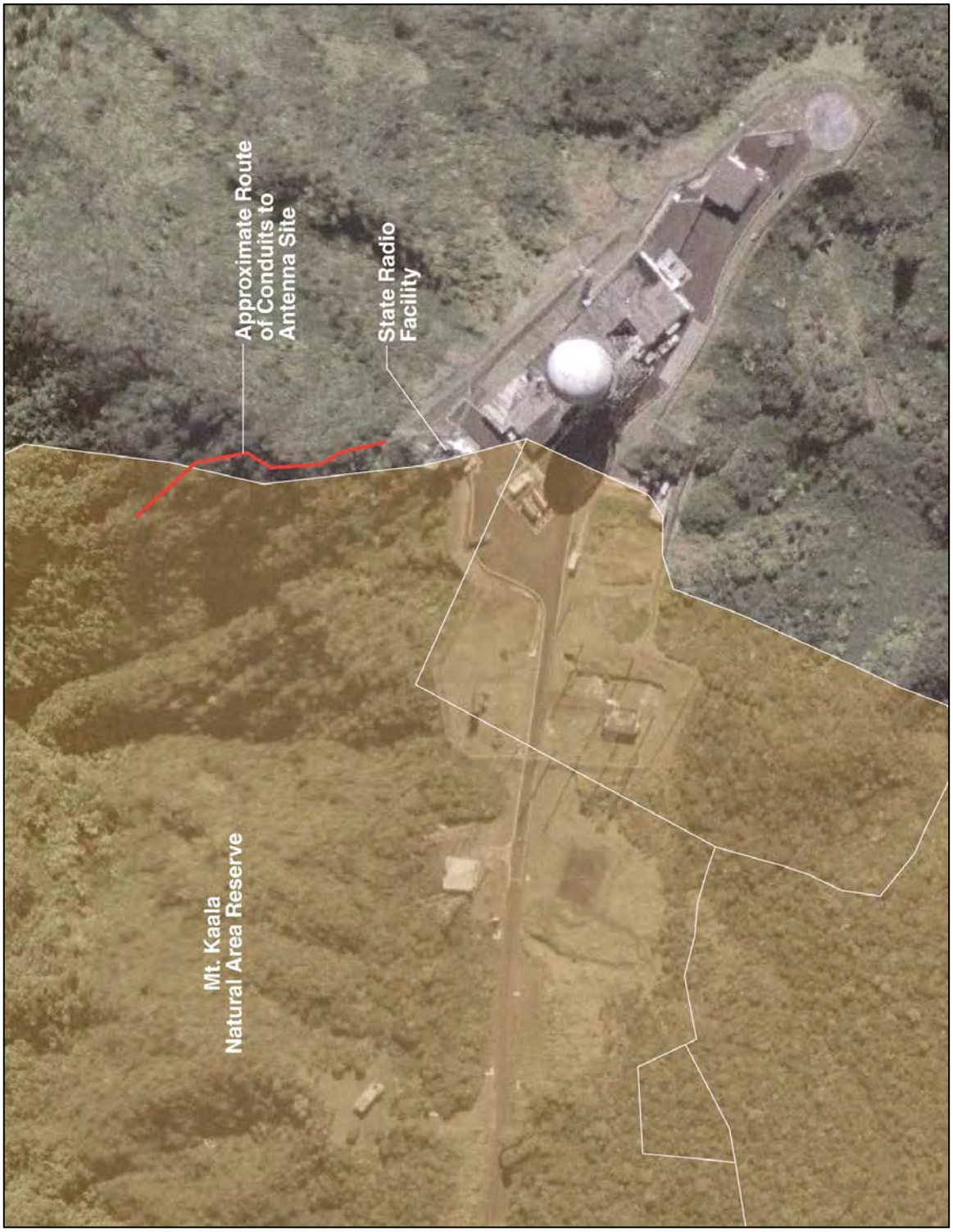

Figure 1 – Project Site Showing Existing Facilities and Proposed Route of the Replacement Conduit

There is one existing above ground microwave antenna feed line routed from the Mt. Kaʻala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits will be routed above ground from the State's radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawaiʻi for its Hawaiʻi Interactive Television System distance learning system; 2) add high-capacity digital microwave links for the as part of the Rainbow/Anuenue system wide transition to digital; and 3) upgrade and add to the State's critical land mobile radio systems that support public safety and critical government operations.

The habitat present within the fenced secure area consists of pavement, driveways and very short mowed grass (Figure 1 and 2). The habitat between the security fence and the down-slope dish antennae is composed of a native dominated elfin cloud forest (Figure 1 and 3).

Project Site

The State's licensed radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Kaʻala Air Force Station (AFS) site situated at the summit of Mt. Kaʻala. The site is less than one half-acre and is identified as Tax Map Keys (TMK): (1) 7-07-001: portions of 001: (1) 6-07-003: portions of 023 and 025. Mt. Kaʻala is at the northern end of the Waianae Mountain Range, and is the highest peak on the island of Oʻahu at an elevation of 4,025 feet above mean sea level. The Mt. Kaʻala AFS is located where the districts of Wahiawā, Waialua, and Waiʻanae all converge at this mountain's summit. The State's radio facility is situated within Waialua and Wahiawā districts and electrical conduit improvements would extend slightly down the Kamaohanui Ridge and into the Waialua district (Figure 1).

The Mt. Kaʻala AFS is maintained by the U.S. Army, which has tenant agreements with other Federal and State agencies for telecommunications use at this site. The majority of the land on which Mt. Kaʻala AFS is constructed, is owned by the U.S. Army, and is part of the Schofield Barracks Military Reservation. This Federal property is identified as TMK: (1) 7-07-001: portion of 001. This station is fenced for security, and other government agencies have telecommunication facilities on this site. The U.S. Army maintains tenant agreements with both the U.S. Air Force and the Federal Aviation Administration for their facilities at this station. The State of Hawai'i, Hawaiʻi Air National Guard, and the U.S. Navy also maintain isolated individual structures.

Figure 2 - State of Hawai‘i radio towers and building, security fence and habitat within the fenced perimeter

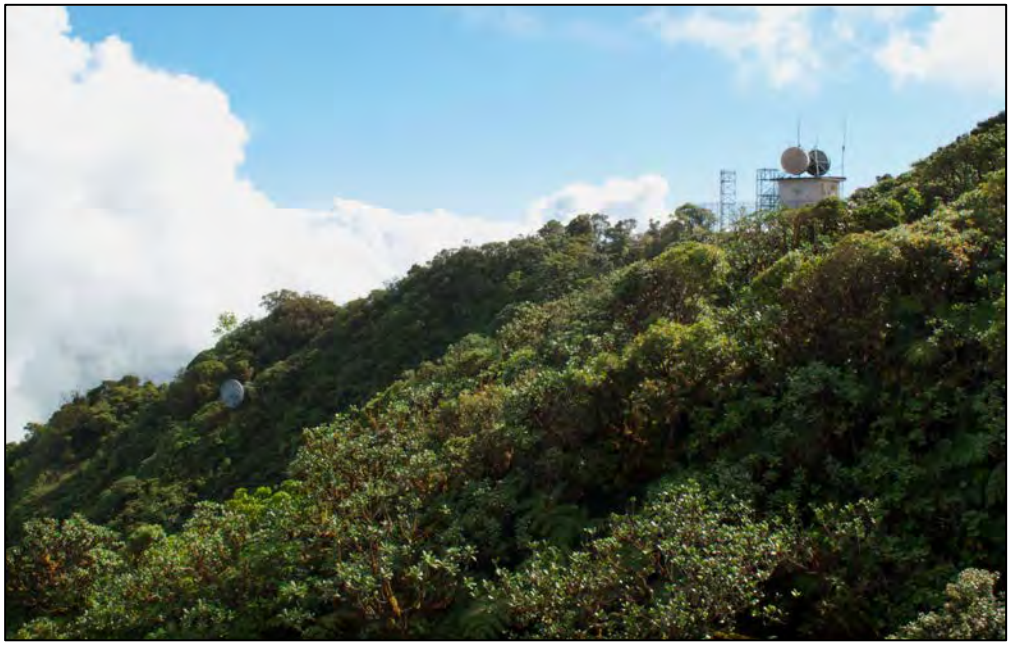

Figure 3 - State of Hawai‘i radio towers and building and dish antenna, showing typical elfin cloud forest habitat between the towers and the dish antenna

The western portion of the fenced-in summit area of the Mt. Kaʻala AFS includes two parcels owned by the State of Hawaiʻi, identified as TMK: (1) 6-07-003: portions of 023 and 025. These areas of the station are leased to the U.S. Air Force by the State of Hawaiʻi. This State property is designated as the Mt. Kaʻala Natural Area Reserve and is under the jurisdiction of the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) [Figure 1].

Coordination with the USFWS

On April 25, 2011 the U.S. Coast Guard (USCG) sent a letter to the USFWS requesting technical assistance pursuant to section 7 of the Endangered Species Act of 1973, as amended (ESA) [16 U.S.C. 1531 *et seq*]. The USCG received a reply from the USFWS dated May 27, 2011 (USFWS Log # 2011-TA-0264). In its response, the Service indicated that information in their files indicated that the project footprint is within designated critical habitat for the following endangered species, *Cyanea acuminate, Cyanea longiflora, Labordia cyrtandrea, Phyllostegia hirsuta, Alsinidendron trinerve, Diplazium molokaiense,* and the Hawaiian picture-wing fly (*Drosophila substenoptera*). Additionally the letter went on to state that the project should determine whether the endangered Hawaiian tree snail, *Achatineila mustelina*, is currently using resources within the disturbance corridor, and that the proposed action also has the potential to impact the endangered Hawaiian hoary bat *(Lasiurus cinereus semotus*), and the endangered Hawaiian Petrel *(Pterodroma sandwichensis*), and the threatened Newell's Shearwater (*Puffinus auricularis newelli*).

There have been several follow up telephone conversations and email communications between the project biologist and Michelle Bogardus, Dawn Greenlee, Tim Langer and Ian Bordenave, of your office regarding the framework and contents of this submission.

Modification of Critical Habitat

The project team mapped the Critical Habitat unit boundaries for the eight species detailed above onto the project site work drawings using the coordinates published in the final rules for all of the these species (Figure 4). The project also overlaid the boundaries of designated Critical Habitat for the endangered Oʻahu ʻElepaio (*Chasiempis ibidis*) onto the project drawings. What emerged from this exercise was that the proposed action will modify 0.093-acres of Critical Habitat for three listed species, *Alsinidendron trinerve*, *Labordia cyrtandrea* and Oʻahu ʻElepaio.

Alsinidendron trinerve:

The proposed action will modify 0.093 acres of *Alsinidendron trinerve* Critical Habitat within Unit # 4, which represents 0.062% of the 159-acre polygon designated for this species within the 9,689-acres of Unit 4 (USFWS, 2003). The habitat that will be modified has already been modified by the construction and ongoing maintenance of the existing facilities in the same location.

Labordia cyrtandrae

The proposed action will modify 0.093 acres of *Alsinidendron trinerve* Critical Habitat within Unit # 4, which represents 0.023% of the 397-acre polygon designated for this species within the 9,689-acres of Unit 4, and 0.003% of the total 2,487-acres of Critical Habitat designated for this species on the island of O‘ahu (USFWS, 2003). The habitat that will be modified has already been modified by the construction and ongoing maintenance of the existing facilities in the same location.

O‘ahu ‘Elepaio:

The proposed action will modify 0.093 acres of O‘ahu ‘Elepaio, Critical Habitat in Unit 1, Northern Waianae Mountains, which represents 0.0008% of the 11,005 acres of designated Critical Habitat within Unit 1, and 0.0001% of the approximately 65,879 acres of Critical Habitat designated for this species (USFWS, 2001). In their final rule the service estimated that there was a resident ‘Elepaio population of three birds within the Mt. Ka‘ala Natural Area Reserve, but no known breeding pairs (USFWS, 2001). O‘ahu ‘Elepaio are usually found in lower elevation, taller stature mixed forest than is found within the project area, atop Mt. Ka‘ala. The habitat that will be modified has already been modified by the construction and ongoing maintenance of the existing facilities in the same location.

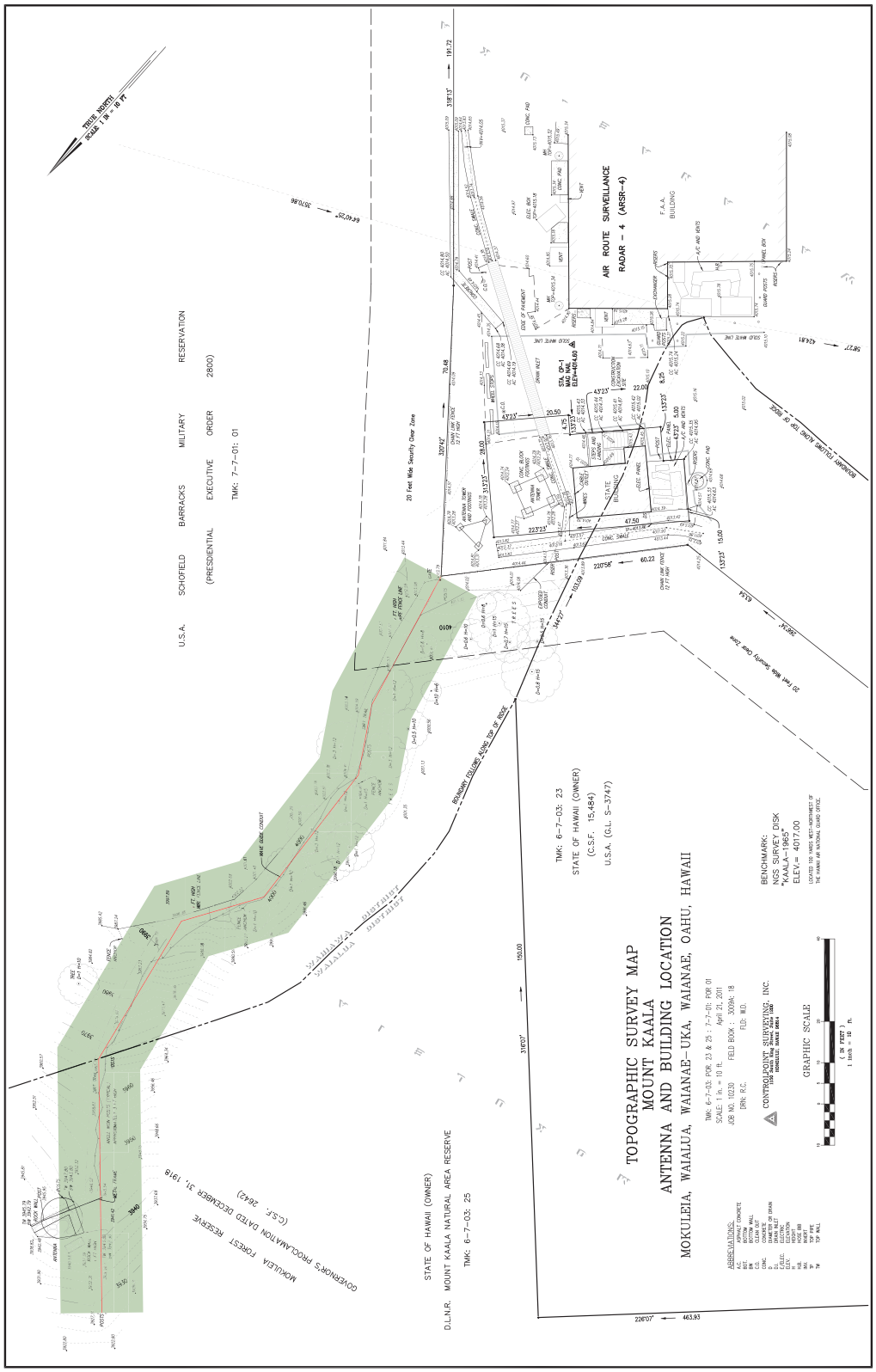

Figure 4 – Project Site Showing Disturbance boundaries and existing facilities

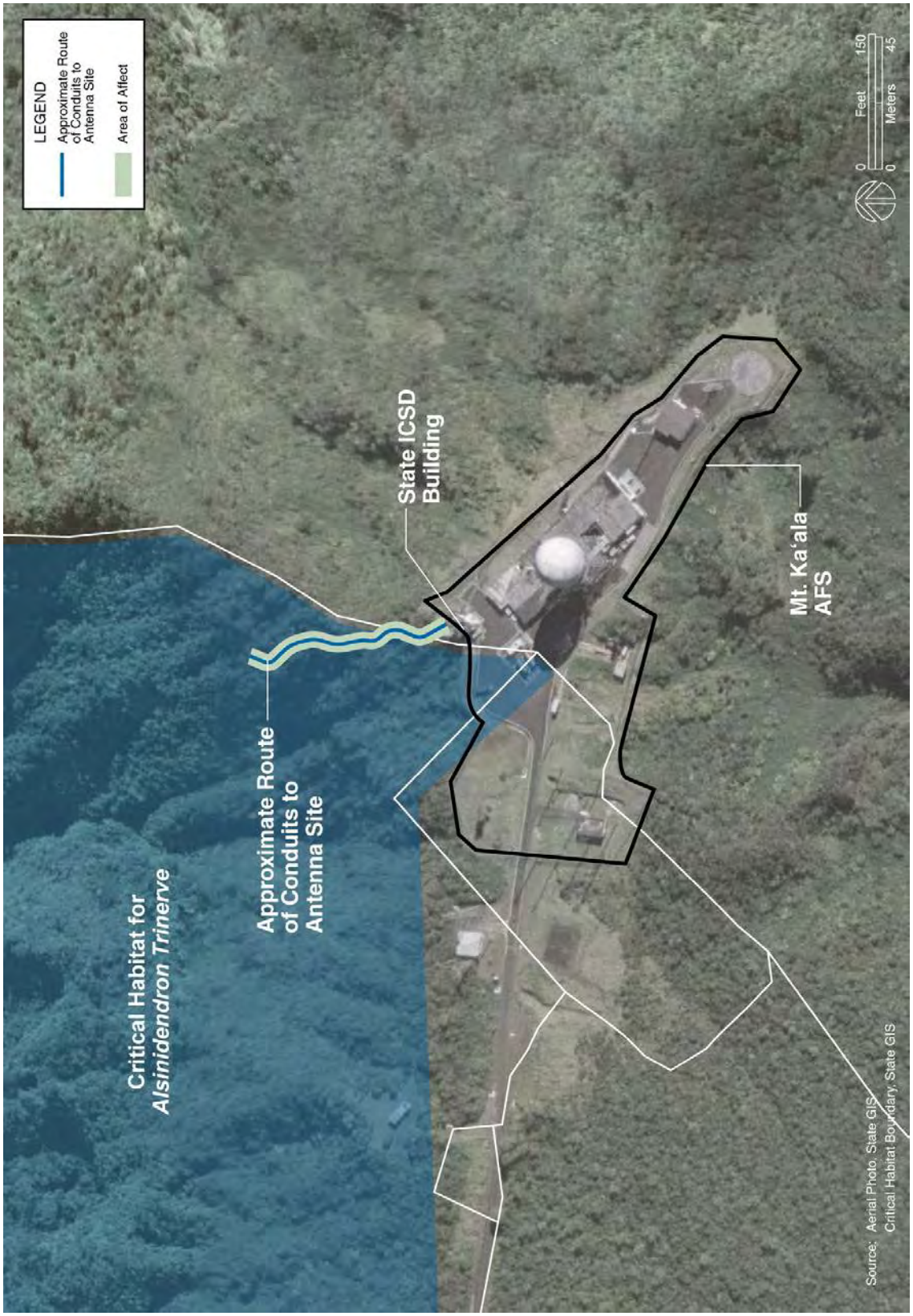

Figure 5 – *Alsinidendron trinerve* Critical Habitat Unit # 4 overlain on Project Disturbance Corridor

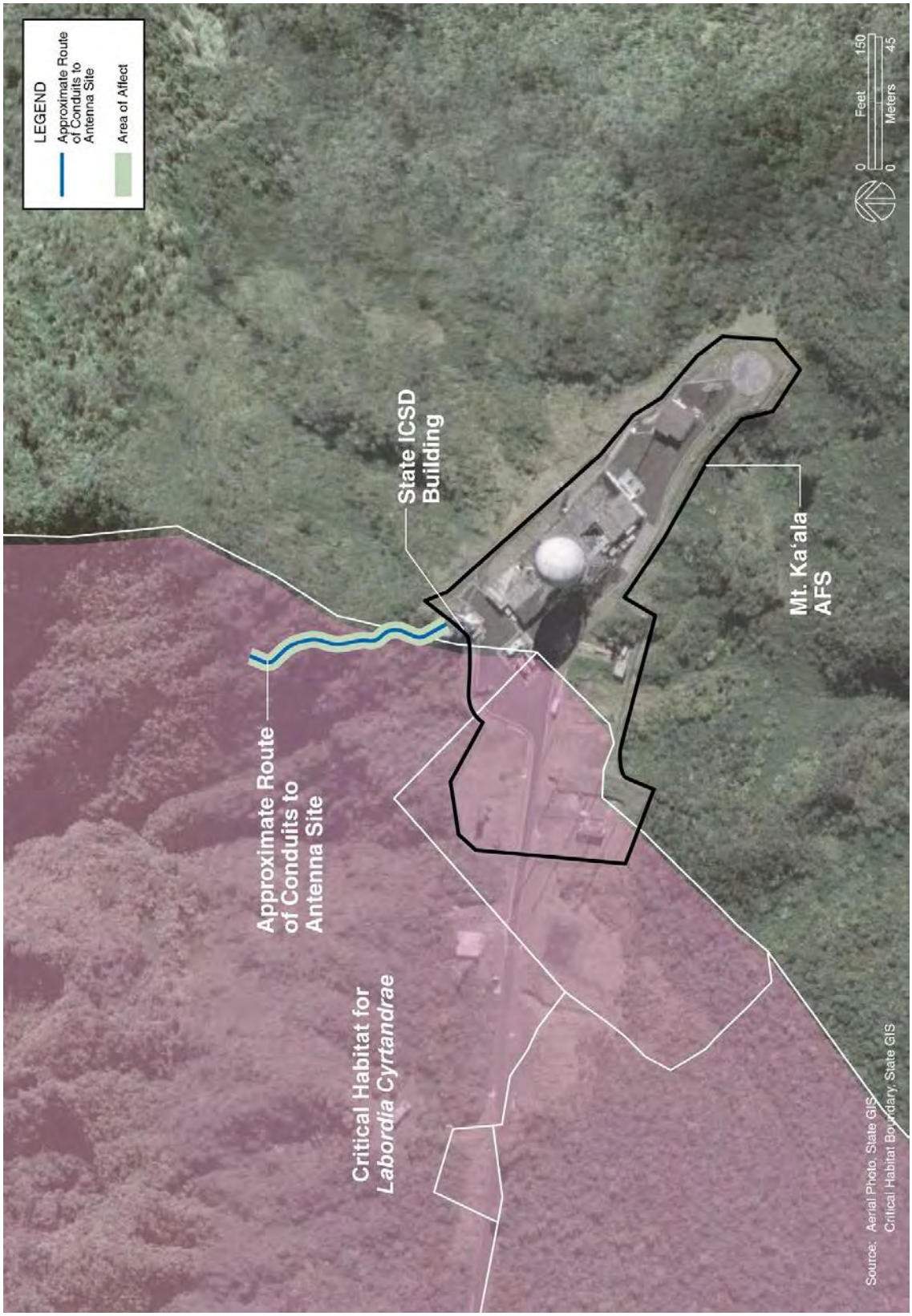

Figure 6 – *Labordia cyrtandrea* Critical Habitat Unit # 4 overlain on Project Disturbance Corridor

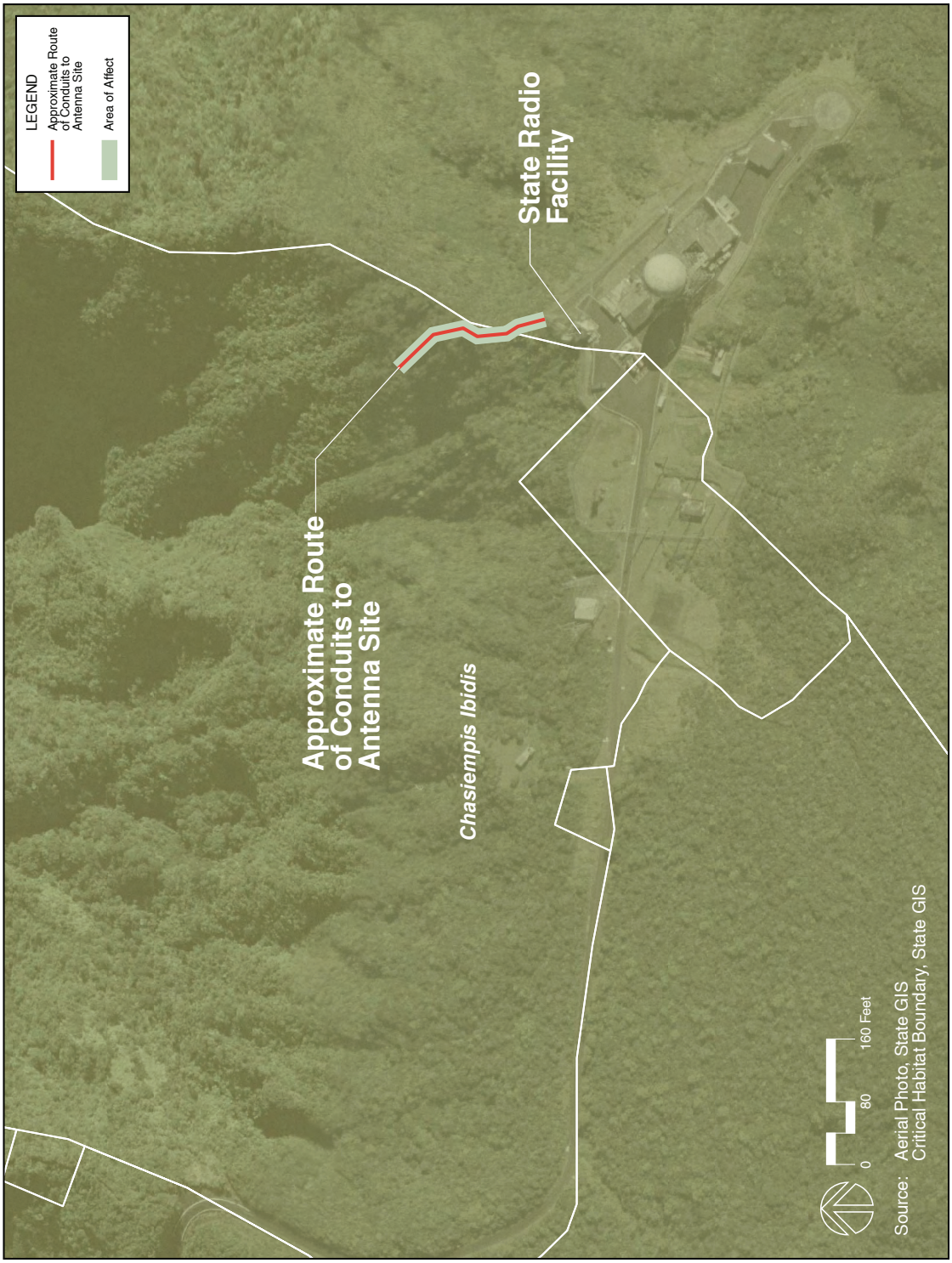

Figure 7– O'ahu 'Elepaio (*Chasiempis ibidis*), Critical Habitat Unit # G overlain on Project Disturbance Corridor

Potential Impacts to ESA protected Species

Botanical, invertebrate, avian and mammalian studies were conducted on the site and adjoining area on February 2 and 3, 2011. Technical reports detailing the methodologies used, findings and recommendations were prepared (LeGrande, 2011; Montgomery, 2011; David, 2011), and are all appended to this letter as attachments A, B, and C. No botanical, invertebrate, avian or mammalian species currently proposed, or listed under the ESA were detected during the course of the surveys conducted on the site (LeGrande, 2011; Montgomery, 2011; David, 2011).

The principal threat to native plant communities and listed plant species posed by this action are those associated with clearing and grubbing activities during the construction phase of the project. Native species dominated habitats such as the habitat present along the antenna feed lines corridor are susceptible to degradation from introduced alien weedy species typically associated with ground disturbance and construction activities. Additionally, given that the terrain between the facilities buildings and the down-slope antenna is quite steep, there is a potential risk that storm-water runoff flowing down the antenna feed line corridor during construction may result in erosion. Minimization measures to minimize both of these potential threats are presented in the minimization discussion.

The principal potential threat to native invertebrates, and this case the listed Hawaiian tree snail, *Achatinella mustelina* and *Drosophila substenptera*, posed by this proposed project are actions associated with clearing and grubbing activities during the construction phase of the project. As no *Achatinella mustelina* or *Drosophila substenptera* were recorded during the course of the surveys conducted on the site, it is not expected that this action will result in deleterious impacts to these species.

The principal potential threat to the threatened Newell's shearwater *(Puffinus auricularis newelli)* and endangered Hawaiian petrel *(Pterodroma sandwichensis),* posed by this proposed project are actions associated with 1) the installation of exterior lighting, and 2) the erection of structures which rise above the surrounding vegetation, Seabird species can be attracted to lights and are known to collide with buildings, light poles, wires, and other tall objects as they fly from the ocean to the mountains nesting sites, especially during the breeding season. As no nighttime construction activity will be allowed, and no lighting is proposed as part of this project, it is not expected that the proposed action will result in deleterious impacts to these or any other seabird species. The new antennae structure is un-guyed and will be painted white so as to be more readily visible to nocturnally flying birds.

The principal potential impact that the proposed action poses to endangered Hawaiian hoary bats (*Lasiurus cinereus semotus*), is during the clearing and grubbing phases of construction as vegetation is removed. Hawaiian hoary bats roost in both exotic and native woody vegetation. During the pupping season female carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared, additionally adult female bats sometimes leave their pups in the roost tree while they themselves forage, very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing. As there is no suitable

roosting vegetation on the site for this species, and woody vegetation taller than 4.6 meters (15-feet), will not be cleared during the bat pupping season it is not expected that the proposed project will result in deleterious impacts to this species.

Minimization Measures

The following minimization measures will be included in the construction contracts as special conditions.

- All construction personnel shall be briefed on the sensitivity of the habitat present down-slope from the fenced facilities, and will be informed of the need to follow all restrictions, protocols and Best Management Practices (BMP) contained in this documents and the special construction contract provisions.

- To prevent the introduction of exotic invasive species into the sensitive native dominated ecosystem below the site, all project-related materials, equipment and construction personnel boots and clothing used on the project site shall be cleaned of seedy soils prior to use on the site.

- Silt fencing and other appropriate Best Management Practices (BMP) measures will be installed and maintained for the duration of the construction phase of the project to ensure that no POL's or construction debris is allowed to migrate down-slope into the forest.

- Any cleared areas on steep slopes will be stabilized so as to ensure that erosion does not occur.

- Construction personnel will be restricted to within the project disturbance corridor so as to prevent trampling or further degradation of the habitat outside of the disturbance corridor.

- No personal pets will be allowed on the job site.

- All trash, especially those created from human comestibles shall be properly disposed of and removed from the site as soon as possible.

- If any vegetation replanting is proposed as part of this action only native plants suitable for the habitat present on the site shall be used where practicable.

NLAA Determination

Based on the above information, we have determined that the project will modify .093 acres of federally designated Critical Habitat, delineated for *Alsinidendron trinerve*, and O'ahu 'Elepaio. However the modification of this amount of Critical Habitat will not adversely affect the Critical Habitat units, or the species for which it was designated. Furthermore, that the action is not likely to adversely affect (NLAA) seven listed species, *Alsinidendron trinerve*, *Labordia*

cyrtandrae, O'ahu 'Elepaio, Hawaiian hoary bat, *Drosophila substenptera*, Newell's Shearwater or Hawaiian Petrel.

We respectfully seek your concurrence with this determination. If you have any questions, please feel free to contact our agent in this matter, Reginald David at (808) 329-9141, rdavid@ilhawaii.net. Thank you for your assistance.

Sincerely,

Reginald E. David

Appendices:

A – LeGrande, M. 2011. Botanical Resources Assessment for the Proposed Mt. Kaala Radio Facility Upgrades and Construction Mokuleia, Oahu, Hawaii

B – Montgomery, S. L. 2011. Invertebrates at the site of the Mt. Ka'ala Radio Facility Project, Mt. Ka'ala, O'ahu, Hawai'i.

C – David, R. E. 2011. Avian and Terrestrial Mammalian Surveys Conducted for the Information and Communication Services Division, Mt. Ka'ala Radio Facility Improvements Project, Waialua & Wahiawā Districts, Island of O'ahu.

D - USCG letter of agent.

cc. Ronald Sato – Helbert, Hastert & Fee Planners – Electronic Version
Herb Leong – Richard Matsunaga & Associates – Electronic Version
David Jandoc – Hawaii State DAGS – Electronic Version
Robert Hlivak – Hawaii State – Electronic Version
A.J. Wright, LCDR – US Coast Guard – Electronic Version

BOTANICAL RESOURCES ASSESSMENT FOR THE PROPOSED ICSD MT. KAALA RADIO FACILITY IMPROVEMENTS PROJECT OAHU, HAWAII

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MAY 2011

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INTRODUCTION

This report includes the findings of a plant inventory conducted in Mokuleia on the island of Oahu at the Mount Kaala Air Force Station (AFS). [TMK 6-7-003:23] The proposed project includes redesigning and constructing a new radio facility building to replace the state's existing one located inside the fenced AFS, running additional conduit above ground along Kamaohanui Ridge downslope to an existing microwave antenna site, and replacing and adding one satellite dish at the current microwave antenna site. LeGrande Biological Surveys Inc. carried out a botanical field survey of the above location on February 2, 2011. The primary objectives of the field studies were to:

1) inventory the flora;
2) provide a general description of the vegetation on the project site;
3) search for threatened and endangered species as well as species of concern; and
4) provide recommendations regarding potential impacts to the biological resources of the area in regards to the proposed conduit and antenna replacement project.

Federal and State of Hawaii listed species status follows U.S. Fish and Wildlife Listed and Candidate Species (USFWS 2008) and Federal Register (2002).

GENERAL SITE DESCRIPTION

The current project includes upgrades to the existing radio facilities building within the Mt. Kaala AFS as well as installing new conduit above ground along portions of Kamaohanui Ridge to an existing microwave antenna, replacing the existing antenna with an upgrade, and installing an additional antenna that currently exists on the top of the radio facility building. The project site is located in steep terrain that begins at a level area near the state's radio facility building and then drops down a ridgeline to the existing antenna dish. The Kamaohanui Ridge conduit route and antenna site portion of the project is located within the Mt. Kaala Natural Area Reserve. The elevation at the project site is approximately 3900 feet.

The vegetation along the ridgeline and at the antenna site is characteristic of a Montane Wet Shrubland habitat on Oahu. These communities are found at higher elevation above 1000m on cool, wet windward cliffs and upper ridges. Soils are shallow peat and/or clay layered over weathered lava (Wagner & Herbst, 1999). A semi-open canopy of native trees with an understory dominated by various fern species characterizes the vegetation of the study area.

METHODS

Prior to undertaking the field studies, a search was made of the pertinent literature to familiarize the principal investigator with other botanical studies conducted in the general area. Information from the Hawai`i Natural Heritage Program database and the USFWS

Critical Habitat was reviewed as well as personal communication with Betsy Gagne (DOFAW-NAR). Topographic maps were examined to determine terrain characteristics, access, boundaries, and reference points.

A walk-through survey method was used. Transects included walking along the current path of the telecommunications cable along Kamaohanui Ridge, as well as the location of the existing downslope microwave antenna. An area approximately 50 to 100 feet in all directions from the antenna site was surveyed and a corridor of 20 to 35 feet in width along the conduit route. In areas that were too steep to walk, binoculars were used to identify plant species. Notes were made on plant associations and distribution, disturbances, topography, substrate types, exposure, drainage, etc. Plant identifications were made in the field; plants that could not be positively identified, were photodocumented for later determination in the herbarium, and for comparison with the recent taxonomic literature.

VEGETATION

The study area is composed of a native Mixed Fern Shrubland, dominated by native plants species such as `ohi`a lehua (*Metrosideros polymorpha*), alani (*Melicope clusiifolia*), kanawao (*Broussaisia arguta*) and various fern species including, uluhe (*Dicranopteris linearis* f. *linearis*), hapu`u (*Cibotium* spp.), and `ama`u (*Sadleria cyatheoides*). The tree species tend to form a semi open canopy in most areas providing for abundant understory plants in the moist environment. Most of the tree trunks are matted with several species of moss as well as epiphytic ferns such as wahine noho mauna (*Adenophorus tamariscinus* var. *tamariscinus*) and hoe a Maui (*Elaphoglossum alatum*).

The ground layer is dominated by native fern species as well as other natives such as `ala`alawainui (*Peperomia membranacea*), ha`iwale (*Cyrtandra lessoniana*), and makole (*Nertera granadensis*). Vining species growing in and amongst the shrubs include hoe kuahiwi (*Smilax melastomifolia*) and the native mint kapana (*Phyllostegia grandiflora*). The dominant alien plant species is blackberry (*Rubus argutus*). The prickly branches grow throughout the shrubland, climbing trees and making traversing the understory difficult at times.

The majority of the introduced plant species can be found either along the trail to the antenna or at the antenna site itself. Disturbance to the substrate and weed seeds on tools and/or clothing and boots are all vectors of dispersal of weed seeds. Weedy species observed at the antenna site include; Koster's curse (*Clidemia hirta*), narrow-leaved carpetgrass (*Axonopus fissifolius*), Maui pamakani (*Ageratina adenophora)*, fuchsia begonia (*Begonia foliosa*), and fiddlewood (*Citharexylum caudatum*). A few trees of strawberry guava (*P. cattleianum*) were also observed to the west of the antenna site in a small gulch. About half of the trees were cut down (Montgomery, pers.comm), but additional eradication efforts should be made to eradicate this rogue population.

Several individuals of ginger (*Hedychium* sp.) were observed growing along feral pig (*Sus scrofa*) trails in the project area. Disturbance of the understory by pigs also appears to be a factor in alien plant establishment.

There were a total of 60 plant species documented within the survey area. 46 species are native (76%) and 14 are introduced (23%). An inventory of all the plants observed within the study area is presented in the species list at the end of the report.

CRITICAL HABITAT

A portion of the study area falls within the Unit 4 Critical Habitat Area of Oahu designated by the USFWS (Federal Register, 2003). Critical Habitat is a term used to define a specific geographic area(s) that has features essential for the management or conservation of a threatened or endangered species (USFWS, 2009). Not all listed Threatened or Endangered species have Critical Habitat designations. Designation of Critical Habitat for a particular species does not necessarily mean that individuals of the species are present in that unit, but that it has the potential to be there due to the optimum habitat requirements for that species within the particular unit.

There are two plant taxa that have critical habitat designation within Unit 4 that overlap the study area, they are: *Alsinidendron trinerve* and *Labordia crytandrae*. No individuals of either of these species were observed within the study site during this survey. The study area within the natural area preserve encompasses a small corridor for the conduit and the current antenna site. The main concerns for the native plant species within the study site are the presence of feral pigs and alteration to the substrate by humans that can cause open denuded areas of soil providing weeds space to invade and spread.

DISCUSSION & RECOMMENDATIONS

None of the plants observed during the survey is a threatened or endangered species or a species of concern (U.S. Fish and Wildlife Service, 2008). Although no endangered or threatened plant species were found during the survey of the project site, the native habitat is primarily intact and care should be taken while accessing and clearing the project site to limit ground disturbance. Several non-native plant species were only located at the base of the existing antenna where the ground had been disturbed during previous work in the area. Uprooting native plants and disturbing the soil provides extant weed species with more opportunity to become established. Any future disturbance in the area can also have the possibility of introducing new invasive plant species to the area that have the potential to spread into adjacent native forest areas.

The proposed radio tower and antenna project could have significant negative impacts on the botanical resources of the site and the general region if care is not taken to limit ground disturbance and unintentional weed introductions. All gear including boots, clothing, tools, etc. should be cleaned daily during the construction phase and only used at the Mt. Kaala location for the duration of the project. Removal and/or cutting back of

native plants should be limited to the minimum amount of clearance needed to execute the project. Installing semi-permanent level steps and or hand holds along the ridge and at the antenna site may help in preventing erosion during the construction phase of the project. A follow up survey to monitor for any new introduced weed species post construction is recommended. An initial observation followed by subsequent visits at several month intervals may aid in catching any new introduced weed species and exterminating them before they can spread.

The essential upgrades to the state's radio building and antenna need not have a detrimental effect to the environment if careful planning and execution of the construction phase is undertaken.

LITERATURE CITED

Evehuis, N.L. and L.G. Eldredge, editors. 1999-2002. Records of the Hawaii Biological Survey. Bishop Museum Occasional Papers Nos. 58-70.

Federal Register. 2003. Department of the Interior, Fish and Wildlife Service, 50 CFR 17. Endangered and Threatened Wildlife and Plants. Final Designations or Non Designations of Critical Habitat for 101 Plant Species from the Island of Oahu, HI, Final Rule. *Federal Register*, 68 No. 116 (Thursday, June 13, 2003).

Foote, D.E., E.L. hill, S. Nakamura, and F. Stephens. 1972. Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.

Staples, G. and D.R. Herbst. 2005. A Tropical Garden Flora: plants cultivated in the Hawaiian Islands and other tropical places. Bishop Museum Press, Honolulu, HI.

U.S. Fish and Wildlife Service. 2008. Hawaiian Islands Plants: Updated April 14, 2008 Listed and Candidate Species, as Designated under the U.S. Endangered Species Act. 21pp.

U.S. Fish and Wildlife Service. 2009. Critical Habitat Fact Sheet. Updated July 2009. http://www.fws.gov/Midwest/endangered/saving/CriticalHabitatFactSheet.html

Wagner, W.L. and D.R. Herbst. 1999. Supplement to the Manual of the flowering plants of Hawaii, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawaii. Revised Edition. 2 vols. University of Hawaii Press and Bishop Museum Press, Honolulu.

TABLE 1. PLANT SPECIES LIST

The following checklist is an inventory of all the plant species observed within the survey areas of the proposed Mount Kaala Telecom Antenna Location during a site visit on February 2, 2011. The plant names are arranged alphabetically by family and then by species into three groups: Pteridophytes, Monocots, and Dicots. The taxonomy and nomenclature of the Ferns and Fern Allies follow Palmer (2002), flowering plants (Monocots and Dicots) are in accordance with Wagner *et al*. (1990), Wagner and Herbst (1999) and Staples and Herbst (2005). Recent name changes are those recorded in the Hawaii Biological Survey series (Evehuis and Eldredge, eds., 1999-2002) and the BISH native-naturalized checklist March 2010.
For each species, the following name is provided:

1. Scientific name with author citation.
2. Common English and/or Hawaiian name(s), when known.
3. Where the plant was observed; marked as in either the coastal or mauka sections of the project area or both.
4. Biogeographic status. The following symbols are used:

A = Alien species introduced to the Hawaiian Islands by humans, intentionally or accidentally.

I = Indigenous species native to the Hawaiian Islands and also found elsewhere in the world.

E = Endemic species found only in the Hawaiian Islands.

SCIENTIFIC NAME	COMMON NAME	STATUS
PTERIDOPHYTES		
ASPLENIACEAE		
Asplenium contiguum var. *contiguum* Kaulf.		E
Asplenium polyodon G.Forst.	punana manu	I
ATHYRIACEAE		
Athyrium microphyllum (Sm.) Alston	`akolea	E
BLECHNACEAE		
Blechnum appendiculatum Willd.		X
Sadleria cyatheoides Kaulf.	`ama`u	E
Sadleria pallida Hook.&Arn.	`ama`u `i`i	E
DENNSTAEDTIACEAE		
Hypolepis hawaiiensis var. *hawaiiensis*	olua	E
DICKSONIACEAE		
Cibotium glaucum (Sm.) Hook.&Arn.	hapu`u pulu	E
Cibotium menziesii Hook.	hapu`u `i`i	E
DRYOPTERIDACEAE		
Nothoperanema rubiginosa (Brack.) A.R.Sm. & D.D. Palmer		E
Dryopteris glabra var. *glabra* (Brack.) Kuntze	kilau	E
ELAPHOGLOSSACEAE		
Elaphoglossum alatum Gaudich.	hoe a Maui	E
GLEICHENIACEAE		
Dicranopteris linearis (Burm. f.) Underw. f. *linearis*	uluhe, unuhe	I
Diplopterygium pinnatum (Kunze) Nakai	uluhe lau nui	E

GRAMMITIDACEAE		
Adenophorus tamariscinus var. *tamariscinus*	wahine noho mauna	E
Adenophorus tripinnatifidus Gaudich.		E
Grammitis tenella Kaulf.	mahinalua	E
HYMENOPHYLLACEAE		
Mecodium recurvum (Gaudich.) Copel.	ohia ku	E
LYCOPODIACEAE		
Lycopodium venustulum var. *venustulum*		I
POLYPODIACEAE		
Lepisorus thunbergianus (Kaulf.) Ching	pakahakaha	I
PSILOTACEAE		
Psilotum nudum (L.) P. Beauv.	moa, moa nahele	I
ANGIOSPERMS--MONOCOTS		
CYPERACEAE		
Machaerina angustifolia (Gaudich.) T.Koyama	`uki	I
IRIDACEAE		
Crocosmia x_crocosmiiflora (Lemoine ex Burbidge & Dean) N.E.Br.	montbretia	X
LILIACEAE		
Astelia menziesiana Sm.	kaluaha	E
Dianella sandwicensis Hook. & Arn.	`uki`uki	E
POACEAE		
Axonopus fissifolius (Raddi) Kuhim.	narrow-leaved carpetgrass	X
Andropogon virginicus L.	broomesedge, yellow bluestem	X
Sacciolepis indica (L.) Chase	Glenwood grass	X

SMILACACEAE		
Smilax melastomifolia Sm.	hoi kuahiwi	E
ZINGIBERACEAE		
Hedychium sp.	ginger	X
DICOTS		
AQUIFOLIACEAE		
Ilex anomala Hook.& Arn.	kawa`u	I
ARALIACEAE		
Cheirodendron platyphyllum subsp. *platyphyllum* (Hook.&Arn.) Seem.	lapalapa	E
Cheirodendron trigynum subsp. *trigynum* (Gaudich.) A.Heller	olapa	E
ASTERACEAE		
Ageratina adenophora (Spreng.) R.M.King & H.Rob.	Maui pamakani	X
BEGONIACEAE		
Begonia foliosa Kunth	fuchsia begonia	X
CAMPANULACEAE		
Trematolobelia macrostachys (Hook. & Arn.) Zahlbr.	koli`i	E
CELASTRACEAE		
Perrottetia sandwicensis A.Gray	olomea	E
EPACRIDACEAE		
Leptecophylla tameiameiae (Cham & Schlecht) C.M. Weiller	pukiawe	I
ERICACEAE		
Vaccinium calycinum Sm.	`ohelo	E

GESNERIACEAE		
Cyrtandra lessoniana Gaudich	ha`iwale	E
GUNNERACEAE		
Gunnera petaloidea Gaudich.	`ape`ape	E
HYDRANGEACEAE		
Broussaisia arguta Gaudich.	kanawao	E
LAMIACEAE		
Phyllostegia grandiflora (Gaudich.) Benth.	kapana	E
MELASTOMATACEAE		
Clidemia hirta (L.) D. Don var. *hirta*	Koster's curse	X
MYRSINACEAE		
Myrsine lessertiana A.DC.	kolea lau nui	E
Myrsine sandwicensis A.DC.	kolea lau li`i	E
MYRTACEAE		
Metrosideros polymorpha var. *polymorpha* Gaudich.	`ohi`a lehua	E
Metrosideros tremuloides (A.Heller) Knuth	lehua `ahihi	E
Psidium cattleianum Sabine	Strawberry guava, waiwi `ula`ula	X
Syzygium sandwicensis (A.Gray) Nied.	`ohi`a ha	E
PIPERACEAE		
Peperomia membranacea	`ala`alawainui	E
PLANTAGINACEAE		
Plantago major L.	common plantago	X
PLANTAGINACEAE		
Plantago lanceolata L.	Narrow-leaved plantain	X

ROSACEAE		
Rubus argutus Link	prickly Florida blackberry	X
RUBIACEAE		
Coprosma ochracea	pilo	E
Kadua affinis DC.	manono	E
Nertera granadensis (Lf.) Druce	makole	I
RUTACEAE		
Melicope clusiifolia (A.Gray) T.G.Hartley & B.C.Stone	alani	E
Melicope oahuensis (H.Lev.) T.G.Hartley & B.C.Stone	alani kuahiwi	E
VERBENACEAE		
Citharexylum caudatum L.	fiddlewood	X

Terrestrial Invertebrate resources at the site of the Mt. Ka‘ala Radio Facility Project, Mt. Ka’ala, O’ahu, Hawai’i

Prepared by:
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Submitted to: Helber Hastert & Fee Planners, Inc.

For: Richard Matsunaga and Associates Architects, Inc.

REVISED May 26, 2011

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SUMMARY
The Mount Ka'ala project sites sampled in this survey yielded native and adventive terrestrial invertebrates. No invertebrate currently listed as endangered or threatened under either federal or state statutes was observed within the survey area. I found the habitat little changed since my last visit in June 2001.

INTRODUCTION
This report summarizes the findings of a survey conducted by Steven L. Montgomery, Ph. D., to provide information as part of regulatory documents to be prepared by the planning firm Helber Hastert & Fee Planners, Inc. in connection with the Information and Communication Services Division Mt. Ka'ala Radio Facility Improvements Project.

The project proposes to conduct repair and replacement actions related to communications equipment at the summit of the Waianae mountains, O'ahu (Figure 1). Tasks include

- replace an existing telecommunications tower at the same location
- repair and renovation improvements of an existing radio facility State building
- extend electrical conduits between State and Federal buildings
- replace existing conduit lines with new conduits running approximately 200 ft away and 90 feet down slope from the State building to an existing antenna site, and other accessory electrical improvements.

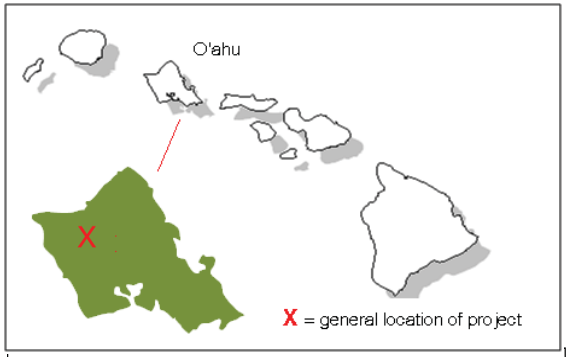

Figure 1: General location of project in Hawaiian Island chain.

These activities will take place in well-defined areas at the summit of Mt. Ka'ala, O'ahu. The majority of the activity is in locations that already have cement pads or other altered environments. A portion of the activity will require work in a narrow 20 ft. corridor during construction and an 8ft. easement after completion (Figure 4, red line) within a small portion of the state's Mount Ka'ala Natural Area Reserve (Figure 2).

Figure 2: Ka'ala Natural Area Reserve
from DLNR/DOFAW web site

SURVEY METHODS

Since 1970, I have taken part in field projects on the Island of O'ahu, several on Mt. Ka'ala, and others throughout the island chain. My study design and my analysis of results utilize those experiences and the results of other surveys.

Previous Surveys and Literature Search

A search was made for independent biological studies associated with this site or with nearby sites. Searches were made for publicly available articles mounted on the web (Google Scholar, University of Hawaii's Scholar Space). Searches were made in the Pacific Basin Information Node (2011) a database which provides geographic access. Searches also were made in Bishop Museum's Arthropod and Mollusk checklists for species utilizing 'kaala' as part of the species name.

A search at the State's Office of Environmental Quality Control (2010) web site for surveys done at this site or in adjacent areas returned no results. This is not surprising as there has been no construction in the area for many years. Access to the project area has been limited by the remote location, by government security, and by restrictions associated with the current status of a portion of the mountain as a Natural Area Reserve.

It should be remembered that the place name Ka'ala applies to the entire mountain in some databases and even the designation 'summit' or 'top' covers a wide area. The focus of this survey was a very narrow and defined area and it is to be expected that many species noted as present on Mt. Ka'ala in published studies, and in museum collections and databases will not be found by this survey.

Fieldwork

Field surveys were conducted February 2 and 3, 2011. I conducted a general assessment of terrain and habitats at the start of the survey. Surveying efforts were conducted at various times of day and night, vital for a thorough survey. Field collaboration with botany surveyor M. LeGrande was helpful to my invertebrate searches.

Fieldwork schedule:

February 2, 2011	Orientation, general invertebrate collecting; light survey
February 3, 2011	Half-day of general invertebrate collecting

SURVEY METHODS:

The following survey methods for terrestrial invertebrates were used as appropriate to the terrain, botanical resources, and target species.

Baiting: Baits are used to attract insect species to specific tastes or smells. For example, native *Drosophila* respond to a mushroom or banana bait. Baits can mimic that smell and taste and so attract those insects. Insects are enticed by the bait's 'advertisement.' Baits are placed at likely locations and checked periodically. Any insects at the bait are then observed and censused. This is much more efficient than roaming the research area seeking cryptic or night feeding insects.

Host plant searches: Potential host plants, both native and introduced, were searched for arthropods that feed or rest on plants.

Light survey: A survey of insects active at night is vital to a complete record of the fauna. Many insects are only active at night to evade birds, avoid desiccation and high temperatures, or to use night food sources, such as night opening flowers. Light sampling uses a bright light source in front of a white cloth sheet (Figure 3). Night active insects seem to mistake the collecting light for the light of the moon, which they use to orient themselves. In attempting to navigate by the collecting light, disoriented insects are drawn toward the light and land on the cloth in confusion. This type of collecting is most successful during the dark phase of the moon or under clouds blocking starlight.

Figure 3. Light census on Ka'ala

Survey Methods continued

Sampling was conducted for approximately 8 hours on the night of Feb 2, 2011. Both mercury vapor (MV) and ultraviolet (UV) light sources were used. Lights associated with nearby buildings did provide some competition to my light survey.

The location for the light was mandated by NARS staff, Ms. B. Gagné, due to concern for damage to specific plants in the survey area. The sample location, marked on Figure 4, is close enough to the proposed construction area to offer a fair survey sample of the night active invertebrate fauna.

Figure 4. Map showing light monitoring sites (**X**). Red line shows route of conduit.

Survey Methods continued

Sweep nets: Sweeping is a common method of general collecting for most flying and perching insects. A fine mesh net was swept across plants, leaf litter, rocks, etc. to collect any flying, perching, or crawling insects. Transfer from the net was either by aspiration, or by placing the net contents directly into a holding container.

Visual observation: At all times, I was vigilant for any visual evidence of arthropod presence or activity. Visual observations provide valuable evidence and are a cross check that extends the reach of sampling techniques. Visual observation also included turning over rocks, examining dead wood, and other debris.

SURVEY LIMITATIONS / CONDITIONS
My ability to form advisory opinions is influenced in the following ways:

Collecting conditions:
Weather: Weather was favorable for surveying on both days of the survey.

Seasons:
Seasonal variation in vegetation was not a factor in the native invertebrates inventoried.

Weather and seasonal vegetation play an important role in any biological survey. Host plant presence/absence, and seasonal changes, especially plant growth after heavy rains, affect the species collected. Many arthropods time their emergence and breeding to overlap or follow seasonal weather, or to coincide with growth spurts of an important food plant. Monitoring at a different time of the year might produce a longer / shorter / different list of species.

Moon: The moon was 'dark' and presented no competition to the collecting light on the evening of February 2, 2011 (USNO).

Limited duration: Because the size of the project area is relatively small, the mobility of invertebrates makes it possible that surveying for a longer period of time would enlarge the list of invertebrate species. A few species reasonably expected to occur on the property were not observed but are likely present (see Species May Be Present, pg. 8).

Selectivity: The terrestrial invertebrate survey was focused on finding any endemic and indigenous Hawaiian species. No attempt was made to completely document the common alien arthropod species present.

RESULTS OF SURVEY:
Native Hawaiian plant, vertebrate, and invertebrate populations are interdependent. Certain insects are obligatorily attached to host plants and use only that plant as their food and / or provide pollination for native plants. Invertebrates such as insects and snails, as well as the fruit and seeds of native plants, are the natural food of native birds. The health of native Hawaiian ecosystems depends on habitat quality and absence or low levels of continental predators and herbivores. Sufficient food sources, host plant availability, and the absence of continental dominants comprise a classic healthy native ecosystem. Consequently, where appropriate in the survey discussion, host plants, and introduced arthropods, birds, and mammals, are noted.

General observation:
Having made a number of visits to the Mt. Ka'ala NARS over a 40-year period, I am pleased to say the vegetation and native invertebrate species appeared to be in generally good condition similar to my last visit.

Incidental records:
In addition to the results noted below, the following species were noted in passing during the survey:

Pig trails were seen in the survey area and pigs (*Sus scrofa scrofa*) were seen running ahead of the vehicle on the road 1 mile below the work site.

DISCUSSION
Native terrestrial invertebrate species observed are listed in Table 1.

Species of Interest
INSECTA
Lepidoptera: Geometridae
The Lehua pug moth (*Eupithecia*) was among the most abundant native invertebrates present.

Species of Interest continued

Diptera: Cecidomyiidae
Heteroconarinia spinosa Hardy, 1960
Of note are the fly larvae found in the half-unfolded terminal leaf of a *Melicope* species (Figure 5). The larvae did not respond to a variety of foods offered in the lab in an attempt to rear them to adult to allow a definite species identification. The circumstances of their discovery, however, mirror a report by entomologist P. H. Timberlake in March 1917 (1918). He reports capturing a female laying eggs in the same part on the same plant genus on Mt. Ka'ala, but the eggs did not hatch in his lab.

Figure 5. *Melicope* leaves (folded leaf circled) and opened leaf on right showing larvae.

SPECIES NOT OBSERVED, MAY BE PRESENT ON THE SITE
INSECTA
Diptera: Drosophilidae*: Drosophila* sp. Picture-winged flies
None of the native *Drosophila* species recently listed as endangered or threatened were observed and the host plants are not present on this route. It should be noted, however, that one area of the critical habitat for *Drosophila substenoptera* was designated on Mt. Ka'ala (Figure 6). (USFWS 2006, 2008). The specific host plant associated with *D. substenoptera, Cheirodendron,* was seen on the site, but only on the edge of the survey area and at a size and condition unsuitable to host *D. substenoptera* (LeGrande 2011).

Species Not Observed:
Drosophila continued

The conduit route and repair work to other facilities are well outside the actual border of the critical habitat (Figure 7).

Although the specific areas covered by this survey were not conducive to their presence, *Drosophila* of several species do thrive in the near vicinity based on other surveys (Montgomery 1994; PBIN 2011).

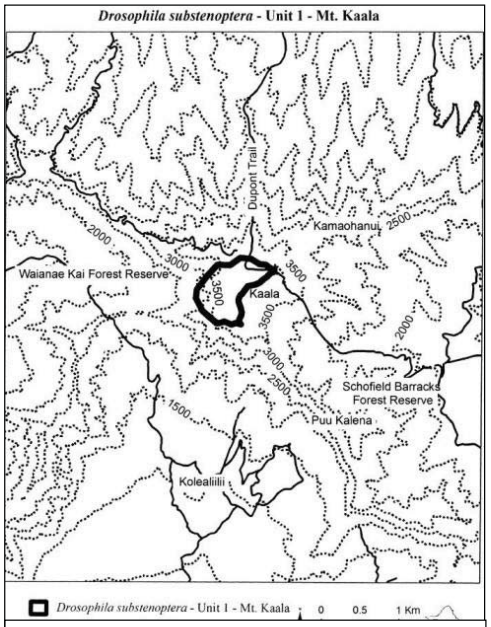

Figure 6. Mt. Ka'ala critical habitat for *Drosophila substenoptera*

Figure 7. *Drosophila substenoptera* critical habitat / project location

Species Not Observed, May Be Present continued

Odonata: Coenagrionidae *Megalagrion koelense* Hawaiian damselfly
Megalagrion koelense (Blackburn, 1884), although not seen on this visit, does exist on Mt. Ka'ala. I have observed the larvae in axils of 'ie'ie (*Freycinetia arborea*) in past visits to the mountain and it was taken previously by others (e.g., PBIN 2011: ent 2950 Bryan Jr., E.H.1929 Apr 21). The adults are free flying, take smaller insects as prey, and should not be disturbed by the planned project activity. Eggs are laid and the young develop in phytotelmata, such as the small amounts of water in the 'ie'ie axils. As long as the project does not remove any of the host plants, the larvae will be undisturbed.

MEDICALLY IMPORTANT SPECIES ON THE SITE
Although not seen during the survey, the larger Ka'ala area may include habitat for centipedes, scorpions, and widow spiders. Both honey bees (*Apis mellifera*) and Western yellowjacket wasps (*Vespula pensylvanica*), a known alien predator on *Drosophila*, have been seen.

Western yellowjacket wasps (Figure 8) are a ground-nesting species and can be very aggressive. Unlike honey bees they do not die when they sting and individuals can sting repeatedly. Although it is unlikely a nest is in the construction route, extreme caution should be used if a nest is found. Cordon off the adjacent area. Do not attempt eradication without protective clothing and instruction. Request professional assistance from the nearest Hawai'i State Department of Health, Vector Control Branch.

Figure 8 Ground nest of yellowjacket wasp. Wasps can sting repeatedly in large numbers.

Those entering the property should be alert for the species noted above as they may pose a serious risk to some individuals, and supervisors should be aware of any employee allergies. Some individuals can experience anaphylactic reactions to venom. Never put hands where eyes cannot see. Workers can greatly reduce the risk of accidental contact and bites or stings with all species noted here with appropriate clothing. Recommended are the use of gloves and wearing long sleeved shirt, long pants, boots with socks pulled up over pant cuffs.

Please see *What Bit Me?* (Nishida & Tenorio 1993) and *What's Bugging Me?* (Tenorio & Nishida 1995).

Table 1: List of Invertebrates seen in the survey

Species	Common Name	Status	Abundance	Notes
MOLLUSCA				
GASTROPODA				
PULMONATA	snails and slugs			
Cochlicopidae				
Laminella sp.		End	U	
Leptachatina sp.		End	O	
Succineidae				
Succinea sp.		End	C	
ARTHROPODA				
ARACHNIDA				
ACARI	mites			
Oribatidae				
Oribotritia n. sp.	moss mite			
ARANEAE	spiders			
Salticidae	jumping spider			
unidentified species		?	U	seen but not captured
CRUSTACEA				
AMPHIPODA				
Talitridae	sandhoppers			
Platorchestia kaalaensis (Barnard, 1955)		End	U	
INSECTA				
COLEOPTERA	beetles			
Aglycyderidae				
Proterhinus cristatus Perkins, 1931		End	U	
Nitidulidae				
Nesapterus monticola (Sharp, 1878)		End	R	
Staphylinidae				
Myllaena vicina Sharp		End	U	
COLLEMBOLA	springtails			
Entomobryidae				
Tomocerus minor (Lubbock)		Adv	A	
DIPTERA	flies, mosquitoes			
Calliphoridae				
Dyscritomyia cuprea James, 1981		End	O	
Cecidomyiidae				
Heteroconarinia spinosa Hardy, 1960 ?	alani plant midge	End	R	see notes

Table 1: continued

Species	Common Name	Status	Abundance	Notes
Diptera continued				
Drosophilidae				
Tantalia albovittata (Malloch)		End	U	
Titanochaeta swezeyi Wirth		End	U	pupa in web
Muscidae				
Lispocephala kaala Williams, 1938		End	U	
HETEROPTERA	true bugs			
Miridae				
Hyalopeplus pellucidus (Stal)		End	C	
Nesiomiris beardsleyi Gagne, 1997		End	U	
Reduviidae				
Saldula sp.		End	O	
HOMOPTERA	planthoppers			
Cixiidae				
Oliarus kaonohi Kirkaldy		End	U	
Psyllidae				
Hevaheva silvestris Kirkaldy		End	O	
Trioza ohiaicola Crawford, 1918		End	A	
HYMENOPTERA	wasps, bees, ants			
Apidae				
Apis mellifera L.	honey bee	Adv	O	
Vespidae				
Vespula pensylvanica (Saussure, 1857)	western yellow-jacket	Adv	U	
ICHNEUMONIDAE	wasps			
Enicospilus kaala Ashmead, 1901		End	U	
LEPIDOPTERA				
Cosmopterigidae	case bearers			
Hyposmocoma sp. 1	black, pointed adult	End	U	
Crambidae (Pyralidae)	micro-moths			
Eudonia ombrodes (Meyrick,1888)	moss moth	End	A	
Geometridae	pug moths			
Eupithecia craterias (Meyrick, 1899)		End	O	
Eupithecia monticolens Butler, 1881		End	C	
Eupithecia n. sp. #7		End	U	
Eupithecia n. sp. #8		End	R	
Scotorythra corticea	looper moths	End	U	
Scotorythra epixantha (Perkins, 1901)		End	U	
Scotorythra rara (Butler)		End	C	
Scotorythra paludicola (Butler)	koa moth	End	U	
Scotorythra species 1		End	U	

Table 1: continued

Species	Common Name	Status	Abundance	Notes
Lepidoptera continued				
Lycaenidae				
Udara blackburni (Tuely, 1878)	Blackburn's butterfly	End	C	
Noctuidae				
Ascalapha odorata (Linnaeus, 1758)	black witch moth	Adv	O	
Haliophyle flavistigma (Warren, 1912)		End	U	
Pyralidae				
Omiodes antidoxa Meyrick		End	U	
Sphingidae	hawk moths			
Hyles calida (Butler)		End	R	
Tortricidae				
Eccoptocera foetorivorans (Butler)	ohia leaf webber	End	U	
Spheterista pleonectes (Walsingham, 1907)		End	R	
ODONATA	dragonflies; damselflies			
Aeshnidae				
Anax strenuus Hagen		End	U	
Libellulidae				
Pantala flavescens (Fabricius, 1798)	globe skimmer	Ind	O	
ORTHOPTERA	praying mantis, grasshoppers, crickets			
Tettigoniiidae				
Banza sp.		End	U	immature
PSOCOPTERA	bark - lice			
Psocidae				
Ptycta kaala Thornton 1984		End	O	

Status:

End	endemic to Hawaiian Islands
Ind	indigenous to Hawaiian Islands
Adv	adventive
Pur	purposefully introduced
?	unknown

ABUNDANCE = occurrence ratings:

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

SPECIES BELIEVED NOT PRESENT ON THE SITE
INVERTEBRATES

Alien predatory ants are a major cause of low numbers of native arthropods. The absence of ants such as the bigheaded ant (*Pheidole megacephala*) and longlegged ant (*Anoplolepis gracilipes*) which prey on other insects (Zimmerman 1948-80), is a major factor in the diversity of native species at Ka'ala. Ants are well documented as a primary cause of low levels of native arthropods (Perkins 1913). Ant populations often do not overlap. Rather the species have separate territories, effectively apportioning the hunting grounds between themselves, offering few, if any, ant-free zones where native arthropods can thrive.

ARTHROPODA
INSECTA

Hymenoptera: Colletidae: *Hylaeus* sp. Yellow-faced bee

The yellow faced bee was not observed in this survey. A search of the specimen data base of Bishop Museum's extensive collections did not retrieve any *Hylaeus* records from the summit of Ka'ala (PBIN). Similarly, a thorough study of the species by Daly & Magnacca (2003), does not list any collections from Ka'ala in the Recent Collections table. The only *Hylaeus* record found in my 1994 survey of records was from 1906, at 1500 ft., far below the current survey location.

Lepidoptera: Sphingidae *Manduca blackburni* Blackburn's sphinx moth

Blackburn's sphinx moth (*Manduca blackburni*), (Figure 9) an endangered species (USFWS 2000) which favors leeward slopes, was not found in this survey. The moth's solanaceous native host plant, 'aiea (*Nothocestrum* sp.), and best alien host, tree tobacco (*Nicotiana glauca*), were not observed on the property in my own survey, or the current botanical survey (LeGrande 2011 pers. com.). Neither *Capparis sandwichiana*, nor other known nectar plants favored by the adult moth, were encountered in my surveying, or the current botanical survey (LeGrande 2011 pers. com.).

The moth has not been seen on O'ahu for many decades. The *Recovery Plan* (USFWS 2003, 2005) for this large sphinx moth proposes only one Management Unit on O'ahu, at the location of the Nature Conservancy's Honouliuli Preserve, now in state control.

© Figure 9 Blackburn's sphinx moth is distinguished from other hawk moths by orange markings.

Species believed not present continued

Odonata: Coenagrionidae *Megalagrion pacificum* Hawaiian damselfly

Megalagrion pacificum proposed as endangered (USFWS 2010a), was not seen during this survey, and is unlikely to be found on site, as the area does not provide the habitat associated with the species.

POTENTIAL IMPACTS
Potential Impacts on Native, Rare, Federally or State Listed Species

No federally or state listed endangered or threatened invertebrate species were noted in this survey (DLNR 1996, 1997; USFWS 2010b, 2011).

RECOMMENDATIONS
Prevent habitat degradation:

A **Best Practices Management Plan** for construction should be written and implemented specifying methods and controls for the entire construction zone to prevent runoff, spills, and impact on the habitat. Establish construction staging areas and storage of materials in the paved areas.

Invasive species, alien to a Hawaiian ecosystem, can do terrible damage to native invertebrates and reduce native plant pollinators, and food resources for native birds. Two factors influence establishment of alien species which prey on and compete with native species: access and regular food sources.

To prevent establishment of alien species:

Inspect construction materials for hitchhiking seeds or animals. Soil packed in tires, on helicopter runners, or workers' boots can transport seeds and insect or snail eggs. Ants, snails and slugs, and many other invertebrates can hide in boxes or equipment resting at one location and later be carried to Ka'ala. If replanting after construction, care should be taken to prevent alien plant or animal species from being introduced on the plantings, associated soil, or pots.

Clean tools, boots, and equipment used at other projects to minimize the chance of transporting new pest plants or animals to the area.

Remove trash regularly. Predatory invertebrate species such as ants easily establish in areas where food trash is consistently available. Food trash during construction can attract mongoose, cat, and rat populations as well, resulting in predation on birds and native seeds. Provide trash cans at construction areas where food is consumed, keep cans covered. Importantly, construction supervisors need to establish a culture of using the receptacles. Carry out trash at the end of each work day.

As no mosquitoes were seen during this survey, it will be important not to provide habitat for them to begin breeding. Even a small amount of water created in trash (e.g., Vienna sausage can) is sufficient for breeding. Mosquitoes are known to be vectors of disease for humans (*Aedes albopictus*, dengue) and birds (*Culex quinquefasciatus*, bird malaria). Care should be taken during construction and in design of new facilities not to create areas that will collect and hold standing water.

Other precautions

Restrict animal access: Do not allow employees or others to bring pet dogs or cats to the work site. Even well behaved animals can escape a leash and fail to return on command.

No baiting for pigs: Under no circumstance should employees bait or feed pigs with the intention of hunting. The net effect is to increase the number of pigs attracted to the work site. If pigs are seen, advice should be sought from NARS staff.

Shield external lighting:

During construction and in the finished project, it will be important to plan to shield outdoor lighting. Unshielded lighting is well-known for confusing, exhausting, and stranding sea birds making them vulnerable to predators. Additionally, artificial lighting is attractive and confusing to many arthropods (see *Methods* page 4), concentrating them as easy prey for feeding bats at night. Insects attracted to lights at night often remain in place at dawn and are easily seen and consumed by birds. The lowest practical level of lighting should be used.

Landscape with native plants:

We recommend revegetation of disturbed areas with native plants from the Ka'ala environment. Native plants would provide habitat for native arthropods, while eliminating the chance of erosion around the base of new installations. Native invertebrates will find this refuge over time. Native birds will obtain food from fruits, seeds, and the native invertebrates.

NARS staff can provide an appropriate species list and by prior arrangement with growers, native Hawaiian plants can be as convenient to re-plant as the introduced plants commonly used to re-vegetate after new construction. Plants grown from seeds gathered from Ka'ala plants would be especially well adapted to local conditions.

Worker Education:

The best defense any fragile ecosystem can have is an informed public. Providing defined pathways to and from work sites will reduce trampling of plants and disturbance of wildlife. Providing information and guidance about working on Ka'ala to all crew members will ensure preservation of the maximum habitat during the project. Because of the presence of feral pigs, using and firmly closing all gates each and every time will be important. (See pig feeding and trash above)

ACKNOWLEDGMENTS

Thanks are extended to NARS and DOFAW staff for assistance in access and permitting and to Maya LeGrande for assistance in the field.

Steven Lee Montgomery directed all surveys and is responsible for all conclusions. Anita Manning contributed to preparation of this report. Some images used in this report were not taken in the course of this project. These photos, marked by © symbol were made by Anita Manning and/or S. L. Montgomery prior to this contract and were chosen because they best illustrate the subject.

STANDARD NOMENCLATURE

Invertebrate names follow

Freshwater & Terrestrial Mollusk Checklist (HBS 2002b)
Common Names of Insects & Related Organisms (HES 1990)
Hawaiian Terrestrial Arthropod Checklist (HBS2002a; Nishida 2002)

Mammal names follow *Mammals in Hawai'i* (Tomich 1986) and *Hawaiian Mammal Checklist* (HBS 2002d)

Place name spelling follows *Place Names of Hawai'i* (Pukui et al. 1976)

Plant names follow

Manual of the Flowering Plants of Hawai'i (Wagner et al. 1999)
A Tropical Garden Flora (Staples and Herbst 2005)
Hawaiian names follow Pukui & Elbert (1986).

ABBREVIATIONS

DLNR	Department of Land and Natural Resources, State of Hawai'i
DOFAW	Division of Forestry and Wildlife, State of Hawai'i
ft	feet
HBS	Hawai'i Biological Survey
m	meter
MV	Mercury Vapor
n.	new
NARS	Natural Area Reserve System
sp.	species
spp.	more than one species
USFWS	United States Fish and Wildlife Service
UV	Ultraviolet

GLOSSARY[1]

Adventive: organisms introduced to an area but not purposefully.

Alien: not native; occurring in the locality it occupies ONLY with human assistance, accidental or purposeful. Polynesian introductions (e.g., coconut) and post-1778 introductions (e.g., guava, goats, and sheep) are aliens.

Anaphylactic: hypersensitivity; may cause shock, respiratory distress, swelling, other problems

Arthropod: insects and related invertebrates (e.g., spiders) having an external skeleton and jointed legs.

Aspiration: invertebrates are transferred from original location (leaf, net, etc.) into a large vial. Two tubes are lodged in one stopper in the vial. Air drawn in on one tube, creates suction at the end of the second tube; the target insect is drawn into the vial by the pulling air.

Endemic: naturally occurring, without human transport, ONLY in the locality occupied. Hawaii has a high percentage of endemic plants and animals, some in very small microenvironments.

Indigenous: naturally occurring without human assistance in the locality it occupies; may also occur elsewhere, including outside the Hawaiian Islands. (e.g., Naupaka kahakai (*Scaevola sericea*) is the same plant in Hawai'i and throughout the Pacific).

Insects: arthropods with six legs, and bodies in 3 sections

Invertebrates: animals without backbones (insects, spiders, snails / slugs, shrimp)

Larva/larval: an immature stage of development in young of many animals.

Mollusk: invertebrates in the phylum Mollusca. Common representatives are snails, slugs, mussels, clams, oysters, squids, and octopuses.

Native: organism that originated in area where it lives without human assistance. May be indigenous or endemic.

Naturalized: an alien organism that, with time, yet without further human assisted releases or plantings, has become established in an area to which it is not native.

Nocturnal: active or most apparent at night.

Phytotelmata: Small amounts of water held by plants such as that collected at the base of leaves, petals or bracts. The fauna associated with phytotelmata is often unique.

Pupa: the stage between larva and adult in insects with complete metamorphosis, a non-feeding and inactive stage often inside a case

Purposefully introduced: an organism brought into an area for a specific purpose, for example, as a biological control agent.

Rare: threatened by environmental factors and in low numbers.

Species: all individuals and populations of a particular type of organism, maintained by biological mechanisms that result in their breeding mostly with their kind.

1 Glossary based largely on definitions in *Biological Science: An Ecological Approach*, 7th ed., Kendall/Hunt Publishing Co., Dubuque, a high school text; on the glossary in *Manual of Flowering Plants of Hawai'i*, Vol.2, Wagner, et al., 1999, Bishop Museum Press, and other sources.

LITERATURE CITED

Daly, H. V. and K. N. Magnacca. 2003. *Insects of Hawaii.* Volume 17: *Hawaiian Hylaeus.* University of Hawaii Press, Honolulu, Hawaii. 234 pp.

Department of Land and Natural Resources (DLNR). 1996, 1997. Indigenous Wildlife, Endangered and Threatened Wildlife and Plants, and Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-124-2 -§13-124-3, June 13, 1996. Exhibit 1. Feb. 1, 1997. www.state.hi.us/dlnr/dofaw/rules/Chap124exhib.pdf

Hawai'i Biological Survey (HBS). 2002a update. *Hawaiian Arthropod Checklist.* B. P. Bishop Museum, Honolulu, Hawai'i. Accessed February 2011. http://www2.bishopmuseum.org/HBS/checklist/

_____. 2002b. *Hawaiian Freshwater & Terrestrial Mollusk Checklist*. B. P. Bishop Museum, Honolulu, Hawai'i. Accessed February 2011. http://www2.bishopmuseum.org/HBS/checklist/

_____. 2002c. *Hawaiian Mammal Checklist.* B. P. Bishop Museum, Honolulu, Hawai'i. Accessed February 2011. http://www2.bishopmuseum.org/HBS/checklist/query.asp?grp=Mammal

Hawaiian Entomological Society (HES). 1990. *Common Names of Insects & Related Organisms*. Committee on Common Names of Insects. 87 pp.

LeGrande, M. 2011. Email March 14, 2011.

Montgomery, S. L. 1994. *Invertebrates of Ka'ala Natural Area Reserve Summit Cloud Forest*. A report to Natural Area Reserve System, DLNR, Honolulu, HI. 8 pp.

Nishida, G. M. (ed.). 2002. *Hawaiian Terrestrial Arthropod Checklist.* Fourth edition. *Bishop Museum Technical Report* 22, Honolulu, HI. 313 pp.

Nishida, G. M. and J. M. Tenorio. 1993. *What Bit Me?* Univ. of Hawaii Press. 72 pp.

Office of Environmental Quality Control. Online library. Accessed February 2011. http://oeqc.doh.hawaii.gov/Shared Documents/

Pacific Basin Information Node (PBIN). Data base / geographic search accessed February 2011. http://pbin.nbii.gov/otherinverts/index.asp

Perkins, R. C. L. 1913. "Introduction. Being a review of the land-fauna of Hawaiia," and "Vertebrates." *In*: Sharp, D., ed., *Fauna Hawaiiensis. Vol. 1.* Cambridge University Press, Cambridge, and Bishop Museum Special Pub. 6.

Pukui, M. K. and S. H. Elbert. 1986. *Hawaiian Dictionary, Revised and Enlarged Edition*. University of Hawaii Press, Honolulu, Hawai'i. 572 pp.

Literature cited: continued

Pukui, M. K., S. H. Elbert, and E. T. Mookini. 1976. *Place Names of Hawaii.* University of Hawaii Press, Honolulu, Hawai'i. 289 pp.

Staples, G. W. and D. R. Herbst. 2005. *A tropical garden flora.* Bishop Museum Press, Honolulu, 908 pp.

Tenorio, J. M. and G. M. Nishida. 1995. *What's Bugging Me?* University of Hawaii Press, Honolulu, HI, 184 pp.

Timberlake, P. H. 1918. "Note on Occurrence of an Endemic Itonidid on Oahu," *Proceedings of the Hawaiian Entomological Society*, 3 (5): 380. Honolulu.

Tomich, P. Q. 1986. *Mammals in Hawaii.* Bishop Museum Press, Honolulu, Hawaii. 375 pp.

U.S. Fish & Wildlife Service (USFWS). 2000. *Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Blackburn's Sphinx Moth from the Hawaiian Islands; Final Rule.* 50 CFR Part 17. In *Federal Register*, February 1, 2000, Volume 65, Number 21, pp. 4770-4779.

_____. 2003. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Blackburn's Sphinx Moth; Final Rule.* 50 CFR Part 17. In *Federal Register*, June 10, 2003, Volume 68, Number 111, pp. 34709-34766.

_____. 2005. *Recovery Plan for the Blackburn's Sphinx Moth (Manduca blackburni).* Portland, Oregon. 125 pp.

_____. 2006 May 9. *Endangered and Threatened Wildlife and Plants; Determination of Status for 12 Species of Picture-Wing Flies From the Hawaiian Islands.* 50 CFR Part 17, Federal Register, Vol. 71, No. 89, pp. 26835 -26852.

_____. 2008 December 4. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for 12 Species of Picture-Wing Flies From the Hawaiian Islands*. 50 CFR Part 17, Federal Register, Vol. 73, No. 234, pp. 73794-73895..

_____. 2010a June 24. *Endangered and Threatened Wildlife and Plants; Listing the Flying Earwig Hawaiian Damselfly and Pacific Hawaiian Damselfly As Endangered Throughout Their Ranges.* 50 CFR Part 17, Federal Register, Vol. 75, No.121, pp 35990-36012.

_____. 2010b November 10. *Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions; Proposed Rule.* 50 CFR Part 17, Federal Register, Vol. 75, No. 217, pp. 69221-69294.

Literature cited: continued

U.S. Fish & Wildlife Service (USFWS). 2011. USFWS Threatened and Endangered Species System (TESS), accessed February 2011, http://ecos.fws.gov/tess_public/

U.S. Naval Observatory (USNO), Astronomical Applications Department. *Sun and Moon Data for One Day*. http://aa.usno.navy.mil/

Wagner, W. L., D. R. Herbst, and S. H. Sohmer. 1999. *Manual of the flowering plants of Hawai'i*, Rev. ed. University of Hawaii Press and Bishop Museum Press, Honolulu, 1919 pp.

Zimmerman, E. C. 1948- 80. *Insects of Hawaii*. University of Hawaii Press, Honolulu.

Avian and Terrestrial Mammalian Surveys Conducted for the Information and Communications Services Division, Mt. Kaʻala Radio Facility Improvement Project, Waialua and Wahiawā Districts, Island of Oʻahu

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Introduction and Background

The State of Hawai'i, Department of Accounting and General Services, Information and Communication Services Division (ICSD) is proposing to implement repair and renovation improvements to their existing building used as a radio facility, a telecommunications tower, and other accessory electrical improvements located on Mt. Ka'ala.

The State's licensed radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Ka'ala Air Force Station (AFS) site situated at the summit of Mt. Ka'ala. The site is less than one half-acre and is identified as Tax Map Keys (TMK): (1) 7-07-001: portions of 001; (1) 6-07-003: portions of 023 and 025. Mt. Ka'ala is at the northern end of the Waianae Mountain Range, and is the highest peak on the island of O'ahu at an elevation of 4,025 feet above mean sea level. The Mt. Ka'ala AFS is located where the districts of Wahiawā, Wailua, and Wai'anae all converge at this mountain's summit. The State's radio facility is situated within Wailua and Wahiawā districts and electrical conduit improvements would extend slightly down the Kamaohanui Ridge and into the Wailua district (Figure 1).

The Mt. Ka'ala AFS is maintained by the U.S. Army, which has tenant agreements with other Federal and State agencies for telecommunications use at this site. The majority of the land on which Mt. Ka'ala AFS is constructed, is owned by the U.S. Army, and is part of the Schofield Barracks Military Reservation. This Federal property is identified as TMK: (1) 7-07-001: portion of 001. This station is fenced for security, and other government agencies have telecommunication facilities on this site. The U.S. Army maintains tenant agreements with both the U.S. Air Force and the Federal Aviation Administration for their facilities at this station. The State of Hawai'i, Hawai'i Air National Guard, and the U.S. Navy also maintain isolated individual structures.

The western portion of the fenced-in summit area of the Mt. Ka'ala AFS includes two parcels owned by the State of Hawai'i, identified as TMK: (1) 6-07-003: portions of 023 and 025. These areas of the station are leased to the U.S. Air Force by the State of Hawai'i. This State property is designated as the Mt. Ka'ala Natural Area Reserve and is under the jurisdiction of the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW).

This report describes the methods used and the results of, avian and mammalian surveys conducted on the subject property as part of the environmental disclosure process associated with the proposed ICSD improvement project.

The primary purpose of the surveys was to determine if there are any avian or mammalian species currently listed, or proposed for listing under either federal or State of Hawai'i endangered species statutes within or adjacent to the study area. The federal and State of Hawai'i listed species status follows species identified in the following referenced documents, (DLNR 1998, U. S. Fish & Wildlife Service (USFWS) 2005a, 2005b, 2011). Fieldwork was conducted on February 2, 2011.

A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text.

General Project and Site Description

The State is proposing to undertake both interior and exterior repairs to the existing State building. This includes re-roofing the building to address cracks and leaks. A new conduit would be installed within the existing driveway to connect the State building with a nearby generator building (Figure 1).

The State's existing 25-foot-tall tower will be replaced with a 50-foot-tall tower within the State's licensed area. Additional microwave and whip antennas will be installed on the new tower along with the antennas relocated from the State building. The U.S. Coast Guard will be responsible for demolishing this existing State radio tower, and designing and constructing the new taller tower.

A 48-inch-tall, 75-inch-wide corner reflector antenna will be relocated from the State building to the lower mount at the existing antenna site downhill of Kamaohanui Ridge. The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility.

There is one existing above ground microwave antenna feed line routed from the Mt. Ka'ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits will be routed above ground from the State's radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai'i for its Hawai'i Interactive Television System distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State's critical land mobile radio systems that support public safety and critical government operations.

The habitat present within the fenced secure area consists of pavement, driveways and very short mowed grass (Figure 1 and 2). The habitat between the security fence and the down-slope dish antennae is composed of a native dominated elfin cloud forest (Figure 1 and 3).

Figure 1 – Project Site Showing Existing Facilities and Proposed Route of the Replacement Conduit

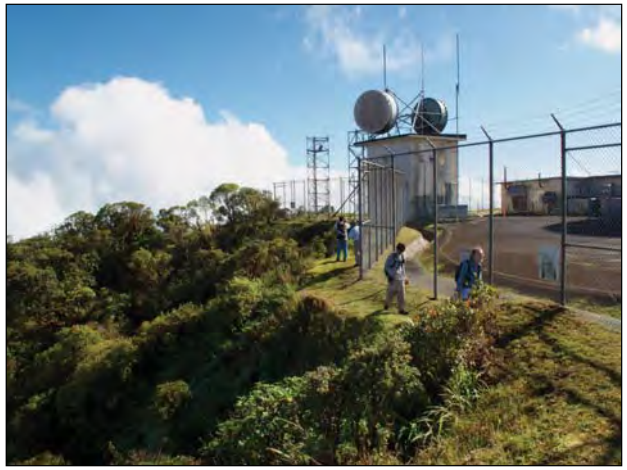

Figure 2 - State of Hawai'i radio towers and building, security fence and habitat within the fenced perimeter

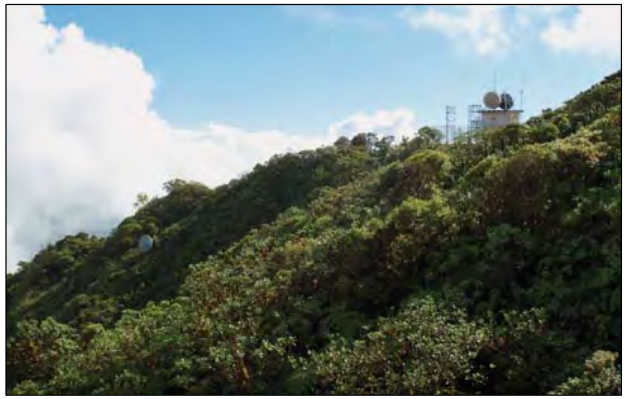

Figure 3 - State of Hawai'i radio towers and building and dish antenna, showing typical elfin cloud forest habitat between the towers and the dish antenna

Methods

The avian phylogenetic order and nomenclature used in this report follows the *AOU Check-List of North American Birds* (American Ornithologists' Union 1998), and the 42nd through the 51st supplements to the Check-List (American Ornithologists' Union 2000; Banks et al. 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010). Mammal scientific names follow (Tomich 1986). Place names follow (Pukui et al. 1974).

Avian Survey Methods

One avian count station was sited approximately half way between the State of Hawai'i radio towers and the dish antenna located down slope from the security fence (Figures 1 and 3). A single 8-minute avian point count was made at this station. Field observations were made with the aid of Leica 10 X 42 binoculars and by listening for vocalizations. The count and subsequent search of the remainder of the site was conducted between 9:00 am and 10:30 am. Time not spent counting the point count station was used to search the rest of the site for species and habitats not detected during the point count. Weather conditions were ideal, with no rain, unlimited visibility and winds of between 1 and 3 miles an hour.

Avian Survey Results

A total of 18 individual birds of six different species, representing four separate families, were recorded during the station count, no additional species were detected during the remainder of the time spent on the site (Table 1). Three of the species detected, Pacific Golden-Plover (*Pluvialis fulva*), O'ahu 'Amakihi[1] (*Hemignathus flavus*), and 'Apapane (*Himatione sanguinea*) are native species. The plover is an indigenous migratory shorebird species and the 'Amakihi and 'Apapane are endemic forest birds. The remaining three species detected are considered to be alien to the Hawaiian Islands (Table 1).

No avian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR 1998, USFWS 2005a, 2005b, 2011).

Avian diversity and densities were in keeping with the relatively high altitude and the ridge top environment present on the site.

[1] The American Ornithological Union does not use Hawaiian diacritical marks in its Check-List of North American Birds, we choose to do so out of respect for the Hawaiian language and culture.

Table 1 - Avian Species Detected – Mt. Ka'ala Radio Facility Site

Common Name	*Scientific Name*	*ST*	*#*
	CHARADRIIFORMES		
	CHARADRIIDAE - Lapwings & Plovers		
Pacific Golden-Plover	*Pluvialis fulva*	IM	1
	PASSERIFORMES		
	CETTIIDAE - Cettia Warblers & Allies		
Japanese Bush-Warbler	*Cettia diphone*	A	6
	ZOSTEROPIDAE - White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	3
	FRINGILLIDAE – Fringilline And Cardueline Finches & Allies		
	Carduelinae – Carduline Finches		
House Finch	*Carpodacus mexicanus*	A	2
	Drepanidinae - Hawaiian Honeycreepers		
O'ahu 'Amakihi	*Hemignathus flavus*	EB	1
'Apapane	*Himatione sanguinea*	EB	5

Key to Table 1.

ST	Status
A	Alien Species – introduced to Hawai'i by humans which have become established in the wild
IM	Indigenous Migratory Species – Native migratory but not unique to the Hawaiian islands
EB	Endemic Breeding Species – Native and unique to the Hawaiian Islands
#	Number - Number of birds detected during the station count

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *'ōpe'ape'a* as it is known locally, all terrestrial mammals currently found on the Island of O'ahu are alien species, and most are ubiquitous. The survey of terrestrial mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all vertebrate mammalian species detected within the project area.

Mammalian Survey Results

Three mammalian species were detected during the course of this survey. Several humans (*Homo sapiens*) and ample sign of their presence in the project area, was encountered.

Tracks, sign and scat of dog (*Canis f. familiaris*) and pig (*Sus s. scrofa*), was encountered along the roadside leading up to the security fence.

No mammalian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR 1998, USFWS 2005a, 2005b, 2011).

Discussion

Avian Resources

The findings of the avian survey are consistent with the location of the property, and the habitat present on the site.

Although no seabirds were detected during the course of this survey, several seabird species potentially overfly the site on occasion. Collision with man-made structures is considered to be the second most significant cause of mortality in locally nesting seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals (Hadley 1961, Telfer 1979, Sincock 1981, Reed *et al*, 1985, Telfer *et al*, 1987, Cooper and Day 1994, 1998, Podolsky *et al*, 1998, Ainley *et al*, 2001).

There are no known nesting colonies of any of the resident seabird species present on O'ahu on, or immediately adjacent to the project site.

Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitat currently present on the site. Although no rodents were detected during the course of this survey, it is likely that one or more of the four established alien *muridae* found on O'ahu, roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), European house mouse (*Mus musculus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*) use various resources found within the general project area on a seasonal basis. All of these introduced rodents are deleterious to native ecosystems and the native faunal species that are dependant on them for food, cover and other resources.

In a letter received by the project from the USFWS dated March 31, 2011 – USFWS Log# 2011-TA-0176 the Service raised the issue of the potential that clearing vegetation within the project site may pose a risk to roosting bats.

As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of suitable roosting vegetation is normally likely to be minimal. However, during the pupping season female bats carrying their pups may be less able to rapidly

vacate a roost site as the vegetation is cleared, additionally adult female bats sometimes leave their pups in the roost tree while they themselves forage, very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing.

As there is no vegetation suitable to provide roosting sites for Hawaiian hoary bats within the project site, it is not expected that the removal of the low stature shrubby vegetation will result in deleterious impacts to the listed species.

Potential Impacts to Protected Species

Seabirds

The principal potential impact that the improvement project poses to seabirds, is the increased threat that birds potentially could be downed after becoming disoriented by outdoor lighting associated with possible night-time construction activity, and following build-out by any exterior lighting which may be installed as part of this project.

Critical Habitat

The site is within the federally designated O'ahu 'Elepaio (*Chasiempis ibidis*) Critical Habitat Unit # 1, Northern Waianae Mountains, which encompasses some 5,657 acres of the total 11,005 acres of land designated as Critical Habitat for this species (USFWS 2001). In their final rule the service estimated that there was a resident 'Elepaio population of three birds within the Mt. Ka'ala Natural Area Reserve, but no known breeding pairs (USFWS 2001). O'ahu 'Elepaio are usually found in lower elevation, taller stature mixed forest than is found within the project area, atop Mt. Ka'ala.

The proposed action will modify 0.093 acres of 'Elepaio Critical Habitat, which represents 0.002% of the 5,657acres of Unit #1. The habitat that will be modified has already been modified by the construction and ongoing maintenance of the existing facilities in the same location.

Recommendations

- If nighttime work will be required in conjunction with the proposed action, it is recommended that lights be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures (Reed et al. 1985, Telfer *et al* 1987).

- It is also recommended that all exterior lighting that may be associated with the operation of the proposed facility be shielded so as to reduce the potential for

interactions of nocturnally flying seabirds with external lights and man-made structures (Reed *et al* 1985, Telfer *et al* 1987).

Glossary

Alien – Introduced to Hawai'i by humans
Endangered – Listed and protected under the Endangered Species Act of 1973, as amended (ESA) as an endangered species
Endemic – Native to the Hawaiian Islands and unique to Hawai'i
Indigenous – Native to the Hawaiian Islands, but also found elsewhere naturally
Muridae – Rodents, including rats, mice and voles, one of the most diverse family of mammals.
Nocturnal – Night-time, after dark
'Ōpe'ape'a – Endemic endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*)
Pelagic – An animal that spends its life at sea – in this case seabirds that only return to land to nest and rear their young
Phylogenetic – The evolutionary order that organisms are taxonomically arranged by
Threatened – Listed and protected under the ESA as a threatened species

AFS – US Air Force Station
DLNR – Hawai'i State Department of Land & Natural Resources
DOFAW – Division of Forestry and Wildlife
ESA – Federal Endangered Species Act of 1973, as amended
ICSD – Information and Communication Services Division
TMK – Tax Map Key
USFWS – United State Fish & Wildlife Service

Literature Cited

Ainley, D. G, R. Podolsky, L. Deforest, G. Spencer, and N. Nur. 2001. The Status and Population Trends of the Newell's Shearwater on Kaua'i: Insights from Modeling, *in*: Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna*. Studies in Avian Biology No. 22: Cooper's Ornithological Society, Allen Press, Lawrence, Kansas. (Pg. 108-123).

American Ornithologist's Union. 1998. *Check-list of North American Birds*. 7th edition. AOU. Washington D.C. 829pp.

_____. 2000. Forty-second supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 117:847-858.

Banks, R. C., C. Cicero, J. L. Dunn, A. W. Kratter, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, and D. F. Stotz. 2002. Forty-third supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 119:897-906.

_____. 2003 Forty-fourth supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 120:923-931.

_____. 2004 Forty-fifth supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 121:985-995.

_____. 2005 Forty-sixth supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 122:1031-1031.

_____. 2006 Forty-seventh supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 123:926-936.

Banks, R. C., C. R. Terry Chesser, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, and D. F. Stotz. 2007 Forty-eighth supplement to the American Ornithologist Union *Check-list of North American Birds*. Auk 124:1109-1115.

Banks, R. C., C. R. Terry Chesser, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, and D. F. Stotz, and K. Winker. 2008 Forty-ninth supplement to the American Ornithologist Union *Check-list of North American Birds*. Auk 125:758-768.

Chesser, R. T., R. C. Banks, F. K. Barker, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, and D. F. Stotz, and K. Winker. 2009. Fiftieth supplement to the American Ornithologist Union *Check-list of North American Birds*. Auk 126:1-10.

_____. 2010. Fifty-first supplement to the American Ornithologist Union *Check-list of North American Birds*. Auk 127:726-744.

Cooper, B. A and R. H. Day. 1994. Kauai endangered seabird study. Volume 1: Interactions of Dark-rumped Petrels and Newell's Shearwaters with utility structures on Kauai, Hawaii: Final Report, TR-105847-V1, Electric Power Research Institute, Palo Alto, California.

_____. 1998. Summer Behavior and Mortality of Dark-rumped Petrels and Newell's Shearwaters at Power Lines on Kauai. Colonial Waterbirds, 21 (1): 11-19.

Department of Land and Natural Resources (DLNR). 1998. Indigenous Wildlife, Endangered And Threatened Wildlife And Plants, And Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-134-1 through §13-134-10, dated March 02, 1998.

Hadley, T. H. 1961. Shearwater calamity on Kauai. Elepaio 21:60.

Podolsky, R., D.G. Ainley, G. Spencer, L. de Forest, and N. Nur. 1998. "Mortality of Newell's Shearwaters Caused by Collisions with Urban Structures on Kaua'i". Colonial Waterbirds 21:20-34.

Pukui , M. K., S. H. Elbert, and E. T. Mookini 1976. *Place Names of Hawaii*. University of Hawaii Press. Honolulu, Hawai'i. 289 pp.

Reed, J. R., J. L Sincock, and J. P. Hailman 1985. Light Attraction in Endangered Procellariform Birds: Reduction by Shielding Upward Radiation. Auk 102: 377-383.

Sincock, J. L. 1981. Saving the Newell ʻs Shearwater. Pages 76-78 in Proceedings of the Hawaii Forestry and Wildllife Conference, 2-4 October 1980. Department of Land and Natural Resources, State of Hawaii, Honolulu.

Telfer, T. C. 1979. Successful Newell's Shearwater Salvage on Kauai. 'Elepaio 39:71

Telfer, T. C. , J. L. Sincock, G. V. Byrd, and J. R. Reed. 1987. Attraction of Hawaiian seabirds to lights: Conservation efforts and effects of moon phase. Wildlife Society Bulletin 15:406-413.

Tomich, P.Q. 1986. *Mammals in Hawaii*. Bishop Museum Press. Honolulu, Hawaii. 37 pp.

U.S. Fish & Wildlife Service (USFWS) 1998. Recovery Plan for the Hawaiian Hoary Bat. U.S. Fish & Wildlife Service, Portland, Oregon.

_____. 2001. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Oahu Elepaio (*Chasiempis sandwichensis ibidis*); Final Rule. Federal Register, 66 No. 237 (December 10, 2001): 63751-63782.

_____. 2005a. Endangered and Threatened Wildlife and Plants. 50CFR 17:11 and 17:12 (Tuesday, November 1, 2005).

U.S. Fish & Wildlife Service (USFWS) 2005b. 50 CFR 17. Endangered and Threatened Wildlife and Plants. Review of Species That Are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petition; Annual Description of Progress on Listing Actions. Federal Register, 70 No. 90 (Wednesday, May 11, 2005): 24870-24934.

_____. 2011. USFWS Threatened and Endangered Species System (TESS), online at http://ecos.fws.gov/tess_public/StartTESS.do

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
CEU Honolulu

300 Ala Moana Blvd.
Honolulu, HI 96850
Phone: 808-535-3464
Fax: 808-535-3479

5090
24 Aug 2011

MEMORANDUM

From: A.J. Wright, LCDR
CG CEU Honolulu

Reply to Attn of: Dr. Dennis Mead
808-535-3464

To: Dr. Loyal Mehrhoff, Field Supervisor
U.S. Department of the Interior
Pacific Islands and Wildlife Office
300 Ala Moana Blvd, Room 3-122, Box 500088
Honolulu, Hawaii 96850

Subj: State of Hawaii ICSD Ka'ala Radio Facilities Improvement Project
Section 7 Consultation – Notice of Designation of Authorized Agents
USFWS Log #2011-TA-0264

1. The United States Coast Guard (USCG) is participating in a project implementing certain repair and renovation improvements to upgrade the State Department of Accounting and General Service, Information and Communication Services Division's telecommunication facility at the summit of Mount Ka'ala on the island of O'ahu. Consultation under Section 7 of the Endangered Species Act (ESA) has been initiated because of the USCG's involvement in this State project and its use of federal funds.

2. This letter is to notify the U.S. Fish and Wildlife Service that we have authorized Helber Hastert and Fee, Planners, Inc. and Rana Biological Consulting as our Authorized Agents to process the Section 7 consultation for this proposed action.

3. If you need additional information, please contact Dr. Dennis Mead by phone at (808) 535-3464, or by email at dennis.j.mead@uscg.mil.

Cc: HI DAGS, Attn: Daniel Jandoc
HI DAGS, Attn: Robert Hlivak
Richard Matsunaga & Associates, Attn: Herb Leong
Helber, Hastert & Fee, Planners, Attn: Ronald Sato

FWS Concurrence Letter
(December 20, 2011)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2012-I-0113

DEC 2 0 2011

Lieutenant Commander A.J. Wright
Commanding Officer
United States Coast Guard
Civil Engineering Unit Honolulu
300 Ala Moana Boulevard, Room 8-134
Honolulu, Hawaii 96850-4982

Subject: Informal Consultation for Mt. Kaala Facility Improvements Project, Oahu

Dear Lieutenant Commander Wright:

The U.S. Fish and Wildlife Service (Service) received your letter on November 18, 2011, requesting our concurrence with your determination that the proposed modification of an existing communications tower at Mt. Kaala, on the island of Oahu, will not adversely affect the the threatened Newell's shearwater (*Puffinus auricularis newelli*) and endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), Hawaiian tree snail (*Achatinella mustelina*), Hawaiian picture-wing fly (*Drosophila substenoptera*), and plant species *Alsinidendron trinerve* and *Labordia cyrtandrae*. Furthermore, your letter requests concurrence that the proposed action is not likely to adversely modify designated critical habitat areas for the endangered Oahu elepaio (*Chasiempis sandwichensis ibidis*) and plant species *Alsinidendron trinerve* and *Labordia cyrtandrae*.

The findings and recommendations in this consultation are based on: (1) your letter received November 18, 2011, requesting informal consultation for the proposed project; (2) a phone conversation on December 16, 2011, between Reginald David of Rana Biological Consulting, Inc., and Ian Bordenave, Fish and Wildlife Biologist with the Service; and (3) pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Program. This response is in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Project Description
The State of Hawaii, Department of Accounting and General Services, Information and Communication Services Division (ICSD), with the assistance of the U.S. Coast Guard (USCG), is proposing to implement a host of improvements to their existing Mt. Kaala radio facility. Renovations being proposed include interior and exterior repairs to the existing ICSD building to

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address cracks and leaks. A new conduit is proposed for installation within the existing driveway to connect the ICSD building with a nearby generator building and the ICSD's existing 25-foot-tall tower is proposed to be replaced with a 50-foot-tall tower within the ICSD's licensed area. The existing solid microwave dish antenna on the upper antenna mount is proposed to be replaced with a high performance antenna that includes a shroud and a radome cover that will match the physical outline of the main Mt. Kaala Air Force Station (AFS) facility nearby. The USCG will be responsible for demolishing the existing ICSD radio tower, as well as designing and constructing the new taller tower.

A 48-inch-tall, 75-inch-wide, corner reflector antenna is proposed for relocation from the ICSD building to the lower mount at an existing antenna site downhill of Kamaohanui Ridge. The lower mount will also be used to support a camera that will provide a view of the north shore of Oahu. There is an existing above ground microwave antenna feed line that is routed from the Mt. Kaala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. In the proposed project, a total of five, new, antenna feed lines and conduits will be routed above ground from the ICSD radio facility to the site. The existing cable supports extending down the ridge to the antenna site would be replaced with improved supports (about two feet high) following the existing route and a section of these cables would be located underground where they pass under the security fence to the radio facility building.

The ICSD's licensed radio facility is 1,161 square feet in size and located within the larger 6.6 acre AFS site situated at the summit of Mt. Kaala. The site is less than one-half acre and is identified as Tax Map Keys (TMK): (1) 7-07-001: portions of 001: (1) 6-07-003: portions of 023 and 025. Mt. Kaala is at the northern end of the Waianae mountain range and is the highest peak on the island of Oahu at an elevation of 4,025 feet above mean sea level.

At issue are the potential deleterious impacts to endangered species and the potential for adverse modification of designated critical habitat which may occur within the project footprint due to the effects of the proposed action. To address these concerns, the USCG contracted the consulting services of Rana Biological Consulting, Inc (Rana). Vertebrate resource surveys conducted by Reginald David, botanical resource surveys conducted by Maya LeGrande, and invertebrate resource surveys conducted by Steven Montgomery, Ph.D., were submitted to the Service along with your letter dated November 18, 2011. The results of each of these surveys demonstrated that there are no endangered species present within the proposed radio tower project footprint, nor in the cable corridor or immediate vicinity of the proposed reflector antenna located lower down the mountainside. These areas comprise the entirety of the action area.

According to information compiled by Rana for the USCG and submitted to the Service, a total of 0.093 acres of designated critical habitat for three endangered species will be modified due to the proposed action. This level of modification is not novel to the existing habitat given the ongoing operational and maintenance activities at the existing facilities in the same location. The total modification for the Oahu elepaio, *A. trinerve*, and *L. cyrtandrea* will comprise only a fraction of 0.10 percent of each species' respective critical habitat areas.

Conservation Measures

The Hawaiian hoary bat roosts in both exotic and native woody vegetation and, while foraging, leaves young unattended in "nursery" trees and shrubs. If trees or shrubs suitable for bat roosting

are cleared during the breeding season, there is a risk that young bats could inadvertently be harmed or killed. Additionally, outdoor lighting, such as lighting used to illuminate construction areas for nighttime work, can adversely impact seabirds by causing disorientation that results in exhaustion or collision with objects, such as utility lines, guy wires, and structures that extend above surrounding vegetation. Furthermore, while no endangered or threatened species were found during surveys of the project site, the surrounding native habitat is primarily intact and care should be taken while accessing and clearing the project site to limit ground disturbance. The following measures identified in your letter and phone conversation will be implemented at the project site to avoid and minimize project impacts to listed species. These conservation measures are considered part of the project description. Any changes to, modifications of, or failure to implement these conservation measures may result in the need to reinitiate this consultation:

- The new antennae structure will be un-guyed and painted white to be more readily visible to birds flying at night.

- No woody vegetation taller than 4.6 meters (15 feet) will be cleared from June 1 to September 15.

- All construction personnel shall be briefed on the sensitivity of the habitat present down-slope from the fenced facilities and will be informed of the need to follow all restrictions, protocols, and Best Management Practices (BMP) contained in this document and special construction contract provisions.

- To prevent the introduction of exotic invasive species into the sensitive native dominated ecosystem below the site, all project-related materials, equipment, and construction personnel boots and clothing used on the project site shall be cleaned of seedy soils prior to use at the site.

- Silt fencing and other appropriate BMP measures will be installed and maintained for the duration of the construction phase of the project to ensure that no construction debris is allowed to migrate down-slope into the forest.

- Any cleared areas on steep slopes will be stabilized so as to ensure that erosion does not occur.

- Construction personnel will be restricted to within the project disturbance corridor so as to prevent trampling or further degradation of the habitat outside of the disturbance corridor.

- No personal pets will be allowed on the job site.

- All trash, especially those created from human comestibles, shall be properly disposed of and removed from the site as soon as possible.

- If any vegetative replanting is proposed as part of this action, only native plants suitable for the habitat present at the site shall be used, where practicable.

Due to the aforementioned conservation measures to avoid and minimize impacts to listed species and designated critical habitat, the Service concurs with your determination that the proposed project may affect, but is not likely to adversely affect, listed species or designated critical habitat. Unless the project description changes, new information reveals that the proposed project may affect listed species or designated critical habitat in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed action, no further action pursuant to section 7 of the ESA is necessary. If you have any questions or concerns regarding this consultation, please contact Ian Bordenave, Fish and Wildlife Biologist (phone: 808-792-9400, email: ian_bordenave@fws.gov).

Sincerely,

For Loyal Mehrhoff
Field Supervisor

Appendix B

Photos of Existing Project Site

Photo 1A: View of Mt. Ka‘ala Access Road

Photo 1B: View of Mt. Ka‘ala AFS entrance

Photo 1C: East view of bog area located south of installation

Photo 1D: East view of State radio facility and downhill antenna site

Photos

ICSD Mt. Ka‘ala Radio Facility Improvements Project
Wahiawā and Waialua, O‘ahu

Prepared for:
State of Hawai‘i
Department of Accounting and General Services
Information and Communication Services Division

Photo 2A: Northeast view of State radio facility inside installation

Photo 2B: View of State radio building

Photo 2C: View of existing antennas on building roof

Photo 2D: East view of State downhill dish antenna site

Photos

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Photo 3A: North view of coastline from downhill antenna site

Photo 3B: Northeast view of coastline from downhill antenna site

Photo 3C: View of adjacent FAA building and parking area

Photo 3D: View of drainage swale by State building

Photos

ICSD Mt. Ka'ala Radio Facility Improvements Project

Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Photo 4A: Northwest view of State tower (left) and tower for another agency

Photo 4B: View of existing ground area by State tower

Photo 4C: North view of fence corner where conduits from State building will extend to downhill antenna site

Photo 4D: View of existing conduit from State building to downhill antenna site

Photos

ICSD Mt. Ka'ala Radio Facility Improvements Project
Wahiawā and Waialua, O'ahu

Prepared for:
State of Hawai'i
Department of Accounting and General Services
Information and Communication Services Division

Photo 5A: View of telecommunication equipment covered with plastic (leaks)

Photo 5B: View of plastic covering equipment

Photo 5C: View of cracks in building celing

Photo 5D: View of spalling on building walls

Appendix C

Botanical Resources Assessment for the ICSD Mt. Ka'ala Radio Facility Improvements Project

May 2011

Prepared By:
LeGrande Biological Surveys, Inc.

BOTANICAL RESOURCES ASSESSMENT FOR THE PROPOSED ICSD MT. KAALA RADIO FACILITY IMPROVEMENTS PROJECT OAHU, HAWAII

Prepared by:

Maya LeGrande
LeGrande Biological Surveys, Inc
68-310 Kikou Street
Waialua HI 96791

Prepared for:

Helber Hastert and Fee, Planners
Pacific Guardian Center, Makai Tower
733 Bishop Street, Suite 2590
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MAY 2011

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INTRODUCTION

This report includes the findings of a plant inventory conducted in Mokuleia on the island of Oahu at the Mount Kaala Air Force Station (AFS). [TMK 6-7-003:23] The proposed project includes redesigning and constructing a new radio facility building to replace the state's existing one located inside the fenced AFS, running additional conduit above ground along Kamaohanui Ridge downslope to an existing microwave antenna site, and replacing and adding one satellite dish at the current microwave antenna site. LeGrande Biological Surveys Inc. carried out a botanical field survey of the above location on February 2, 2011. The primary objectives of the field studies were to:

1) inventory the flora;
2) provide a general description of the vegetation on the project site;
3) search for threatened and endangered species as well as species of concern; and
4) provide recommendations regarding potential impacts to the biological resources of the area in regards to the proposed conduit and antenna replacement project.

Federal and State of Hawaii listed species status follows U.S. Fish and Wildlife Listed and Candidate Species (USFWS 2008) and Federal Register (2002).

GENERAL SITE DESCRIPTION

The current project includes upgrades to the existing radio facilities building within the Mt. Kaala AFS as well as installing new conduit above ground along portions of Kamaohanui Ridge to an existing microwave antenna, replacing the existing antenna with an upgrade, and installing an additional antenna that currently exists on the top of the radio facility building. The project site is located in steep terrain that begins at a level area near the state's radio facility building and then drops down a ridgeline to the existing antenna dish. The Kamaohanui Ridge conduit route and antenna site portion of the project is located within the Mt. Kaala Natural Area Reserve. The elevation at the project site is approximately 3900 feet.

The vegetation along the ridgeline and at the antenna site is characteristic of a Montane Wet Shrubland habitat on Oahu. These communities are found at higher elevation above 1000m on cool, wet windward cliffs and upper ridges. Soils are shallow peat and/or clay layered over weathered lava (Wagner & Herbst, 1999). A semi-open canopy of native trees with an understory dominated by various fern species characterizes the vegetation of the study area.

METHODS

Prior to undertaking the field studies, a search was made of the pertinent literature to familiarize the principal investigator with other botanical studies conducted in the general area. Information from the Hawai`i Natural Heritage Program database and the USFWS

Critical Habitat was reviewed as well as personal communication with Betsy Gagne (DOFAW-NAR). Topographic maps were examined to determine terrain characteristics, access, boundaries, and reference points.

A walk-through survey method was used. Transects included walking along the current path of the telecommunications cable along Kamaohanui Ridge, as well as the location of the existing downslope microwave antenna. An area approximately 50 to 100 feet in all directions from the antenna site was surveyed and a corridor of 20 to 35 feet in width along the conduit route. In areas that were too steep to walk, binoculars were used to identify plant species. Notes were made on plant associations and distribution, disturbances, topography, substrate types, exposure, drainage, etc. Plant identifications were made in the field; plants that could not be positively identified, were photodocumented for later determination in the herbarium, and for comparison with the recent taxonomic literature.

VEGETATION

The study area is composed of a native Mixed Fern Shrubland, dominated by native plants species such as `ohi`a lehua (*Metrosideros polymorpha*), alani (*Melicope clusiifolia*), kanawao (*Broussaisia arguta*) and various fern species including, uluhe (*Dicranopteris linearis* f. *linearis*), hapu`u (*Cibotium* spp.), and `ama`u (*Sadleria cyatheoides*). The tree species tend to form a semi open canopy in most areas providing for abundant understory plants in the moist environment. Most of the tree trunks are matted with several species of moss as well as epiphytic ferns such as wahine noho mauna (*Adenophorus tamariscinus* var. *tamariscinus*) and hoe a Maui (*Elaphoglossum alatum*).

The ground layer is dominated by native fern species as well as other natives such as `ala`alawainui (*Peperomia membranacea*), ha`iwale (*Cyrtandra lessoniana*), and makole (*Nertera granadensis*). Vining species growing in and amongst the shrubs include hoe kuahiwi (*Smilax melastomifolia*) and the native mint kapana (*Phyllostegia grandiflora*). The dominant alien plant species is blackberry (*Rubus argutus*). The prickly branches grow throughout the shrubland, climbing trees and making traversing the understory difficult at times.

The majority of the introduced plant species can be found either along the trail to the antenna or at the antenna site itself. Disturbance to the substrate and weed seeds on tools and/or clothing and boots are all vectors of dispersal of weed seeds. Weedy species observed at the antenna site include; Koster's curse (*Clidemia hirta*), narrow-leaved carpetgrass (*Axonopus fissifolius*), Maui pamakani (*Ageratina adenophora),* fuchsia begonia (*Begonia foliosa*), and fiddlewood (*Citharexylum caudatum*). A few trees of strawberry guava (*P. cattleianum*) were also observed to the west of the antenna site in a small gulch. About half of the trees were cut down (Montgomery, pers.comm), but additional eradication efforts should be made to eradicate this rogue population.

Several individuals of ginger (*Hedychium* sp.) were observed growing along feral pig (*Sus scrofa*) trails in the project area. Disturbance of the understory by pigs also appears to be a factor in alien plant establishment.

There were a total of 60 plant species documented within the survey area. 46 species are native (76%) and 14 are introduced (23%). An inventory of all the plants observed within the study area is presented in the species list at the end of the report.

CRITICAL HABITAT

A portion of the study area falls within the Unit 4 Critical Habitat Area of Oahu designated by the USFWS (Federal Register, 2003). Critical Habitat is a term used to define a specific geographic area(s) that has features essential for the management or conservation of a threatened or endangered species (USFWS, 2009). Not all listed Threatened or Endangered species have Critical Habitat designations. Designation of Critical Habitat for a particular species does not necessarily mean that individuals of the species are present in that unit, but that it has the potential to be there due to the optimum habitat requirements for that species within the particular unit.

There are two plant taxa that have critical habitat designation within Unit 4 that overlap the study area, they are: *Alsinidendron trinerve* and *Labordia crytandrae*. No individuals of either of these species were observed within the study site during this survey. The study area within the natural area preserve encompasses a small corridor for the conduit and the current antenna site. The main concerns for the native plant species within the study site are the presence of feral pigs and alteration to the substrate by humans that can cause open denuded areas of soil providing weeds space to invade and spread.

DISCUSSION & RECOMMENDATIONS

None of the plants observed during the survey is a threatened or endangered species or a species of concern (U.S. Fish and Wildlife Service, 2008). Although no endangered or threatened plant species were found during the survey of the project site, the native habitat is primarily intact and care should be taken while accessing and clearing the project site to limit ground disturbance. Several non-native plant species were only located at the base of the existing antenna where the ground had been disturbed during previous work in the area. Uprooting native plants and disturbing the soil provides extant weed species with more opportunity to become established. Any future disturbance in the area can also have the possibility of introducing new invasive plant species to the area that have the potential to spread into adjacent native forest areas.

The proposed radio tower and antenna project could have significant negative impacts on the botanical resources of the site and the general region if care is not taken to limit ground disturbance and unintentional weed introductions. All gear including boots, clothing, tools, etc. should be cleaned daily during the construction phase and only used at the Mt. Kaala location for the duration of the project. Removal and/or cutting back of

native plants should be limited to the minimum amount of clearance needed to execute the project. Installing semi-permanent level steps and or hand holds along the ridge and at the antenna site may help in preventing erosion during the construction phase of the project. A follow up survey to monitor for any new introduced weed species post construction is recommended. An initial observation followed by subsequent visits at several month intervals may aid in catching any new introduced weed species and exterminating them before they can spread.

The essential upgrades to the state's radio building and antenna need not have a detrimental effect to the environment if careful planning and execution of the construction phase is undertaken.

LITERATURE CITED

Evehuis, N.L. and L.G. Eldredge, editors. 1999-2002. Records of the Hawaii Biological Survey. Bishop Museum Occasional Papers Nos. 58-70.

Federal Register. 2003. Department of the Interior, Fish and Wildlife Service, 50 CFR 17. Endangered and Threatened Wildlife and Plants. Final Designations or Non Designations of Critical Habitat for 101 Plant Species from the Island of Oahu, HI, Final Rule. *Federal Register*, 68 No. 116 (Thursday, June 13, 2003).

Foote, D.E., E.L. hill, S. Nakamura, and F. Stephens. 1972. Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.

Staples, G. and D.R. Herbst. 2005. A Tropical Garden Flora: plants cultivated in the Hawaiian Islands and other tropical places. Bishop Museum Press, Honolulu, HI.

U.S. Fish and Wildlife Service. 2008. Hawaiian Islands Plants: Updated April 14, 2008 Listed and Candidate Species, as Designated under the U.S. Endangered Species Act. 21pp.

U.S. Fish and Wildlife Service. 2009. Critical Habitat Fact Sheet. Updated July 2009. http://www.fws.gov/Midwest/endangered/saving/CriticalHabitatFactSheet.html

Wagner, W.L. and D.R. Herbst. 1999. Supplement to the Manual of the flowering plants of Hawaii, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawaii. Revised Edition. 2 vols. University of Hawaii Press and Bishop Museum Press, Honolulu.

TABLE 1. PLANT SPECIES LIST

The following checklist is an inventory of all the plant species observed within the survey areas of the proposed Mount Kaala Telecom Antenna Location during a site visit on February 2, 2011. The plant names are arranged alphabetically by family and then by species into three groups: Pteridophytes, Monocots, and Dicots. The taxonomy and nomenclature of the Ferns and Fern Allies follow Palmer (2002), flowering plants (Monocots and Dicots) are in accordance with Wagner *et al*. (1990), Wagner and Herbst (1999) and Staples and Herbst (2005). Recent name changes are those recorded in the Hawaii Biological Survey series (Evehuis and Eldredge, eds., 1999-2002) and the BISH native-naturalized checklist March 2010.
For each species, the following name is provided:

1. Scientific name with author citation.
2. Common English and/or Hawaiian name(s), when known.
3. Where the plant was observed; marked as in either the coastal or mauka sections of the project area or both.
4. Biogeographic status. The following symbols are used:

A = Alien species introduced to the Hawaiian Islands by humans, intentionally or accidentally.

I = Indigenous species native to the Hawaiian Islands and also found elsewhere in the world.

E = Endemic species found only in the Hawaiian Islands.

SCIENTIFIC NAME	COMMON NAME	STATUS
PTERIDOPHYTES		
ASPLENIACEAE		
Asplenium contiguum var. *contiguum* Kaulf.		E
Asplenium polyodon G.Forst.	punana manu	I
ATHYRIACEAE		
Athyrium microphyllum (Sm.) Alston	`akolea	E
BLECHNACEAE		
Blechnum appendiculatum Willd.		X
Sadleria cyatheoides Kaulf.	`ama`u	E
Sadleria pallida Hook.&Arn.	`ama`u `i`i	E
DENNSTAEDTIACEAE		
Hypolepis hawaiiensis var. *hawaiiensis*	olua	E
DICKSONIACEAE		
Cibotium glaucum (Sm.) Hook.&Arn.	hapu`u pulu	E
Cibotium menziesii Hook.	hapu`u `i`i	E
DRYOPTERIDACEAE		
Nothoperanema rubiginosa (Brack.) A.R.Sm. & D.D. Palmer		E
Dryopteris glabra var. *glabra* (Brack.) Kuntze	kilau	E
ELAPHOGLOSSACEAE		
Elaphoglossum alatum Gaudich.	hoe a Maui	E
GLEICHENIACEAE		
Dicranopteris linearis (Burm. f.) Underw. f. *linearis*	uluhe, unuhe	I
Diplopterygium pinnatum (Kunze) Nakai	uluhe lau nui	E

GRAMMITIDACEAE		
Adenophorus tamariscinus var. *tamariscinus*	wahine noho mauna	E
Adenophorus tripinnatifidus Gaudich.		E
Grammitis tenella Kaulf.	mahinalua	E
HYMENOPHYLLACEAE		
Mecodium recurvum (Gaudich.) Copel.	ohia ku	E
LYCOPODIACEAE		
Lycopodium venustulum var. *venustulum*		I
POLYPODIACEAE		
Lepisorus thunbergianus (Kaulf.) Ching	pakahakaha	I
PSILOTACEAE		
Psilotum nudum (L.) P. Beauv.	moa, moa nahele	I
ANGIOSPERMS--MONOCOTS		
CYPERACEAE		
Machaerina angustifolia (Gaudich.) T.Koyama	`uki	I
IRIDACEAE		
Crocosmia x_crocosmiiflora (Lemoine ex Burbidge & Dean) N.E.Br.	montbretia	X
LILIACEAE		
Astelia menziesiana Sm.	kaluaha	E
Dianella sandwicensis Hook. & Arn.	`uki`uki	E
POACEAE		
Axonopus fissifolius (Raddi) Kuhim.	narrow-leaved carpetgrass	X
Andropogon virginicus L.	broomesedge, yellow bluestem	X
Sacciolepis indica (L.) Chase	Glenwood grass	X

SMILACACEAE		
Smilax melastomifolia Sm.	hoi kuahiwi	E
ZINGIBERACEAE		
Hedychium sp.	ginger	X
DICOTS		
AQUIFOLIACEAE		
Ilex anomala Hook.& Arn.	kawa`u	I
ARALIACEAE		
Cheirodendron platyphyllum subsp. *platyphyllum* (Hook.&Arn.) Seem.	lapalapa	E
Cheirodendron trigynum subsp. *trigynum* (Gaudich.) A.Heller	olapa	E
ASTERACEAE		
Ageratina adenophora (Spreng.) R.M.King & H.Rob.	Maui pamakani	X
BEGONIACEAE		
Begonia foliosa Kunth	fuchsia begonia	X
CAMPANULACEAE		
Trematolobelia macrostachys (Hook. & Arn.) Zahlbr.	koli`i	E
CELASTRACEAE		
Perrottetia sandwicensis A.Gray	olomea	E
EPACRIDACEAE		
Leptecophylla tameiameiae (Cham & Schlecht) C.M. Weiller	pukiawe	I
ERICACEAE		
Vaccinium calycinum Sm.	`ohelo	E

GESNERIACEAE		
Cyrtandra lessoniana Gaudich	ha`iwale	E
GUNNERACEAE		
Gunnera petaloidea Gaudich.	`ape`ape	E
HYDRANGEACEAE		
Broussaisia arguta Gaudich.	kanawao	E
LAMIACEAE		
Phyllostegia grandiflora (Gaudich.) Benth.	kapana	E
MELASTOMATACEAE		
Clidemia hirta (L.) D. Don var. *hirta*	Koster's curse	X
MYRSINACEAE		
Myrsine lessertiana A.DC.	kolea lau nui	E
Myrsine sandwicensis A.DC.	kolea lau li`i	E
MYRTACEAE		
Metrosideros polymorpha var. *polymorpha* Gaudich.	`ohi`a lehua	E
Metrosideros tremuloides (A.Heller) Knuth	lehua `ahihi	E
Psidium cattleianum Sabine	Strawberry guava, waiwi `ula`ula	X
Syzygium sandwicensis (A.Gray) Nied.	`ohi`a ha	E
PIPERACEAE		
Peperomia membranacea	`ala`alawainui	E
PLANTAGINACEAE		
Plantago major L.	common plantago	X
PLANTAGINACEAE		
Plantago lanceolata L.	Narrow-leaved plantain	X

ROSACEAE		
Rubus argutus Link	prickly Florida blackberry	X
RUBIACEAE		
Coprosma ochracea	pilo	E
Kadua affinis DC.	manono	E
Nertera granadensis (Lf.) Druce	makole	I
RUTACEAE		
Melicope clusiifolia (A.Gray) T.G.Hartley & B.C.Stone	alani	E
Melicope oahuensis (H.Lev.) T.G.Hartley & B.C.Stone	alani kuahiwi	E
VERBENACEAE		
Citharexylum caudatum L.	fiddlewood	X

Appendix D

Avian and Terrestrial Mammalian Surveys Conducted for the Information and Communication Services Division Mt. Ka'ala Radio Facility Improvements Project

February 2011

Prepared By:
Rana Biological Consulting, Inc.

Avian and Terrestrial Mammalian Surveys Conducted for the Information and Communications Services Division, Mt. Ka'ala Radio Facility Improvement Project, Waialua and Wahiawā Districts, Island of O'ahu

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February 10, 2011

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Introduction and Background

The State of Hawai'i, Department of Accounting and General Services, Information and Communication Services Division (ICSD) is proposing to implement repair and renovation improvements to their existing building used as a radio facility, a telecommunications tower, and other accessory electrical improvements located on Mt. Ka'ala.

The State's licensed radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Ka'ala Air Force Station (AFS) site situated at the summit of Mt. Ka'ala. The site is less than one half-acre and is identified as Tax Map Keys (TMK): (1) 7-07-001: portions of 001; (1) 6-07-003: portions of 023 and 025. Mt. Ka'ala is at the northern end of the Waianae Mountain Range, and is the highest peak on the island of O'ahu at an elevation of 4,025 feet above mean sea level. The Mt. Ka'ala AFS is located where the districts of Wahiawā, Wailua, and Wai'anae all converge at this mountain's summit. The State's radio facility is situated within Wailua and Wahiawā districts and electrical conduit improvements would extend slightly down the Kamaohanui Ridge and into the Wailua district (Figure 1).

The Mt. Ka'ala AFS is maintained by the U.S. Army, which has tenant agreements with other Federal and State agencies for telecommunications use at this site. The majority of the land on which Mt. Ka'ala AFS is constructed, is owned by the U.S. Army, and is part of the Schofield Barracks Military Reservation. This Federal property is identified as TMK: (1) 7-07-001: portion of 001. This station is fenced for security, and other government agencies have telecommunication facilities on this site. The U.S. Army maintains tenant agreements with both the U.S. Air Force and the Federal Aviation Administration for their facilities at this station. The State of Hawai'i, Hawai'i Air National Guard, and the U.S. Navy also maintain isolated individual structures.

The western portion of the fenced-in summit area of the Mt. Ka'ala AFS includes two parcels owned by the State of Hawai'i, identified as TMK: (1) 6-07-003: portions of 023 and 025. These areas of the station are leased to the U.S. Air Force by the State of Hawai'i. This State property is designated as the Mt. Ka'ala Natural Area Reserve and is under the jurisdiction of the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW).

This report describes the methods used and the results of, avian and mammalian surveys conducted on the subject property as part of the environmental disclosure process associated with the proposed ICSD improvement project.

The primary purpose of the surveys was to determine if there are any avian or mammalian species currently listed, or proposed for listing under either federal or State of Hawai'i endangered species statutes within or adjacent to the study area. The federal and State of Hawai'i listed species status follows species identified in the following referenced documents, (DLNR 1998, U. S. Fish & Wildlife Service (USFWS) 2005a, 2005b, 2011). Fieldwork was conducted on February 2, 2011.

A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text.

General Project and Site Description

The State is proposing to undertake both interior and exterior repairs to the existing State building. This includes re-roofing the building to address cracks and leaks. A new conduit would be installed within the existing driveway to connect the State building with a nearby generator building (Figure 1).

The State's existing 25-foot-tall tower will be replaced with a 50-foot-tall tower within the State's licensed area. Additional microwave and whip antennas will be installed on the new tower along with the antennas relocated from the State building. The U.S. Coast Guard will be responsible for demolishing this existing State radio tower, and designing and constructing the new taller tower.

A 48-inch-tall, 75-inch-wide corner reflector antenna will be relocated from the State building to the lower mount at the existing antenna site downhill of Kamaohanui Ridge. The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility.

There is one existing above ground microwave antenna feed line routed from the Mt. Ka'ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits will be routed above ground from the State's radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai'i for its Hawai'i Interactive Television System distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State's critical land mobile radio systems that support public safety and critical government operations.

The habitat present within the fenced secure area consists of pavement, driveways and very short mowed grass (Figure 1 and 2). The habitat between the security fence and the down-slope dish antennae is composed of a native dominated elfin cloud forest (Figure 1 and 3).

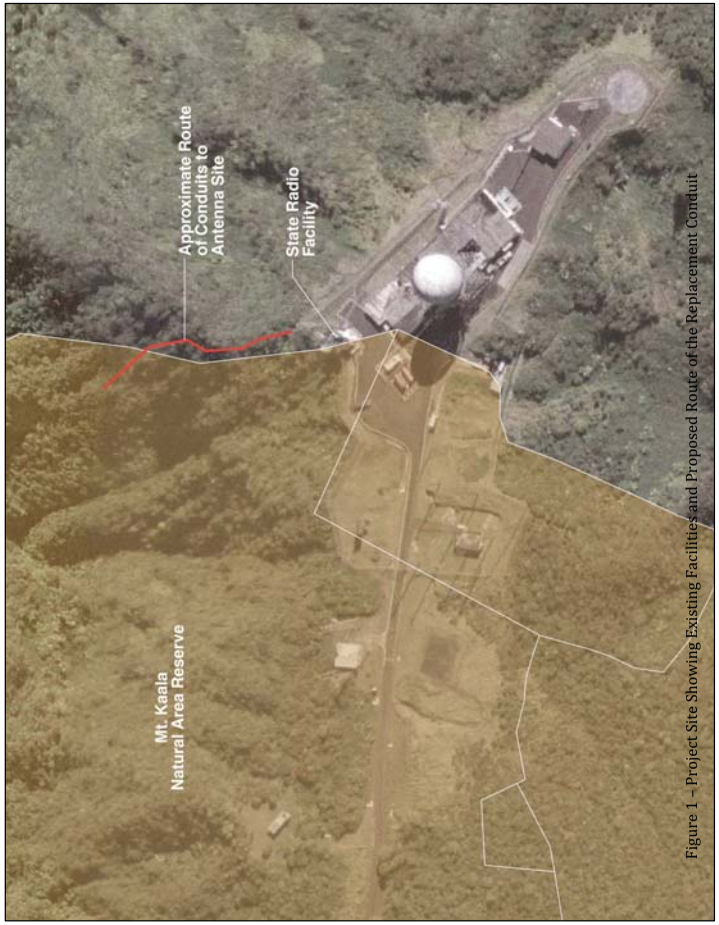

Figure 1 – Project Site Showing Existing Facilities and Proposed Route of the Replacement Conduit

Figure 2 - State of Hawai'i radio towers and building, security fence and habitat within the fenced perimeter

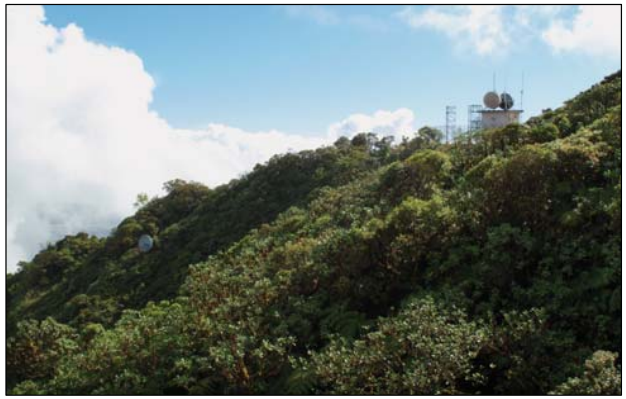

Figure 3 - State of Hawai'i radio towers and building and dish antenna, showing typical elfin cloud forest habitat between the towers and the dish antenna

Methods

The avian phylogenetic order and nomenclature used in this report follows the *AOU Check-List of North American Birds* (American Ornithologists' Union 1998), and the 42nd through the 51st supplements to the Check-List (American Ornithologists' Union 2000; Banks et al. 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010). Mammal scientific names follow (Tomich 1986). Place names follow (Pukui et al. 1974).

Avian Survey Methods

One avian count station was sited approximately half way between the State of Hawai'i radio towers and the dish antenna located down slope from the security fence (Figures 1 and 3). A single 8-minute avian point count was made at this station. Field observations were made with the aid of Leica 10 X 42 binoculars and by listening for vocalizations. The count and subsequent search of the remainder of the site was conducted between 9:00 am and 10:30 am. Time not spent counting the point count station was used to search the rest of the site for species and habitats not detected during the point count. Weather conditions were ideal, with no rain, unlimited visibility and winds of between 1 and 3 miles an hour.

Avian Survey Results

A total of 18 individual birds of six different species, representing four separate families, were recorded during the station count, no additional species were detected during the remainder of the time spent on the site (Table 1). Three of the species detected, Pacific Golden-Plover (*Pluvialis fulva*), O'ahu 'Amakihi[1] (*Hemignathus flavus*), and 'Apapane (*Himatione sanguinea*) are native species. The plover is an indigenous migratory shorebird species and the 'Amakihi and 'Apapane are endemic forest birds. The remaining three species detected are considered to be alien to the Hawaiian Islands (Table 1).

No avian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR 1998, USFWS 2005a, 2005b, 2011).

Avian diversity and densities were in keeping with the relatively high altitude and the ridge top environment present on the site.

[1] The American Ornithological Union does not use Hawaiian diacritical marks in its Check-List of North American Birds, we choose to do so out of respect for the Hawaiian language and culture.

Table 1 - Avian Species Detected – Mt. Ka'ala Radio Facility Site

Common Name	*Scientific Name*	*ST*	*#*
	CHARADRIIFORMES		
	CHARADRIIDAE - Lapwings & Plovers		
Pacific Golden-Plover	*Pluvialis fulva*	IM	1
	PASSERIFORMES		
	CETTIIDAE - Cettia Warblers & Allies		
Japanese Bush-Warbler	*Cettia diphone*	A	6
	ZOSTEROPIDAE - White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	3
	FRINGILLIDAE – Fringilline And Carduelline Finches & Allies		
	Carduelinae – Carduline Finches		
House Finch	*Carpodacus mexicanus*	A	2
	Drepanidinae - Hawaiian Honeycreepers		
O'ahu 'Amakihi	*Hemignathus flavus*	EB	1
'Apapane	*Himatione sanguinea*	EB	5

Key to Table 1.

ST	Status
A	Alien Species – introduced to Hawai'i by humans which have become established in the wild
IM	Indigenous Migratory Species – Native migratory but not unique to the Hawaiian islands
EB	Endemic Breeding Species – Native and unique to the Hawaiian Islands
#	Number - Number of birds detected during the station count

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *'ōpe'ape'a* as it is known locally, all terrestrial mammals currently found on the Island of O'ahu are alien species, and most are ubiquitous. The survey of terrestrial mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all vertebrate mammalian species detected within the project area.

Mammalian Survey Results

Three mammalian species were detected during the course of this survey. Several humans (*Homo sapiens*) and ample sign of their presence in the project area, was encountered.

Tracks, sign and scat of dog (*Canis f. familiaris*) and pig (*Sus s. scrofa*), was encountered along the roadside leading up to the security fence.

No mammalian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR 1998, USFWS 2005a, 2005b, 2011).

Discussion

Avian Resources

The findings of the avian survey are consistent with the location of the property, and the habitat present on the site.

Although no seabirds were detected during the course of this survey, several seabird species potentially overfly the site on occasion. Collision with man-made structures is considered to be the second most significant cause of mortality in locally nesting seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals (Hadley 1961, Telfer 1979, Sincock 1981, Reed *et al*, 1985, Telfer *et al*, 1987, Cooper and Day 1994, 1998, Podolsky *et al*, 1998, Ainley *et al*, 2001).

There are no known nesting colonies of any of the resident seabird species present on O'ahu on, or immediately adjacent to the project site.

Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitat currently present on the site. Although no rodents were detected during the course of this survey, it is likely that one or more of the four established alien *muridae* found on O'ahu, roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), European house mouse (*Mus musculus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*) use various resources found within the general project area on a seasonal basis. All of these introduced rodents are deleterious to native ecosystems and the native faunal species that are dependant on them for food, cover and other resources.

In a letter received by the project from the USFWS dated March 31, 2011 – USFWS Log# 2011-TA-0176 the Service raised the issue of the potential that clearing vegetation within the project site may pose a risk to roosting bats.

As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of suitable roosting vegetation is normally likely to be minimal. However, during the pupping season female bats carrying their pups may be less able to rapidly

vacate a roost site as the vegetation is cleared, additionally adult female bats sometimes leave their pups in the roost tree while they themselves forage, very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing.

As there is no vegetation suitable to provide roosting sites for Hawaiian hoary bats within the project site, it is not expected that the removal of the low stature shrubby vegetation will result in deleterious impacts to the listed species.

Potential Impacts to Protected Species

Seabirds

The principal potential impact that the improvement project poses to seabirds, is the increased threat that birds potentially could be downed after becoming disoriented by outdoor lighting associated with possible night-time construction activity, and following build-out by any exterior lighting which may be installed as part of this project.

Critical Habitat

The site is within the federally designated O'ahu 'Elepaio (*Chasiempis ibidis*) Critical Habitat Unit # 1, Northern Waianae Mountains, which encompasses some 5,657 acres of the total 11,005 acres of land designated as Critical Habitat for this species (USFWS 2001). In their final rule the service estimated that there was a resident 'Elepaio population of three birds within the Mt. Ka'ala Natural Area Reserve, but no known breeding pairs (USFWS 2001). O'ahu 'Elepaio are usually found in lower elevation, taller stature mixed forest than is found within the project area, atop Mt. Ka'ala.

The proposed action will modify 0.093 acres of 'Elepaio Critical Habitat, which represents 0.002% of the 5,657acres of Unit #1. The habitat that will be modified has already been modified by the construction and ongoing maintenance of the existing facilities in the same location.

Recommendations

- If nighttime work will be required in conjunction with the proposed action, it is recommended that lights be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures (Reed et al. 1985, Telfer *et al* 1987).

- It is also recommended that all exterior lighting that may be associated with the operation of the proposed facility be shielded so as to reduce the potential for

interactions of nocturnally flying seabirds with external lights and man-made structures (Reed *et al* 1985, Telfer *et al* 1987).

Glossary

Alien – Introduced to Hawai'i by humans
Endangered – Listed and protected under the Endangered Species Act of 1973, as amended (ESA) as an endangered species
Endemic – Native to the Hawaiian Islands and unique to Hawai'i
Indigenous – Native to the Hawaiian Islands, but also found elsewhere naturally
Muridae – Rodents, including rats, mice and voles, one of the most diverse family of mammals.
Nocturnal – Night-time, after dark
'Ōpe'ape'a – Endemic endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*)
Pelagic – An animal that spends its life at sea – in this case seabirds that only return to land to nest and rear their young
Phylogenetic – The evolutionary order that organisms are taxonomically arranged by
Threatened – Listed and protected under the ESA as a threatened species

AFS – US Air Force Station
DLNR – Hawai'i State Department of Land & Natural Resources
DOFAW – Division of Forestry and Wildlife
ESA – Federal Endangered Species Act of 1973, as amended
ICSD – Information and Communication Services Division
TMK – Tax Map Key
USFWS – United State Fish & Wildlife Service

Literature Cited

Ainley, D. G, R. Podolsky, L. Deforest, G. Spencer, and N. Nur. 2001. The Status and Population Trends of the Newell's Shearwater on Kaua'i: Insights from Modeling, *in*: Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna*. Studies in Avian Biology No. 22: Cooper's Ornithological Society, Allen Press, Lawrence, Kansas. (Pg. 108-123).

American Ornithologist's Union. 1998. *Check-list of North American Birds*. 7th edition. AOU. Washington D.C. 829pp.

_____. 2000. Forty-second supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 117:847-858.

Banks, R. C., C. Cicero, J. L. Dunn, A. W. Kratter, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, and D. F. Stotz. 2002. Forty-third supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 119:897-906.

_____. 2003 Forty-fourth supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 120:923-931.

_____. 2004 Forty-fifth supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 121:985-995.

_____. 2005 Forty-sixth supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 122:1031-1031.

_____. 2006 Forty-seventh supplement to the American Ornithologist's Union *Check-list of North American Birds*. Auk 123:926-936.

Banks, R. C., C. R. Terry Chesser, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, and D. F. Stotz. 2007 Forty-eighth supplement to the American Ornithologist Union *Check-list of North American Birds*. Auk 124:1109-1115.

Banks, R. C., C. R. Terry Chesser, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, and D. F. Stotz, and K. Winker. 2008 Forty-ninth supplement to the American Ornithologist Union *Check-list of North American Birds*. Auk 125:758-768.

Chesser, R. T., R. C. Banks, F. K. Barker, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., J. D. Rising, and D. F. Stotz, and K. Winker. 2009. Fiftieth supplement to the American Ornithologist Union *Check-list of North American Birds*. Auk 126:1-10.

_____. 2010. Fifty-first supplement to the American Ornithologist Union *Check-list of North American Birds*. Auk 127:726-744.

Cooper, B. A and R. H. Day. 1994. Kauai endangered seabird study. Volume 1: Interactions of Dark-rumped Petrels and Newell's Shearwaters with utility structures on Kauai, Hawaii: Final Report, TR-105847-V1, Electric Power Research Institute, Palo Alto, California.

_____. 1998. Summer Behavior and Mortality of Dark-rumped Petrels and Newell's Shearwaters at Power Lines on Kauai. Colonial Waterbirds, 21 (1): 11-19.

Department of Land and Natural Resources (DLNR). 1998. Indigenous Wildlife, Endangered And Threatened Wildlife And Plants, And Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-134-1 through §13-134-10, dated March 02, 1998.

Hadley, T. H. 1961. Shearwater calamity on Kauai. Elepaio 21:60.

Podolsky, R., D.G. Ainley, G. Spencer, L. de Forest, and N. Nur. 1998. "Mortality of Newell's Shearwaters Caused by Collisions with Urban Structures on Kaua'i". Colonial Waterbirds 21:20-34.

Pukui , M. K., S. H. Elbert, and E. T. Mookini 1976. *Place Names of Hawaii*. University of Hawaii Press. Honolulu, Hawai'i. 289 pp.

Reed, J. R., J. L Sincock, and J. P. Hailman 1985. Light Attraction in Endangered Procellariform Birds: Reduction by Shielding Upward Radiation. Auk 102: 377-383.

Sincock, J. L. 1981. Saving the Newell ʻs Shearwater. Pages 76-78 in Proceedings of the Hawaii Forestry and Wildllife Conference, 2-4 October 1980. Department of Land and Natural Resources, State of Hawaii, Honolulu.

Telfer, T. C. 1979. Successful Newell's Shearwater Salvage on Kauai. 'Elepaio 39:71

Telfer, T. C. , J. L. Sincock, G. V. Byrd, and J. R. Reed. 1987. Attraction of Hawaiian seabirds to lights: Conservation efforts and effects of moon phase. Wildlife Society Bulletin 15:406-413.

Tomich, P.Q. 1986. *Mammals in Hawaii*. Bishop Museum Press. Honolulu, Hawaii. 37 pp.

U.S. Fish & Wildlife Service (USFWS) 1998. Recovery Plan for the Hawaiian Hoary Bat. U.S. Fish & Wildlife Service, Portland, Oregon.

_____. 2001. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Oahu Elepaio (*Chasiempis sandwichensis ibidis*); Final Rule. Federal Register, 66 No. 237 (December 10, 2001): 63751-63782.

_____. 2005a. Endangered and Threatened Wildlife and Plants. 50CFR 17:11 and 17:12 (Tuesday, November 1, 2005).

U.S. Fish & Wildlife Service (USFWS) 2005b. 50 CFR 17. Endangered and Threatened Wildlife and Plants. Review of Species That Are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petition; Annual Description of Progress on Listing Actions. Federal Register, 70 No. 90 (Wednesday, May 11, 2005): 24870-24934.

_____. 2011. USFWS Threatened and Endangered Species System (TESS), online at http://ecos.fws.gov/tess_public/StartTESS.do

Appendix E

Terrestrial Invertebrate Resources at the Site of the Mt. Ka'ala Radio Facility Project

May 2011

Prepared By:
Steven Lee Montgomery, Ph.D.

Terrestrial Invertebrate resources at the site of the Mt. Ka‘ala Radio Facility Project, Mt. Ka’ala, O’ahu, Hawai’i

Prepared by:
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Submitted to: Helber Hastert & Fee Planners, Inc.

For: Richard Matsunaga and Associates Architects, Inc.

REVISED May 26, 2011

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SUMMARY

The Mount Ka'ala project sites sampled in this survey yielded native and adventive terrestrial invertebrates. No invertebrate currently listed as endangered or threatened under either federal or state statutes was observed within the survey area. I found the habitat little changed since my last visit in June 2001.

INTRODUCTION

This report summarizes the findings of a survey conducted by Steven L. Montgomery, Ph. D., to provide information as part of regulatory documents to be prepared by the planning firm Helber Hastert & Fee Planners, Inc. in connection with the Information and Communication Services Division Mt. Ka'ala Radio Facility Improvements Project.

The project proposes to conduct repair and replacement actions related to communications equipment at the summit of the Waianae mountains, O'ahu (Figure 1). Tasks include

- replace an existing telecommunications tower at the same location
- repair and renovation improvements of an existing radio facility State building
- extend electrical conduits between State and Federal buildings
- replace existing conduit lines with new conduits running approximately 200 ft away and 90 feet down slope from the State building to an existing antenna site, and other accessory electrical improvements.

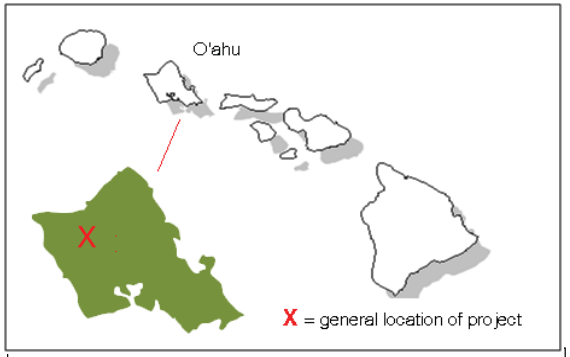


Figure 1: General location of project in Hawaiian Island chain.

These activities will take place in well-defined areas at the summit of Mt. Ka'ala, O'ahu. The majority of the activity is in locations that already have cement pads or other altered environments. A portion of the activity will require work in a narrow 20 ft. corridor during construction and an 8ft. easement after completion (Figure 4, red line) within a small portion of the state's Mount Ka'ala Natural Area Reserve (Figure 2).

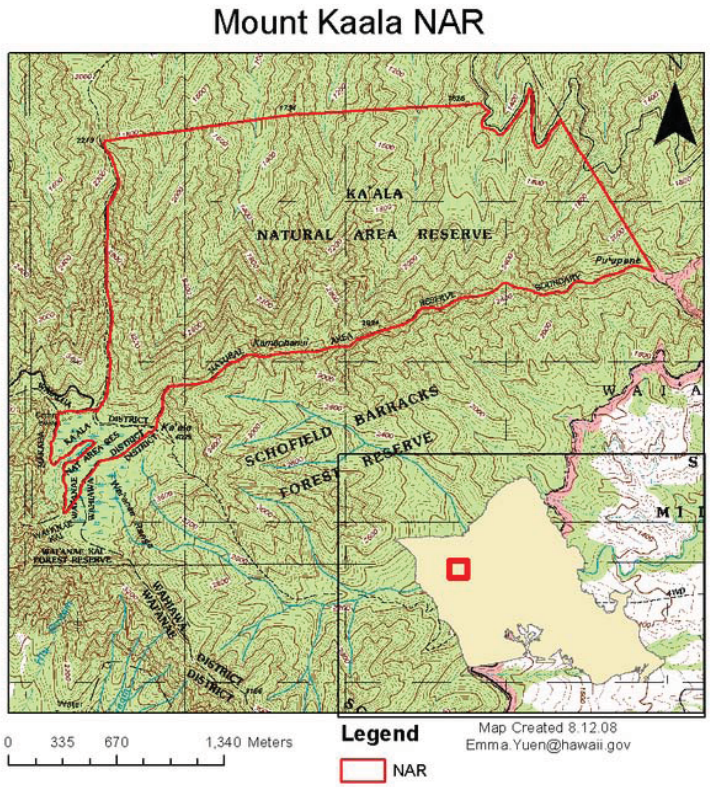


Figure 2: Ka'ala Natural Area Reserve
from DLNR/DOFAW web site

SURVEY METHODS

Since 1970, I have taken part in field projects on the Island of O'ahu, several on Mt. Ka'ala, and others throughout the island chain. My study design and my analysis of results utilize those experiences and the results of other surveys.

Previous Surveys and Literature Search

A search was made for independent biological studies associated with this site or with nearby sites. Searches were made for publicly available articles mounted on the web (Google Scholar, University of Hawaii's Scholar Space). Searches were made in the Pacific Basin Information Node (2011) a database which provides geographic access. Searches also were made in Bishop Museum's Arthropod and Mollusk checklists for species utilizing 'kaala' as part of the species name.

A search at the State's Office of Environmental Quality Control (2010) web site for surveys done at this site or in adjacent areas returned no results. This is not surprising as there has been no construction in the area for many years. Access to the project area has been limited by the remote location, by government security, and by restrictions associated with the current status of a portion of the mountain as a Natural Area Reserve.

It should be remembered that the place name Ka'ala applies to the entire mountain in some databases and even the designation 'summit' or 'top' covers a wide area. The focus of this survey was a very narrow and defined area and it is to be expected that many species noted as present on Mt. Ka'ala in published studies, and in museum collections and databases will not be found by this survey.

Fieldwork

Field surveys were conducted February 2 and 3, 2011. I conducted a general assessment of terrain and habitats at the start of the survey. Surveying efforts were conducted at various times of day and night, vital for a thorough survey. Field collaboration with botany surveyor M. LeGrande was helpful to my invertebrate searches.

Fieldwork schedule:

February 2, 2011	Orientation, general invertebrate collecting; light survey
February 3, 2011	Half-day of general invertebrate collecting

SURVEY METHODS:

The following survey methods for terrestrial invertebrates were used as appropriate to the terrain, botanical resources, and target species.

Baiting: Baits are used to attract insect species to specific tastes or smells. For example, native *Drosophila* respond to a mushroom or banana bait. Baits can mimic that smell and taste and so attract those insects. Insects are enticed by the bait's 'advertisement.' Baits are placed at likely locations and checked periodically. Any insects at the bait are then observed and censused. This is much more efficient than roaming the research area seeking cryptic or night feeding insects.

Host plant searches: Potential host plants, both native and introduced, were searched for arthropods that feed or rest on plants.

Light survey: A survey of insects active at night is vital to a complete record of the fauna. Many insects are only active at night to evade birds, avoid desiccation and high temperatures, or to use night food sources, such as night opening flowers. Light sampling uses a bright light source in front of a white cloth sheet (Figure 3). Night active insects seem to mistake the collecting light for the light of the moon, which they use to orient themselves. In attempting to navigate by the collecting light, disoriented insects are drawn toward the light and land on the cloth in confusion. This type of collecting is most successful during the dark phase of the moon or under clouds blocking starlight.

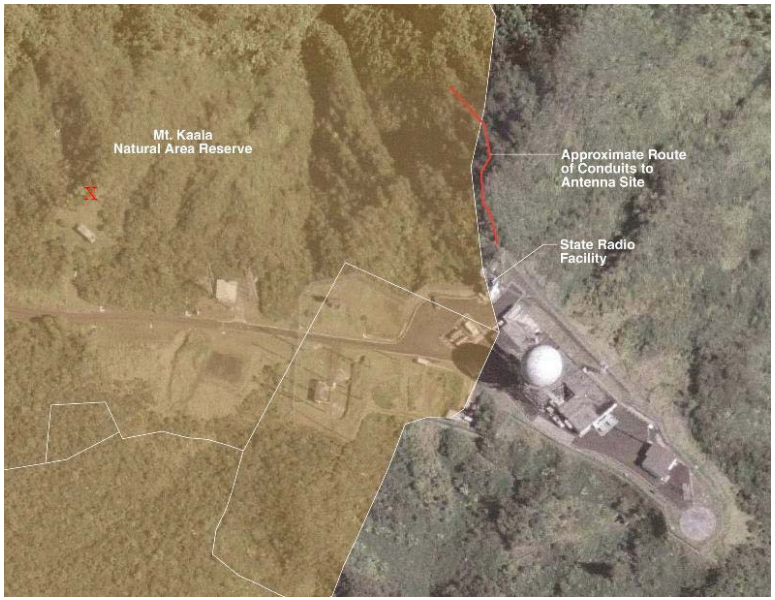
Figure 3. Light census on Ka'ala

Survey Methods continued

Sampling was conducted for approximately 8 hours on the night of Feb 2, 2011. Both mercury vapor (MV) and ultraviolet (UV) light sources were used. Lights associated with nearby buildings did provide some competition to my light survey.

The location for the light was mandated by NARS staff, Ms. B. Gagné, due to concern for damage to specific plants in the survey area. The sample location, marked on Figure 4, is close enough to the proposed construction area to offer a fair survey sample of the night active invertebrate fauna.

Figure 4. Map showing light monitoring sites (**X**). Red line shows route of conduit.



Survey Methods continued

Sweep nets: Sweeping is a common method of general collecting for most flying and perching insects. A fine mesh net was swept across plants, leaf litter, rocks, etc. to collect any flying, perching, or crawling insects. Transfer from the net was either by aspiration, or by placing the net contents directly into a holding container.

Visual observation: At all times, I was vigilant for any visual evidence of arthropod presence or activity. Visual observations provide valuable evidence and are a cross check that extends the reach of sampling techniques. Visual observation also included turning over rocks, examining dead wood, and other debris.

SURVEY LIMITATIONS / CONDITIONS
My ability to form advisory opinions is influenced in the following ways:

Collecting conditions:
Weather: Weather was favorable for surveying on both days of the survey.

Seasons:
Seasonal variation in vegetation was not a factor in the native invertebrates inventoried.

Weather and seasonal vegetation play an important role in any biological survey. Host plant presence/absence, and seasonal changes, especially plant growth after heavy rains, affect the species collected. Many arthropods time their emergence and breeding to overlap or follow seasonal weather, or to coincide with growth spurts of an important food plant. Monitoring at a different time of the year might produce a longer / shorter / different list of species.

Moon: The moon was 'dark' and presented no competition to the collecting light on the evening of February 2, 2011 (USNO).

Limited duration: Because the size of the project area is relatively small, the mobility of invertebrates makes it possible that surveying for a longer period of time would enlarge the list of invertebrate species. A few species reasonably expected to occur on the property were not observed but are likely present (see Species May Be Present, pg. 8).

Selectivity: The terrestrial invertebrate survey was focused on finding any endemic and indigenous Hawaiian species. No attempt was made to completely document the common alien arthropod species present.

RESULTS OF SURVEY:
Native Hawaiian plant, vertebrate, and invertebrate populations are interdependent. Certain insects are obligatorily attached to host plants and use only that plant as their food and / or provide pollination for native plants. Invertebrates such as insects and snails, as well as the fruit and seeds of native plants, are the natural food of native birds. The health of native Hawaiian ecosystems depends on habitat quality and absence or low levels of continental predators and herbivores. Sufficient food sources, host plant availability, and the absence of continental dominants comprise a classic healthy native ecosystem. Consequently, where appropriate in the survey discussion, host plants, and introduced arthropods, birds, and mammals, are noted.

General observation:
Having made a number of visits to the Mt. Ka'ala NARS over a 40-year period, I am pleased to say the vegetation and native invertebrate species appeared to be in generally good condition similar to my last visit.

Incidental records:
In addition to the results noted below, the following species were noted in passing during the survey:

Pig trails were seen in the survey area and pigs (*Sus scrofa scrofa*) were seen running ahead of the vehicle on the road 1 mile below the work site.

DISCUSSION
Native terrestrial invertebrate species observed are listed in Table 1.

Species of Interest
INSECTA
Lepidoptera: Geometridae
The Lehua pug moth (*Eupithecia*) was among the most abundant native invertebrates present.

Species of Interest continued

Diptera: Cecidomyiidae
Heteroconarinia spinosa Hardy, 1960
Of note are the fly larvae found in the half-unfolded terminal leaf of a *Melicope* species (Figure 5). The larvae did not respond to a variety of foods offered in the lab in an attempt to rear them to adult to allow a definite species identification. The circumstances of their discovery, however, mirror a report by entomologist P. H. Timberlake in March 1917 (1918). He reports capturing a female laying eggs in the same part on the same plant genus on Mt. Ka'ala, but the eggs did not hatch in his lab.

Figure 5. *Melicope* leaves (folded leaf circled) and opened leaf on right showing larvae.

SPECIES NOT OBSERVED, MAY BE PRESENT ON THE SITE
INSECTA
Diptera: Drosophilidae*: Drosophila* sp. Picture-winged flies
None of the native *Drosophila* species recently listed as endangered or threatened were observed and the host plants are not present on this route. It should be noted, however, that one area of the critical habitat for *Drosophila substenoptera* was designated on Mt. Ka'ala (Figure 6). (USFWS 2006, 2008). The specific host plant associated with *D. substenoptera, Cheirodendron,* was seen on the site, but only on the edge of the survey area and at a size and condition unsuitable to host *D. substenoptera* (LeGrande 2011).

Species Not Observed:
Drosophila continued

The conduit route and repair work to other facilities are well outside the actual border of the critical habitat (Figure 7).

Although the specific areas covered by this survey were not conducive to their presence, *Drosophila* of several species do thrive in the near vicinity based on other surveys (Montgomery 1994; PBIN 2011).

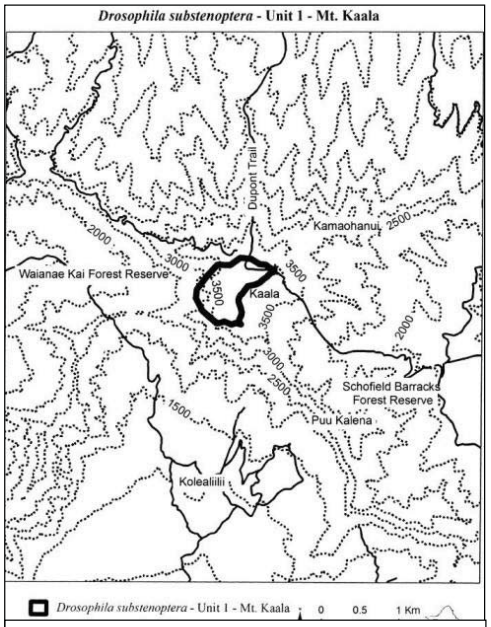


Figure 6. Mt. Ka'ala critical habitat for *Drosophila substenoptera*

Figure 7. *Drosophila substenoptera* critical habitat / project location

Species Not Observed, May Be Present continued

Odonata: Coenagrionidae *Megalagrion koelense* Hawaiian damselfly
Megalagrion koelense (Blackburn, 1884), although not seen on this visit, does exist on Mt. Ka'ala. I have observed the larvae in axils of 'ie'ie (*Freycinetia arborea*) in past visits to the mountain and it was taken previously by others (e.g., PBIN 2011: ent 2950 Bryan Jr., E.H.1929 Apr 21). The adults are free flying, take smaller insects as prey, and should not be disturbed by the planned project activity. Eggs are laid and the young develop in phytotelmata, such as the small amounts of water in the 'ie'ie axils. As long as the project does not remove any of the host plants, the larvae will be undisturbed.

MEDICALLY IMPORTANT SPECIES ON THE SITE

Although not seen during the survey, the larger Ka'ala area may include habitat for centipedes, scorpions, and widow spiders. Both honey bees (*Apis mellifera*) and Western yellowjacket wasps (*Vespula pensylvanica*), a known alien predator on *Drosophila*, have been seen.

Western yellowjacket wasps (Figure 8) are a ground-nesting species and can be very aggressive. Unlike honey bees they do not die when they sting and individuals can sting repeatedly. Although it is unlikely a nest is in the construction route, extreme caution should be used if a nest is found. Cordon off the adjacent area. Do not attempt eradication without protective clothing and instruction. Request professional assistance from the nearest Hawai'i State Department of Health, Vector Control Branch.

Figure 8 Ground nest of yellowjacket wasp. Wasps can sting repeatedly in large numbers.

Those entering the property should be alert for the species noted above as they may pose a serious risk to some individuals, and supervisors should be aware of any employee allergies. Some individuals can experience anaphylactic reactions to venom. Never put hands where eyes cannot see. Workers can greatly reduce the risk of accidental contact and bites or stings with all species noted here with appropriate clothing. Recommended are the use of gloves and wearing long sleeved shirt, long pants, boots with socks pulled up over pant cuffs.

Please see *What Bit Me?* (Nishida & Tenorio 1993) and *What's Bugging Me?* (Tenorio & Nishida 1995).

Table 1: List of Invertebrates seen in the survey

Species	Common Name	Status	Abundance	Notes
MOLLUSCA				
GASTROPODA				
PULMONATA	snails and slugs			
Cochlicopidae				
Laminella sp.		End	U	
Leptachatina sp.		End	O	
Succineidae				
Succinea sp.		End	C	
ARTHROPODA				
ARACHNIDA				
ACARI	mites			
Oribatidae				
Oribotritia n. sp.	moss mite			
ARANEAE	spiders			
Salticidae	jumping spider			
unidentified species		?	U	seen but not captured
CRUSTACEA				
AMPHIPODA				
Talitridae	sandhoppers			
Platorchestia kaalaensis (Barnard, 1955)		End	U	
INSECTA				
COLEOPTERA	beetles			
Aglycyderidae				
Proterhinus cristatus Perkins, 1931		End	U	
Nitidulidae				
Nesapterus monticola (Sharp, 1878)		End	R	
Staphylinidae				
Myllaena vicina Sharp		End	U	
COLLEMBOLA	springtails			
Entomobryidae				
Tomocerus minor (Lubbock)		Adv	A	
DIPTERA	flies, mosquitoes			
Calliphoridae				
Dyscritomyia cuprea James, 1981		End	O	
Cecidomyiidae				
Heteroconarinia spinosa Hardy, 1960 ?	alani plant midge	End	R	see notes

Table 1: continued

Species	Common Name	Status	Abundance	Notes
Diptera continued				
Drosophilidae				
Tantalia albovittata (Malloch)		End	U	
Titanochaeta swezeyi Wirth		End	U	pupa in web
Muscidae				
Lispocephala kaala Williams, 1938		End	U	
HETEROPTERA	true bugs			
Miridae				
Hyalopeplus pellucidus (Stal)		End	C	
Nesiomiris beardsleyi Gagne, 1997		End	U	
Reduviidae				
Saldula sp.		End	O	
HOMOPTERA	planthoppers			
Cixiidae				
Oliarus kaonohi Kirkaldy		End	U	
Psyllidae				
Hevaheva silvestris Kirkaldy		End	O	
Trioza ohiaicola Crawford, 1918		End	A	
HYMENOPTERA	wasps, bees, ants			
Apidae				
Apis mellifera L.	honey bee	Adv	O	
Vespidae				
Vespula pensylvanica (Saussure, 1857)	western yellow-jacket	Adv	U	
ICHNEUMONIDAE	wasps			
Enicospilus kaala Ashmead, 1901		End	U	
LEPIDOPTERA				
Cosmopterigidae	case bearers			
Hyposmocoma sp. 1	black, pointed adult	End	U	
Crambidae (Pyralidae)	micro-moths			
Eudonia ombrodes (Meyrick,1888)	moss moth	End	A	
Geometridae	pug moths			
Eupithecia craterias (Meyrick, 1899)		End	O	
Eupithecia monticolens Butler, 1881		End	C	
Eupithecia n. sp. #7		End	U	
Eupithecia n. sp. #8		End	R	
Scotorythra corticea	looper moths	End	U	
Scotorythra epixantha (Perkins, 1901)		End	U	
Scotorythra rara (Butler)		End	C	
Scotorythra paludicola (Butler)	koa moth	End	U	
Scotorythra species 1		End	U	

Table 1: continued

Species	Common Name	Status	Abundance	Notes
Lepidoptera continued				
Lycaenidae				
Udara blackburni (Tuely, 1878)	Blackburn's butterfly	End	C	
Noctuidae				
Ascalapha odorata (Linnaeus, 1758)	black witch moth	Adv	O	
Haliophyle flavistigma (Warren, 1912)		End	U	
Pyralidae				
Omiodes antidoxa Meyrick		End	U	
Sphingidae	hawk moths			
Hyles calida (Butler)		End	R	
Tortricidae				
Eccoptocera foetorivorans (Butler)	ohia leaf webber	End	U	
Spheterista pleonectes (Walsingham, 1907)		End	R	
ODONATA	dragonflies; damselflies			
Aeshnidae				
Anax strenuus Hagen		End	U	
Libellulidae				
Pantala flavescens (Fabricius, 1798)	globe skimmer	Ind	O	
ORTHOPTERA	praying mantis, grasshoppers, crickets			
Tettigoniiidae				
Banza sp.		End	U	immature
PSOCOPTERA	bark - lice			
Psocidae				
Ptycta kaala Thornton 1984		End	O	

Status:

End	endemic to Hawaiian Islands
Ind	indigenous to Hawaiian Islands
Adv	adventive
Pur	purposefully introduced
?	unknown

ABUNDANCE = occurrence ratings:

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

SPECIES BELIEVED NOT PRESENT ON THE SITE
INVERTEBRATES

Alien predatory ants are a major cause of low numbers of native arthropods. The absence of ants such as the bigheaded ant (*Pheidole megacephala*) and longlegged ant (*Anoplolepis gracilipes*) which prey on other insects (Zimmerman 1948-80), is a major factor in the diversity of native species at Ka'ala. Ants are well documented as a primary cause of low levels of native arthropods (Perkins 1913). Ant populations often do not overlap. Rather the species have separate territories, effectively apportioning the hunting grounds between themselves, offering few, if any, ant-free zones where native arthropods can thrive.

ARTHROPODA
INSECTA

Hymenoptera: Colletidae: *Hylaeus* sp. Yellow-faced bee

The yellow faced bee was not observed in this survey. A search of the specimen data base of Bishop Museum's extensive collections did not retrieve any *Hylaeus* records from the summit of Ka'ala (PBIN). Similarly, a thorough study of the species by Daly & Magnacca (2003), does not list any collections from Ka'ala in the Recent Collections table. The only *Hylaeus* record found in my 1994 survey of records was from 1906, at 1500 ft., far below the current survey location.

Lepidoptera: Sphingidae *Manduca blackburni* Blackburn's sphinx moth

Blackburn's sphinx moth (*Manduca blackburni*), (Figure 9) an endangered species (USFWS 2000) which favors leeward slopes, was not found in this survey. The moth's solanaceous native host plant, 'aiea (*Nothocestrum* sp.), and best alien host, tree tobacco (*Nicotiana glauca*), were not observed on the property in my own survey, or the current botanical survey (LeGrande 2011 pers. com.). Neither *Capparis sandwichiana*, nor other known nectar plants favored by the adult moth, were encountered in my surveying, or the current botanical survey (LeGrande 2011 pers. com.).

The moth has not been seen on O'ahu for many decades. The *Recovery Plan* (USFWS 2003, 2005) for this large sphinx moth proposes only one Management Unit on O'ahu, at the location of the Nature Conservancy's Honouliuli Preserve, now in state control.

© Figure 9 Blackburn's sphinx moth is distinguished from other hawk moths by orange markings.

Species believed not present continued

Odonata: Coenagrionidae *Megalagrion pacificum* Hawaiian damselfly

Megalagrion pacificum proposed as endangered (USFWS 2010a), was not seen during this survey, and is unlikely to be found on site, as the area does not provide the habitat associated with the species.

POTENTIAL IMPACTS
Potential Impacts on Native, Rare, Federally or State Listed Species

No federally or state listed endangered or threatened invertebrate species were noted in this survey (DLNR 1996, 1997; USFWS 2010b, 2011).

RECOMMENDATIONS
Prevent habitat degradation:

A **Best Practices Management Plan** for construction should be written and implemented specifying methods and controls for the entire construction zone to prevent runoff, spills, and impact on the habitat. Establish construction staging areas and storage of materials in the paved areas.

Invasive species, alien to a Hawaiian ecosystem, can do terrible damage to native invertebrates and reduce native plant pollinators, and food resources for native birds. Two factors influence establishment of alien species which prey on and compete with native species: access and regular food sources.

To prevent establishment of alien species:

Inspect construction materials for hitchhiking seeds or animals. Soil packed in tires, on helicopter runners, or workers' boots can transport seeds and insect or snail eggs. Ants, snails and slugs, and many other invertebrates can hide in boxes or equipment resting at one location and later be carried to Ka'ala. If replanting after construction, care should be taken to prevent alien plant or animal species from being introduced on the plantings, associated soil, or pots.

Clean tools, boots, and equipment used at other projects to minimize the chance of transporting new pest plants or animals to the area.

Remove trash regularly. Predatory invertebrate species such as ants easily establish in areas where food trash is consistently available. Food trash during construction can attract mongoose, cat, and rat populations as well, resulting in predation on birds and native seeds. Provide trash cans at construction areas where food is consumed, keep cans covered. Importantly, construction supervisors need to establish a culture of using the receptacles. Carry out trash at the end of each work day.

As no mosquitoes were seen during this survey, it will be important not to provide habitat for them to begin breeding. Even a small amount of water created in trash (e.g., Vienna sausage can) is sufficient for breeding. Mosquitoes are known to be vectors of disease for humans (*Aedes albopictus*, dengue) and birds (*Culex quinquefasciatus*, bird malaria). Care should be taken during construction and in design of new facilities not to create areas that will collect and hold standing water.

Other precautions

Restrict animal access: Do not allow employees or others to bring pet dogs or cats to the work site. Even well behaved animals can escape a leash and fail to return on command.

No baiting for pigs: Under no circumstance should employees bait or feed pigs with the intention of hunting. The net effect is to increase the number of pigs attracted to the work site. If pigs are seen, advice should be sought from NARS staff.

Shield external lighting:

During construction and in the finished project, it will be important to plan to shield outdoor lighting. Unshielded lighting is well-known for confusing, exhausting, and stranding sea birds making them vulnerable to predators. Additionally, artificial lighting is attractive and confusing to many arthropods (see *Methods* page 4), concentrating them as easy prey for feeding bats at night. Insects attracted to lights at night often remain in place at dawn and are easily seen and consumed by birds. The lowest practical level of lighting should be used.

Landscape with native plants:

We recommend revegetation of disturbed areas with native plants from the Ka'ala environment. Native plants would provide habitat for native arthropods, while eliminating the chance of erosion around the base of new installations. Native invertebrates will find this refuge over time. Native birds will obtain food from fruits, seeds, and the native invertebrates.

NARS staff can provide an appropriate species list and by prior arrangement with growers, native Hawaiian plants can be as convenient to re-plant as the introduced plants commonly used to re-vegetate after new construction. Plants grown from seeds gathered from Ka'ala plants would be especially well adapted to local conditions.

Worker Education:

The best defense any fragile ecosystem can have is an informed public. Providing defined pathways to and from work sites will reduce trampling of plants and disturbance of wildlife. Providing information and guidance about working on Ka'ala to all crew members will ensure preservation of the maximum habitat during the project. Because of the presence of feral pigs, using and firmly closing all gates each and every time will be important. (See pig feeding and trash above)

ACKNOWLEDGMENTS

Thanks are extended to NARS and DOFAW staff for assistance in access and permitting and to Maya LeGrande for assistance in the field.

Steven Lee Montgomery directed all surveys and is responsible for all conclusions. Anita Manning contributed to preparation of this report. Some images used in this report were not taken in the course of this project. These photos, marked by © symbol were made by Anita Manning and/or S. L. Montgomery prior to this contract and were chosen because they best illustrate the subject.

STANDARD NOMENCLATURE

Invertebrate names follow

Freshwater & Terrestrial Mollusk Checklist (HBS 2002b)
Common Names of Insects & Related Organisms (HES 1990)
Hawaiian Terrestrial Arthropod Checklist (HBS2002a; Nishida 2002)

Mammal names follow *Mammals in Hawai'i* (Tomich 1986) and *Hawaiian Mammal Checklist* (HBS 2002d)

Place name spelling follows *Place Names of Hawai'i* (Pukui et al. 1976)

Plant names follow

Manual of the Flowering Plants of Hawai'i (Wagner et al. 1999)
A Tropical Garden Flora (Staples and Herbst 2005)
Hawaiian names follow Pukui & Elbert (1986).

ABBREVIATIONS

DLNR	Department of Land and Natural Resources, State of Hawai'i
DOFAW	Division of Forestry and Wildlife, State of Hawai'i
ft	feet
HBS	Hawai'i Biological Survey
m	meter
MV	Mercury Vapor
n.	new
NARS	Natural Area Reserve System
sp.	species
spp.	more than one species
USFWS	United States Fish and Wildlife Service
UV	Ultraviolet

GLOSSARY[1]

Adventive: organisms introduced to an area but not purposefully.

Alien: not native; occurring in the locality it occupies ONLY with human assistance, accidental or purposeful. Polynesian introductions (e.g., coconut) and post-1778 introductions (e.g., guava, goats, and sheep) are aliens.

Anaphylactic: hypersensitivity; may cause shock, respiratory distress, swelling, other problems

Arthropod: insects and related invertebrates (e.g., spiders) having an external skeleton and jointed legs.

Aspiration: invertebrates are transferred from original location (leaf, net, etc.) into a large vial. Two tubes are lodged in one stopper in the vial. Air drawn in on one tube, creates suction at the end of the second tube; the target insect is drawn into the vial by the pulling air.

Endemic: naturally occurring, without human transport, ONLY in the locality occupied. Hawaii has a high percentage of endemic plants and animals, some in very small microenvironments.

Indigenous: naturally occurring without human assistance in the locality it occupies; may also occur elsewhere, including outside the Hawaiian Islands. (e.g., Naupaka kahakai (*Scaevola sericea*) is the same plant in Hawai'i and throughout the Pacific).

Insects: arthropods with six legs, and bodies in 3 sections

Invertebrates: animals without backbones (insects, spiders, snails / slugs, shrimp)

Larva/larval: an immature stage of development in young of many animals.

Mollusk: invertebrates in the phylum Mollusca. Common representatives are snails, slugs, mussels, clams, oysters, squids, and octopuses.

Native: organism that originated in area where it lives without human assistance. May be indigenous or endemic.

Naturalized: an alien organism that, with time, yet without further human assisted releases or plantings, has become established in an area to which it is not native.

Nocturnal: active or most apparent at night.

Phytotelmata: Small amounts of water held by plants such as that collected at the base of leaves, petals or bracts. The fauna associated with phytotelmata is often unique.

Pupa: the stage between larva and adult in insects with complete metamorphosis, a non-feeding and inactive stage often inside a case

Purposefully introduced: an organism brought into an area for a specific purpose, for example, as a biological control agent.

Rare: threatened by environmental factors and in low numbers.

Species: all individuals and populations of a particular type of organism, maintained by biological mechanisms that result in their breeding mostly with their kind.

1 Glossary based largely on definitions in *Biological Science: An Ecological Approach*, 7th ed., Kendall/Hunt Publishing Co., Dubuque, a high school text; on the glossary in *Manual of Flowering Plants of Hawai'i*, Vol.2, Wagner, et al., 1999, Bishop Museum Press, and other sources.

LITERATURE CITED

Daly, H. V. and K. N. Magnacca. 2003. *Insects of Hawaii.* Volume 17: *Hawaiian Hylaeus.* University of Hawaii Press, Honolulu, Hawaii. 234 pp.

Department of Land and Natural Resources (DLNR). 1996, 1997. Indigenous Wildlife, Endangered and Threatened Wildlife and Plants, and Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-124-2 -§13-124-3, June 13, 1996. Exhibit 1. Feb. 1, 1997. www.state.hi.us/dlnr/dofaw/rules/Chap124exhib.pdf

Hawai'i Biological Survey (HBS). 2002a update. *Hawaiian Arthropod Checklist.* B. P. Bishop Museum, Honolulu, Hawai'i. Accessed February 2011. http://www2.bishopmuseum.org/HBS/checklist/

_____. 2002b. *Hawaiian Freshwater & Terrestrial Mollusk Checklist*. B. P. Bishop Museum, Honolulu, Hawai'i. Accessed February 2011. http://www2.bishopmuseum.org/HBS/checklist/

_____. 2002c. *Hawaiian Mammal Checklist.* B. P. Bishop Museum, Honolulu, Hawai'i. Accessed February 2011. http://www2.bishopmuseum.org/HBS/checklist/query.asp?grp=Mammal

Hawaiian Entomological Society (HES). 1990. *Common Names of Insects & Related Organisms*. Committee on Common Names of Insects. 87 pp.

LeGrande, M. 2011. Email March 14, 2011.

Montgomery, S. L. 1994. *Invertebrates of Ka'ala Natural Area Reserve Summit Cloud Forest*. A report to Natural Area Reserve System, DLNR, Honolulu, HI. 8 pp.

Nishida, G. M. (ed.). 2002. *Hawaiian Terrestrial Arthropod Checklist.* Fourth edition. *Bishop Museum Technical Report* 22, Honolulu, HI. 313 pp.

Nishida, G. M. and J. M. Tenorio. 1993. *What Bit Me?* Univ. of Hawaii Press. 72 pp.

Office of Environmental Quality Control. Online library. Accessed February 2011. http://oeqc.doh.hawaii.gov/Shared Documents/

Pacific Basin Information Node (PBIN). Data base / geographic search accessed February 2011. http://pbin.nbii.gov/otherinverts/index.asp

Perkins, R. C. L. 1913. "Introduction. Being a review of the land-fauna of Hawaiia," and "Vertebrates." *In*: Sharp, D., ed., *Fauna Hawaiiensis. Vol. 1.* Cambridge University Press, Cambridge, and Bishop Museum Special Pub. 6.

Pukui, M. K. and S. H. Elbert. 1986. *Hawaiian Dictionary, Revised and Enlarged Edition*. University of Hawaii Press, Honolulu, Hawai'i. 572 pp.

Literature cited: continued

Pukui, M. K., S. H. Elbert, and E. T. Mookini. 1976. *Place Names of Hawaii.* University of Hawaii Press, Honolulu, Hawai'i. 289 pp.

Staples, G. W. and D. R. Herbst. 2005. *A tropical garden flora.* Bishop Museum Press, Honolulu, 908 pp.

Tenorio, J. M. and G. M. Nishida. 1995. *What's Bugging Me?* University of Hawaii Press, Honolulu, HI, 184 pp.

Timberlake, P. H. 1918. "Note on Occurrence of an Endemic Itonidid on Oahu," *Proceedings of the Hawaiian Entomological Society*, 3 (5): 380. Honolulu.

Tomich, P. Q. 1986. *Mammals in Hawaii.* Bishop Museum Press, Honolulu, Hawaii. 375 pp.

U.S. Fish & Wildlife Service (USFWS). 2000. *Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Blackburn's Sphinx Moth from the Hawaiian Islands; Final Rule.* 50 CFR Part 17. In *Federal Register*, February 1, 2000, Volume 65, Number 21, pp. 4770-4779.

_____. 2003. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Blackburn's Sphinx Moth; Final Rule*. 50 CFR Part 17. In *Federal Register*, June 10, 2003, Volume 68, Number 111, pp. 34709-34766.

_____. 2005. *Recovery Plan for the Blackburn's Sphinx Moth (Manduca blackburni).* Portland, Oregon. 125 pp.

_____. 2006 May 9. *Endangered and Threatened Wildlife and Plants; Determination of Status for 12 Species of Picture-Wing Flies From the Hawaiian Islands.* 50 CFR Part 17, Federal Register, Vol. 71, No. 89, pp. 26835 -26852.

_____. 2008 December 4. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for 12 Species of Picture-Wing Flies From the Hawaiian Islands.* 50 CFR Part 17, Federal Register, Vol. 73, No. 234, pp. 73794-73895..

_____. 2010a June 24. *Endangered and Threatened Wildlife and Plants; Listing the Flying Earwig Hawaiian Damselfly and Pacific Hawaiian Damselfly As Endangered Throughout Their Ranges.* 50 CFR Part 17, Federal Register, Vol. 75, No.121, pp 35990-36012.

_____. 2010b November 10. *Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions; Proposed Rule.* 50 CFR Part 17, Federal Register, Vol. 75, No. 217, pp. 69221-69294.

Literature cited: continued

U.S. Fish & Wildlife Service (USFWS). 2011. USFWS Threatened and Endangered Species System (TESS), accessed February 2011, http://ecos.fws.gov/tess_public/

U.S. Naval Observatory (USNO), Astronomical Applications Department. *Sun and Moon Data for One Day*. http://aa.usno.navy.mil/

Wagner, W. L., D. R. Herbst, and S. H. Sohmer. 1999. *Manual of the flowering plants of Hawai'i*, Rev. ed. University of Hawaii Press and Bishop Museum Press, Honolulu, 1919 pp.

Zimmerman, E. C. 1948- 80. *Insects of Hawaii*. University of Hawaii Press, Honolulu.

Appendix F

Archaeological Assesment for the Information and Communication Services Division Mt. Ka'ala Radio Facility Improvements Project

March 2012

Prepared By:
Cultural Surveys Hawai'i, Inc.

Archaeological Assessment for the Information and Communication Services Division (ICSD) Mt. Ka‘ala Radio Facility Improvements Project, Kamananui Ahupua‘a, Waialua District, O‘ahu Island

[TMK: (1) 6-7-003:023 por. & :025 por. (State) and (1) 7-7-001:001 por. (Federal)]

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Reference	Archaeological Assessment for the Information and Communication Services Division (ICSD) Mt. Ka‘ala Radio Facility Improvements Project, Kamananui Ahupua‘a, Waialua District, O‘ahu Island [TMK: (1) 6-7-003:023 por. & :025 por. (State) and (1) 7-7-001:001 por. (Federal)] (Hammatt and Shideler 2012)
Date	March 2012
Project Number (s)	Cultural Surveys Hawai‘i (CSH) Job Code KAMANANUI 3
Investigation Permit Number	The fieldwork component was carried out under archaeological permit number 10-10, issued to Cultural Surveys Hawai‘i, Inc. (CSH) by the Hawai‘i State Historic Preservation Division/ Department of Land and Natural Resources (SHPD/DLNR), per Hawai‘i Administrative Rules (HAR) Chapter 13-282.
Project Location	The project area is on the summit of Mount Ka‘ala. The State’s radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Ka‘ala Air Force Station (AFS) situated at the summit of Mt. Ka‘ala. The State also has a microwave antenna site located downhill off Kamaohanui Ridge connected to the radio facility by an above-ground conduit line. The project area is depicted on the U.S. Geological Survey 7.5-minute series topographic map, Haleiwa (1999) and Schofield Barracks (1998) quadrangles
Land Jurisdiction	Federal (U.S. Air Force and Federal Aviation Administration) and State
Agencies	Hawai‘i State Historic Preservation Division/ Department of Land and Natural Resources (SHPD/DLNR)
Project Description	This Department of Accounting and General Services (DAGS) Radio Facility Project involves placing new conduit within an existing driveway to connect the State building to a nearby generator building, replacement of an existing 25 foot tower with a 50 foot tower, the relocation of a small (10-foot diameter) solid microwave antenna dish approximately 230 feet northeast and 90 feet below grade of an existing State building to be connected with four conduit lines along the existing conduit route. Minimal excavations within the previously graded existing State compound is anticipated.
Project Acreage	The project area per se is approximately 0.15 acres. The archaeological study area is approximately 2.37 acres.
Area of Potential Effect (APE) and Survey Acreage	Based on available information, the proposed project will not have visual, auditory or other environmental impacts to any known archaeological historic properties located either inside or outside the project area. Therefore the area of potential effect is the same as the project area 0.15 acre APE.

Historic Preservation Regulatory Context	This project has a Section 6E-8 Historic Preservation Review (Aiu to Unoki, April 8, 2011, Log No 2011.0679, Doc No. 1103RS62; present Appendix A.) That April 8, 2011 SHPD review specifies that: “SHPD will withhold full comments until development of the EA.” And it is understood that review is on-going. CSH conducted an archaeological inventory survey investigation for the proposed project. Per the requirements of Hawai‘i Administrative Rules (HAR) Chapter 13-13-276, the study was conducted to identify, document, and make Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the survey area’s historic properties. Because no historic properties were identified in the survey area, this investigation is termed an archaeological assessment per HAR Chapter 13-13-275-5. This archaeological assessment report was prepared to support the proposed project’s historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-8, HAR Chapter 13-13-275, and any other project-related historic preservation consultation.
Fieldwork Effort	A field inspection was conducted on by Todd Tulchin, B.S., and David Shideler, M.A., under the overall supervision of Hallett H. Hammatt, Ph. D. (principal investigator), and required approximately 8 person-hours to complete.
Number of Historic Properties Identified	None
Effect Recommendation	CSH’s effect recommendation for the proposed development is “no adverse effect.” The project area was observed to have undergone extensive prior land modification.
Mitigation Recommendation	No further archaeological work is recommended for the proposed project.

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Section 1 Introduction

1.1 Project Background

At the request of Helber, Hastert & Fee, Planners, Cultural Surveys Hawai‘i prepared this Archaeological Assessment for a proposed Information and Communication Services Division (ICSD) Division of the Department of Accounting and General Services (DAGS) Radio Facility Improvements Project on the summit of Mount Ka‘ala, at the highest point of O‘ahu in the northern Wai‘anae Mountain Range (Figure 1 to Figure 3). A complex of State (DAGS) and federal (FAA) facilities are present at the summit of Mount Ka‘ala within a high chain-link fence enclosure (Figure 3).

1.1.1 Project Location and Land Ownership

The State’s licensed radio facility is 1,161 square feet in size and located within the larger 6.6-acre Mt. Ka‘ala Air Force Station (AFS) site situated at the summit of Mt. Ka‘ala. Mt. Ka‘ala is at the northern end of the Waianae Mountain Range, and is the highest peak on the island of O‘ahu at an elevation of 4,025 feet above mean sea level (msl). The Mt. Ka‘ala AFS is located where the districts of Wahiawa, Waialua, and Wai‘anae all converge at this mountain’s summit. Portions of the State’s radio facility are situated within both the Waialua and Wahiawa districts because this boundary line crosses through the facility. Electrical conduit improvements would extend from this facility slightly down Kamaohanui Ridge to an existing microwave antenna site into the Waialua district (Figure 4 & Figure 5).

The majority of the land on which Mt. Ka‘ala AFS is constructed is owned by the U.S. Army as part of the Schofield Barracks Military Reservation. This Federal property is identified as Tax Map Key (TMK) (1) 7-07-001: portion of 001. This station is fenced for security, and other government agencies have telecommunication facilities on this site. The U.S. Army maintains tenant agreements with both the U.S. Air Force and the Federal Aviation Administration (FAA) for their facilities at this station. The State of Hawai'i, Hawai‘i Air National Guard, and the U.S. Navy also maintain isolated individual structures.

The western portion of the Mt. Ka‘ala AFS includes two parcels owned by the State of Hawai‘i, identified as TMK (1) 6-07-003: portions of 023 and 025. These areas of the station are leased to the U.S. Air Force by the State of Hawai‘i. This State-owned property is designated as the Mt. Ka‘ala Natural Area Reserve and is under the jurisdiction of the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW).

1.1.2 Project Background and Objectives

The State DAGS ICSD is the State’s central organization carrying out the responsibilities for statewide data processing, information systems, and telecommunications. As a result, the ICSD owns and operates the State’s telecommunications systems and supporting infrastructure as part of its responsibilities. Major components of the State’s system include microwave radios, land mobile radio systems, antenna systems, towers, and the building at the Mt. Ka‘ala AFS.

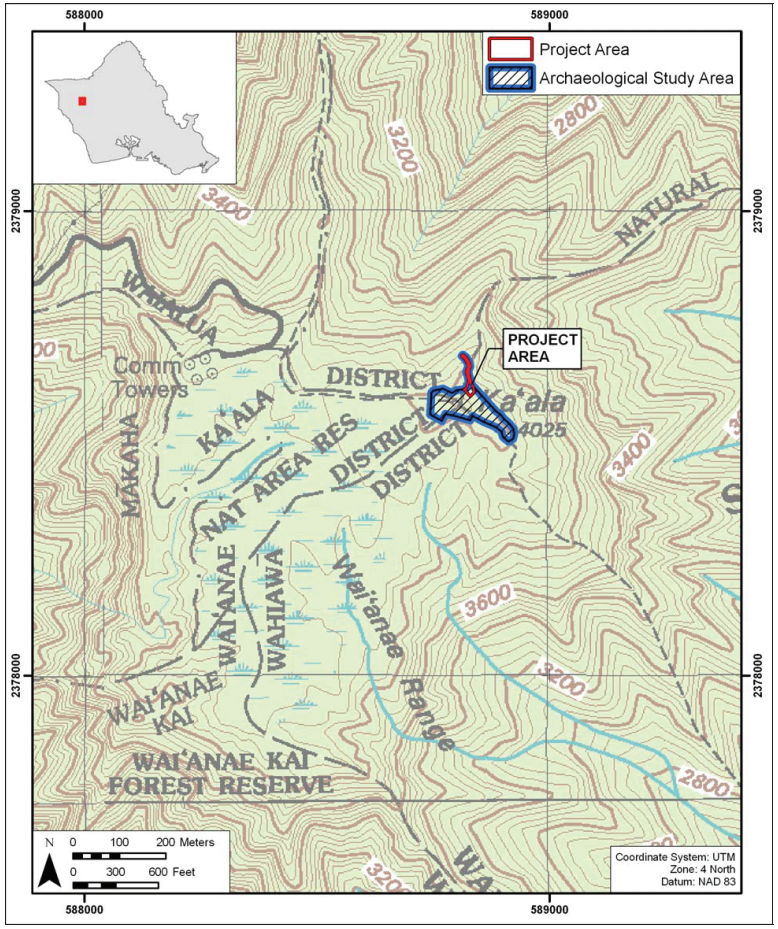

Figure 1. Portion of the U. S. Geological Survey 7.5-minute series topographic map, Hale'iwa (1999) and Schofield Barracks (1998) quadrangles, showing the project area

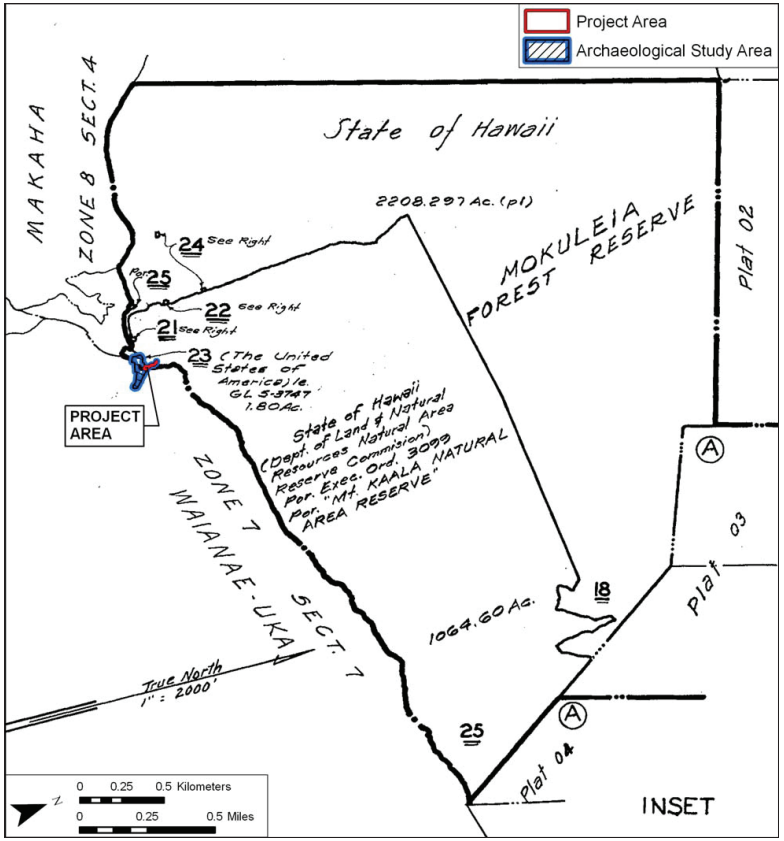

Figure 2. Tax Map Key (TMK) plat [1] 6-5-02 showing the project area

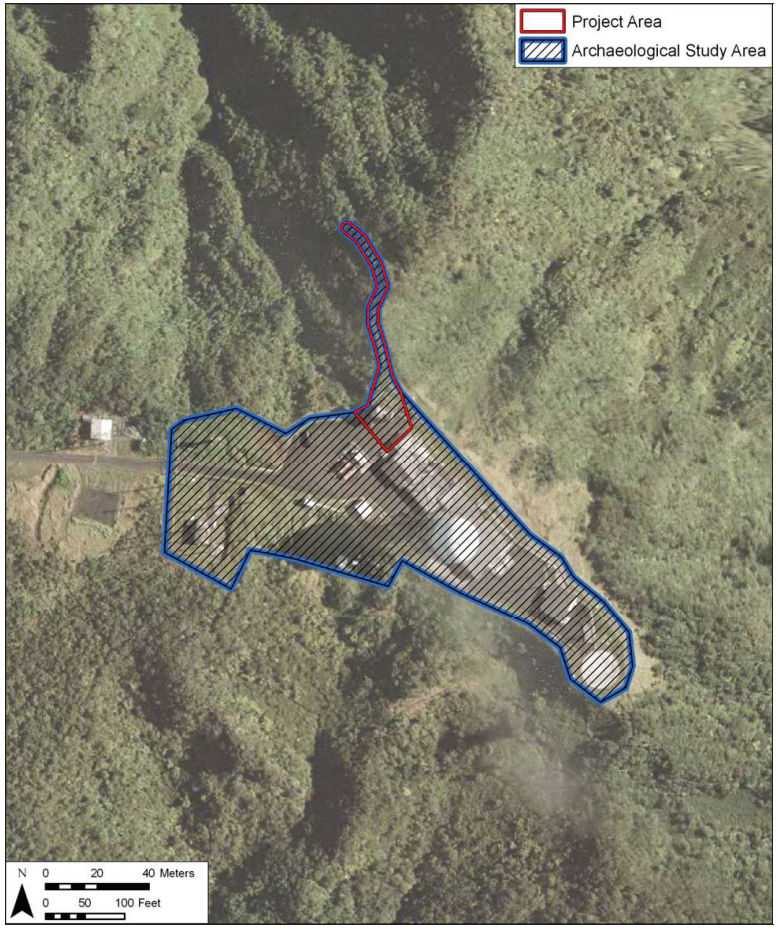

Figure 3. Aerial photograph (source: Google Earth 2008) showing the project area

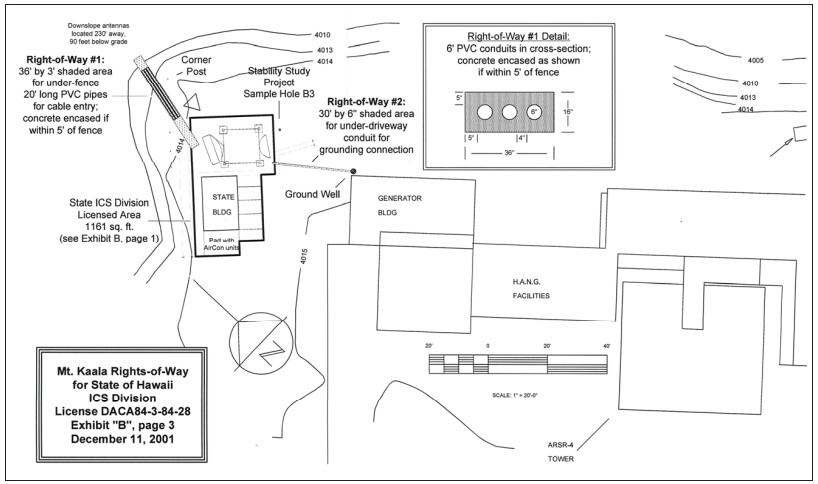

Figure 4. Plan showing relationship of State Building and conduit extending toward down slope antennas

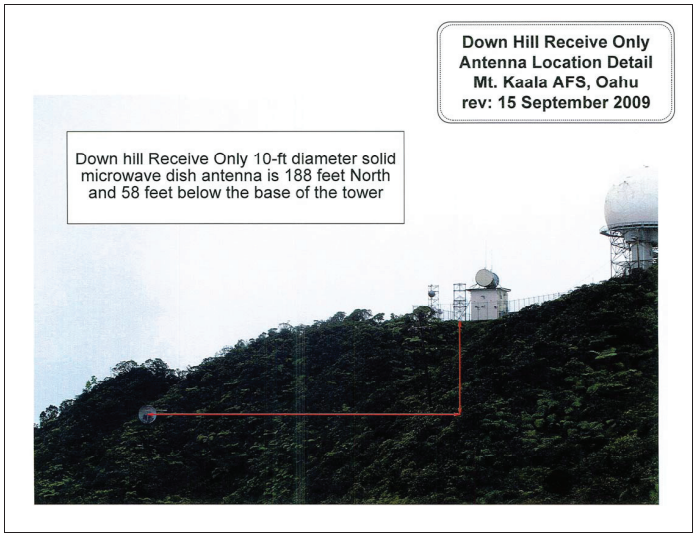

Figure 5. View of the relationship of Mt. Ka'ala facility to the down slope dish antenna

The ICSD provides services to all agencies in the State of Hawaii. The ICSD plans, coordinates, organizes, directs, and administers services to ensure the efficient and effective development of systems. Over the years, there have been tremendous advances in technology and an increased reliance on telecommunications and computers in the workplace. The ICSD is leading the way in implementing cost-effective and efficient information and communication services. The proper application and installation of these technologies continues to be a key component towards the accomplishment of agency missions relating to public safety, emergency services, disaster response, and essential government operations.

To meet this agency's responsibilities effectively, improvements are needed to the State's radio facility to repair building deficiencies and increase reliability of the equipment. This building is in need of various interior and exterior repairs.

An existing 25-foot-tall telecommunications tower needs to be replaced with a 50-foot-tall tower for two reasons. First, there has been a change of the State/Federal Rainbow analog microwave system to a new digital microwave in the lower 6 GHz band instead of the 2 GHz band. Replacement microwave links all operate in the lower 6 GHz microwave band that forces the use of heavy, large-diameter, high-performance, solid microwave dish antennas that are too large of a structural load for the existing tower. This old tower was designed for the lighter grid dishes used on the original 2 GHz band frequencies.

Second the FAA installed a new perimeter security fence around the Mt. Ka'ala AFS facility. Two 13-foot high portions of the FAA fence block portions of the signal path of two existing 6 GHz digital microwave radio antennas at Mt. Ka'ala. In order to achieve necessary path clearance, the antennas must be permanently raised, requiring a taller tower.

An existing microwave antenna site located downhill off Kamaohanui Ridge (see Figure 5) has two antenna mounting structures. A VHF corner reflector antenna needs to be relocated from its current location on the State's facility building roof to the lower of the two antenna mounts. Relocation of this antenna is needed to lower the radio frequency energy emitted from its existing site on the building roof. This corner reflector antenna to be exchanged was inadvertently installed on the building years ago and thus needs to be moved. The corner reflector is needed to provide State Civil Defense siren control. Additional conduit lines routed from the State building to this antenna site are also required to improve reliability.

1.1.3 Proposed Project Improvements

Both interior and exterior repairs to the existing State building would be implemented to fix deficiencies. This includes re-roofing to address cracks and leaks and upgrading electrical service for the facility. A new conduit would be installed within the existing driveway to connect the State building with a nearby FAA generator building. Other repairs include replacing security lighting for the building, doors, and locks. Two 90-foot bare copper wires would also be placed above ground on each side of the ridge to serve as an electrical ground in the event the State facility is struck by lightning.

The State's existing 25-foot-tall tower will be replaced with a 50-foot-tall tower within the State's licensed area. Additional microwave and whip antennas will be installed on the new tower along with relocating existing antennas from the State building. The U.S. Coast Guard will

be responsible for demolishing this existing radio tower, and designing and constructing the new taller tower.

A 48-inch-tall, 75-inch-wide corner reflector antenna will be relocated from the State building to the lower mount at the existing antenna site downhill of Kamaohanui Ridge. The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced by DAGS ICSD with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility.

There is one existing above ground microwave antenna feed line routed from the Mt. Ka‘ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits are planned to be routed above ground from the State’s radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai‘i for its Hawai‘i Interactive Television System (HITS) distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State’s critical land mobile radio systems that support public safety and critical government operations. Construction of these improvements are planned to start in the Fall of 2012 and be completed by the end of 2013.

Minimal excavations within the previously graded existing State compound is anticipated in association with trenching for a utility conduit and erection of a short (50-foot tower). The project area per se is approximately 0.15 acres. The archaeological study area [TMK: (1) 6-7-003:023 & :025 (State) and (1) 7-7-001:001 Federal)] is approximately 2.37 acres – conforming to the entire chain link fence enclosure as well as the short run to the proposed lower elevation antenna.

The immediate vicinity is the confluence of the traditional Native Hawaiian land districts (*moku*) of Waialua, Wai‘anae and Wahiawā and is the confluence of the traditional Native Hawaiian smaller land units (*ahupua‘a*) of Kamananui and Mokulē‘ia (Waialua Moku), Mākaha and Wai‘anae (Wai‘anae Moku) and Wahiawā – which all come together at the summit of Mount Ka‘ala. The location and affinities of the specific project area are understood to be primarily with Kamananui Ahupua‘a of Waialua (see Figure 7). An overview of the cultural and archaeological legacy of both Kamananui Ahupua‘a and the summit area of Mount Ka‘ala are presented in this study.

1.2 Scope of Work

The scope of work for this investigation includes:

1. Historical research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
2. Field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment was to identify any sensitive areas that may require further investigation or mitigation before the project proceeds.
3. Preparation of a report to include the results of the historical research and the fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It was also to provide mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

1.3 Environmental Setting

1.3.1 Natural Environment

The archaeological study area of approximately 2.37 acres includes a relatively level, previously graded area of the summit of Mount Ka‘ala and a short approximately 200 foot stretch of narrow ridge descending sharply to the north (toward Mokulē‘ia).

Annual rainfall in the project area vicinity is approximately 2,000 mm (79 inches) (Giambelluca et al. 1986:73)

Project area sediments on the summit plateau are Alakai mucky peat, 0 to 30 percent slopes (rAAE) and the northern extending ridge line lies on Tropohumults-Dystrandepts association (rTP) soils. (Foote et al. 1972; Figure 6).

The Alakai series consists of deep, very poorly drained soils that formed in organic material overlaying clay weathered from basalt. Alakai soils are on ridges and have slopes of 0 to 30 percent. These soils are very poorly drained; with slow runoff; and slow to moderately slow permeability below the muck. Used for wildlife, watershed, and recreation. Vegetation is *‘ōhia* (*Metrosideros collina*), *lapalapa* (*Cheirondendron sp.*), Hawaiian lobelia (*Lobelia hypoleuca*), *mokihana* (*Pelea anista*), *puakeawa* (*Styphelia tameiameiae*), treefern (*Cibotium splendens*), bracken fern (*Pteridium aquilinum*), *uki uki* (*Dianella*), and associated plants.

The Tropohumults-Dystrandepts association consists of the mountainous areas and lower slopes of the Wai‘anae Range, at elevations from 1,000 to 4,000 feet. This association is composed of gently sloping to very steep, well-drained soils that are underlain by soft weathered rock, volcanic ash, or colluvium, on narrow ridges and side slopes. The mean annual soil temperature is between 56 and 71°F.

Tropohumults soils occur on the narrow ridges at the upper elevations. They have a surface layer and subsoil of reddish-brown silty clay. The subsoil has subangular blocky structure and is

underlain by saprolite (original rock). Dystrandepts occur in concave positions on the steep side slopes. They were derived dominantly from volcanic ash mixed with colluvium. They are dark colored, and in most places the surface is silty clay. The subsoil is generally massive (irregular and lacking structure); however, there are areas where the subsoil is fine textured.

1.3.2 Built Environment

The summit of Mount Ka‘ala has been completely graded for state and federal facilities that are for the most part contained within a high chain-link fence enclosure. The Mount Ka‘ala Summit complex is accessed via a long winding paved road.

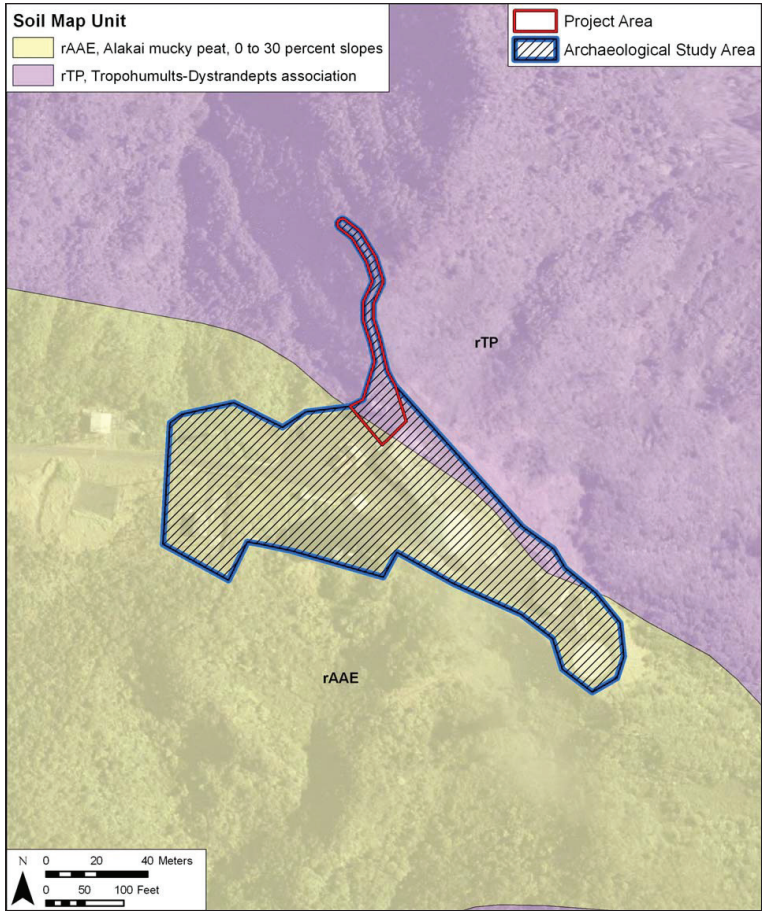

Figure 6. U.S. Geological Survey 7.5-Minute Series Topographic map, ‘Haleiwa (1999) and Schofield Barracks (1998) quadrangles, with overlay of the U.S. Department of Agriculture soil survey data (Foote et al. 1972), indicating sediment types within the project area

Section 2 Methods

2.1 Field Methods

The fieldwork component of this archaeological assessment was conducted on November 5, 2010 by two CSH archaeologists, Todd Tulchin, B.S., and David Shideler, M.A., under the overall supervision of Hallett H. Hammatt, Ph. D. (principal investigator), and required approximately 8 person-hours to complete. The fieldwork consisted of a pedestrian inspection of the proposed DAGS radio facility project area as well as a study as far as possible of the State/Federal compound from outside the tall chain-link fence enclosure.

No historic properties were encountered and the pedestrian inspection was documented with field notes, maps, and photographs.

2.2 Document Review

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

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.

2.3 Consultation

By way of cultural consultation, a draft of this report was circulated to seven parties on June 6, 2011 with a request for comment. Two weeks later on June 21 initial follow-up occurred. The results are presented in the consultation Section 7 of this study.

Section 3 Background Research

The proposed DAGS Radio Facility Project, is understood to lie primarily within the traditional Hawaiian land division of Kamananui Ahupua‘a in Waialua District (Figure 7). This section explores the traditions and history of Kamananui of Waialua with particular study of Mount Ka‘ala per se provided in the following Section 4.

Pukui et al. (1974:80) translate the name “Kamananui” as “the large branch” presumably a reference to Ki‘iki‘i Stream (also known as Kaukonahua Stream) that joins Paukauila Stream at the head of Kaiaka Bay. Kirch and Sahlins (1992:20) relate that Kaiaka Bay “is more commonly called Waialua Bay in historic accounts,” since it is within Kamananui, “the political center of the *moku* [district] of Waialua.”

There is another Kamananui in Waialua District that is a tributary to the Waimea River.

3.1 Mythological and Traditional Accounts

There are few mythological accounts specific to Kamananui, O‘ahu. Thrum’s (1907:252-253) account of “Kaneaukai A Legend of Waialua” makes a passing reference to Kamananui Stream. Two *kahuna* of Waimea are told by the god Kāneaukai to go to Mokulē‘ia to fetch a certain image of the god. The *kahuna* baulk at going “as it was a dark night and there were usually quicksands after a freshet in the Kamananui River.” It is agreed they will send their sons who were aided: “…when a meteor (*hōkū kaolele*) appeared and went before them, showing them how to escape the quicksands.”

3.2 Early Historic Period

Waialua enters the historic record in 1794 when Ka-‘eo-kū-lani recruited the “warriors of Waialua and Wai‘anae” to make war on his nephew Kalanikūpule, then ruler of O‘ahu (Kamakau 1992:168); by December 1794 Ka‘eo had been killed and his forces were defeated. Kalanikūpule was deposed the following year when the invading Hawai‘i Island forces of Kamehameha prevailed at the Battle of Nu‘uanu in April 1795. Apparently the Waialua District was spared direct involvement in the battles associated with Kamehameha’s conquest. However, Kamehameha’s hegemony on O‘ahu would have immediate consequences for the district — including Kamananui Ahupua‘a — during the first decades of the 19th century.

Handy (1940:85) relates that Kamananui formerly had:

> … large terrace areas along the flatlands between the junction of Helemano and Poamoho Streams and the flatland west of Poamoho. There were also small terrace areas up in the lower flats of Poamoho and Kaukonahua Valleys. There were small flats in the bottom of Kaukonahua Canyon for several miles above its junction with Manawai Stream. Poamoho is probably too narrow for taro terraces. It is likely that in these gulches, as at Waimea, sweet potatoes and bananas were planted around home sites along the ridge and near taro patches at the bottom of the gulch. Wild taro and bananas grow in Manawai Valley and presumably also in the other five valleys that run up toward Puu Kane. At Kamananui are the remains

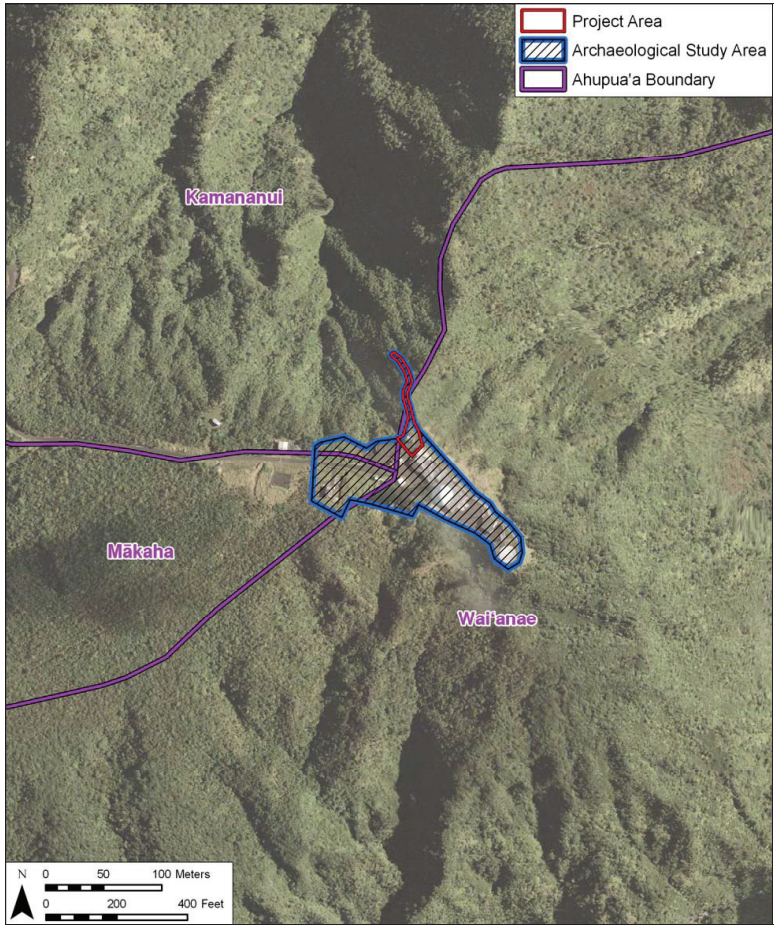

Figure 7. Aerial photograph with annotations of *ahupua‘a* boundaries

> of what McAllister describes as “the longest irrigation ditch of which there is any memory: among modern Hawaiians.

3.3 Early to Mid-1800s

> The Hawaiian Islands began exporting sandalwood to the Orient shortly after 1800 and the commerce flourished until the supply dwindled in the mid-1830s. Trade in sandalwood was the strict monopoly of the ali‘i beginning with Kamehameha. At the height of the sandalwood boom, Kamehameha was buying foreign ships, including six vessels between 1816 and 1818, to transport his own wood to the Orient (Kuykendall 1965:87). When Kamehameha bought the schooner Columbia in 1817, it was paid for with sandalwood from Kauai and from the districts of Waimea and Wai‘anae on O‘ahu (Kuykendall 1965:88).

After Kamehameha’s death in 1819, Liholiho (Kamehameha II) allowed his chiefs to share in the trade, resulting in an unrestrained demand on stocks of the wood and upon the energies of the *maka‘āinana* (commoners) who harvested the sandalwood. In October 1817, a Russian visitor on O‘ahu noted: “There are now many fields left uncultivated, since the natives are obliged to be cutting sandalwood” (Barratt 1988:218).

“Traders records from Kamehameha’s last years show several important *ali‘i* trafficking in sandalwood on their own, including...Kalaimoku, Cox, Boki, Ka‘ahumanu, and some others” (Kirch and Sahlins 1992:59). Among these *ali‘i*, Ke‘eaumoku Cox was the Hawai‘i Island chief who had been given control of Waialua by Kamehameha. Diaries and journals of the western entrepreneurs on O‘ahu record the early 19th-century sandalwood-based trade that intruded upon the established mores and customs of the Waialua population. Stephen Reynolds, a clerk for the Honolulu merchant William French, noted in his journal on April 30, 1824:

> Very hot sun — many of the residents [of Honolulu] preparing to go to Wairua [Waialua], some for wood — some to buy hogs, some for pleasure — All the Kanakas of Wairua belonging to Cox who lately died, came up to day — bringing cows, Pigs, Dogs, Fowls & other things, produce of the Country to give to Krymakoo [Kalaimoku, the Regent], Kahumana [Ka‘ahumanu], & other principal chiefs — according to the custom of the country. (King 1989:27)

Quite likely some of the sandalwood came from the slopes of Mount Ka‘ala.

During the same decades that commercial ventures were forcing changes upon the Hawaiian landscape, western missionaries were gaining a foothold in the islands. The American Board of Commissioners for Foreign Missions, headquartered in Boston, sent its first company of missionaries to the Hawaiian Islands in 1819, leaving Boston on October 23rd aboard the brig Thaddeus.

Accounts by missionary visitors present some of the first documentation of the Kamananui landscape and inhabitants. By the 1820s, the Protestant missionaries had established close links with the *ali‘i*. From July to August 1826, Ka‘ahumanu and an entourage consisting of up to 300 people conducted a proselytizing tour around O‘ahu. Rev. Hiram Bingham’s account of the proceedings at Waialua suggests the extent of the missionaries’ inroads in the district:

> A very large concourse of people assembled on the Lord’s day, for public worship in the open air. To the listening throngs I endeavored to proclaim the great salvation...
>
> After the Sabbath we examined and encouraged, and partially supplied with books, the incipient schools established there under the particular patronage of Lydia Namahana and Gideon Laanui, to whom the district belonged. There were found under Maiao and his assistant teachers, four hundred and ninety-five male and female pupils, and under Kaoo, one hundred and sixty-four, amounting together to six hundred and fifty-nine pupils, chiefly men and women. (Bingham 1847:295-296)

Lydia Pi‘ia Namahana, sister of Ka‘ahumanu, was involved in the Waialua sandalwood trade by 1826 and the following year, retained control of Kamananui and the Waialua District. Stephen Reynolds’ journal entry of October 24, 1826 noted: “Convoy sailed for Wairua — to get 400 piculs of wood from Piia [Namahana] — Due from Cox’s estate” (King 1989:155).

> Namahana’s husband, Gideon La‘anui, had been born on Hawai‘i Island and grew up in the train of Kamehameha. Elizabeth Pratt, La‘anui’s daughter (by his second wife, Teresa Owana), records that it was Kamehameha himself who arranged La‘anui’s marriage to Namahana:
>
> Among the visitors to the royal court was Kekuwai-Piia [Namahana], who had just become a widow, coming as a guest of her sister, Queen Kaahumanu. Laanui was a boy growing to maturity. The king had not forgotten the great wish of his heart, coveting possession of Waimea and hoping to gain it, if not in battle, through a matrimonial alliance...[Now] he chose a new agent of his ambition by inviting Laanui to the court. The invitation was gladly accepted and the visit lasted for months. Kamehameha was loath to have Laanui depart while he was still slyly intriguing with Kaahumanu to negotiate a marriage between Piia and Laanui. Piia is described as being a person heavily built and not prepossessing in appearance like her sisters Kaahumanu and Kaheiheimalie. When at last the proposition was put squarely to Laanui, that it was the united wish of the king and queen that the marriage should take place, for a moment he was dejected. To wed a woman very many years his senior was not the desire of his heart. Yet realizing that it might be perilous to go contrary to the express desire of the powerful monarch he quietly consented “to take the bitter pill.” (Pratt 1920:46)

La‘anui’s own words (given in testimony to the mid-nineteenth century Land Commission) reveal how he and his wife came to reside at Waialua and tell of his land interests in Kamananui:

> My wife Kuaipua [Lydia Namahana Kekuaipi‘ia] is the foundation [kumu] of my claim here at Waialua, and I have truly become a kamaaina here, like the native children of the place [a lilo maoli i kamaaina no o nei, me ke keiki papa la]. After I had been living at Waialua for a little while with Kekuaipiia, the ili of Ukoa became hers — that is at Kamananui — along with Kalopa [Kalaopa], the two of them. Kaahumanu asked Keeaumoku [Cox] for Lokoea and he consented it be given to Piia and she gave me [a haawi a Piia ia‘u] Ukoa, Lokoea and Kalopa in

> [the ahupua‘a of] Kamananui. When Keeaumoku died in 1824, Ka‘ahumanu gave Piia Waialua, from one point to the other, just for her support [‘food’, kona ai io nae], and Kawailoa from the sea inland to the mountain and one side to the other, excepting the kus [‘ili kūpono]. Piia then said to me: Your land is Kawailoa, from upland to the sea and one side to the other, I retain no ku within it; I give it to you, together with the two ili at Paalaa and the six ili at Kamananui. Ukoa and Lokoea are to be joined with the ahupua‘a of Kawailoa. Thus Piia spoke to me. (in Kirch and Sahlins 1992:95)

La‘anui was living at Kawailoa, adjacent to Kamananui, in 1832 (Namahana had died in 1829) when the Rev. John S. Emerson (1800-1867) and his wife arrived at Waialua Bay to establish a mission station in the Waialua district; Emerson reported in a letter:

> The wind was against us as we entered the harbor at Waialua, and we were obliged to “beat in.” As soon as we approached the land, La‘anui, our chief, came alongside in a canoe to welcome us, presenting us with a good watermelon, of which we ate freely and were at once relieved of our seasickness. (Emerson 1928:55)

Emerson gave the name “Haleiwa” (home of the frigate bird) to their settlement. Emerson’s son, Oliver Pomeroy Emerson, recounts an episode revealing the authority La‘anui possessed within Waialua:

> The new [meeting] house [at Waialua] was opened for the first time for dedication and public worship on September 25th, 1833, and Dr. Judd, Mr. Bingham and Mr. Brinsmade, a merchant, came from Honolulu for the occasion. When they got to the meeting with my father, they found an immense crowd of natives filling every part of the house and others crowding around all the windows and doors, utterly unable to enter. “Truly the spirit of God is here working on the hearts of this people, who are hungering for instruction,” thought my father. Dr. Judd, who had been in the country four years longer than he, began to ask questions, and found that La‘anui had issued positive commands that everyone in the entire district of Waialua should attend this service under threat of severe penalty...When La‘anui had filled the meeting-house with the crowd of people standing, he ordered them to sit down on the floor, packed together as close as possible, but a great many were still compelled to stand outside. After the services were over, Dr. Judd and my father kindly explained to La‘anui that he should not force the people to attend church in that way... (Emerson 1928:88-89)

Protestant missionaries throughout the Hawaiian Islands began census taking in 1831, providing the earliest documentation of the size of the native population after the first decades of western contact. During the first census of O‘ahu Island in 1831-1832, a total population of 2,640 was recorded in the Waialua District, comprising only 8.8% of the entire island population of 29,745 (Schmitt 1977:12). By the census of 1835-1836, the Waialua population had dropped to 2,415 comprising 8.6% of the O‘ahu Island population of 27, 798 (Schmitt 1977:38). These early censuses do not record the specific Kamananui Ahupua‘a population figures.

By the time Protestant missionaries were establishing their presence in Waialua in the 1830s, the sandalwood trade that had driven commerce in the Hawaiian Islands had collapsed. However, new enterprises began emerging to fill the void and activity at Waialua would continue apace. In October of 1819, two whaling ships had anchored in the Hawaiian Islands. During the next decades, other whaling ships followed, as the islands became a victual and layover base in the mid-Pacific. Supplies of beef, fresh and salted, and produce were in demand; and a trade in hide and tallow was also developing. As had happened during the years of the sandalwood trade, authority to commandeer valued goods from the commoners of Waialua was vested in the chiefs.

> The variety as well as amount of things being appropriated from Waialua by the ruling chiefs is impressive. The [letters of Gideon La‘anui] speak of ocean fish taken in sweeps as well as great quantities of fish shipped from the old royal ponds of ‘Uko‘a and Lokoea, of dry cooked taro (pai‘ai) as well as poi, of sweet potato, breadfruit, shrimp, goats and pigs, timbers of different kinds, chickens, oranges and lemons — and often cash money. (Kirch and Sahlins 1992:145)

3.4 Māhele of 1848

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established “for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property” (Chinen 1958:8). This led to the Māhele, the division of lands between the king of Hawaii, the *ali‘i*, and the common people, which introduced the concept of private property into the Hawaiian society. In 1848, Kamehameha III divided the land into four categories: certain lands to be reserved for himself and the royal house were known as Crown Lands; lands set aside to generate revenue for the government were known as Government Lands; lands claimed by *ali‘i* and their *konohiki* (supervisors) were called Konohiki Lands; and habitation and agricultural plots claimed by the common people were called *kuleana* (Chinen 1958:8-15). Kamananui Ahupua‘a was retained by the Kingdom as “government lands”.

The Waihona ‘Aina Māhele website shows nineteen land claims filed in Kamananui (Table 1) but none of them were awarded. This appears to have been the pattern in all the Waialua District lands other than in the *ahupua‘a* of Pa‘ala‘a and Kawailoa. Apparently, the missionary in residence, Reverend John S. Emerson, concluded it was in the interest of the native Hawaiians to buy land outright as grants rather than to complete the Land Commission Award application process. “He himself wrote the deeds and had them recorded, issued the titles, and collected for the Government the amounts due….” (Emerson 1928:141). Reverend John Emerson would assert with some pride, “I have accepted an appointment to sell to the natives, at my discretion, about 10,000 acres of land in the district of Waialua” and further that “I have plotted out about 8,000 acres, mostly grazing land, into about 300 lots, and nearly all are bargained for by natives” (Emerson 1928:142). While this system may have been a service to his parish it makes it more difficult to reconstruct traditional Hawaiian patterns of land use at Kamananui from the historic record.

Table 1. Land Claims at Kamananui Ahupua‘a (seemingly none of which was awarded)

LCA #	Claimant	*Ahupua‘a*	*‘Ili*
02683	Imaui	Kamananui	Paukauila, Puaae
02693	Wanahea	Kamananui	Kamahu
02719	Polu	Kamananui?	Manuaula
02742	Puu	Kamananui	Nonokihewa
02797	Kahakinaawa	Kamananui	-
02805	Keoa	Kamananui	-
02810	Kiekie	Kamananui	Paukauila
02899	Kioi	Kamananui	Kumupali
02902	Kauakahi	Kamananui	-
02908	Kuemanu	Kamananui	Muliwai
04313	Kuhi	Kamananui	-
04314	Kaaiohelohua	Kamananui	-
04315	Kahinapoo	Kamananui	-
04317	Keoahu	Kamananui	Keoneula
07342	Kuokoa, L.	Waialua, Kawailoa, Kamananui	Puaena, Lahuimoho, Honohikilua, Kalaopa, Kupalu, Kawaipuolo, Anahulu, Kalehunui, Kamahu, Lokoea, Kealia
07400	Koa	Kamananui	Paukauila
07405	Kahaimoana	Kamananui	-
07415	Kaelehiwa	Kamananui	-
07416	Kaamoku	Kamananui	-

The nature of the Land Grants is long thin rectangles with parallel sides. This form is not at all typical for traditional Hawaiian land holdings that are more commonly in the shape of irregular polygons.

3.5 1850s to 1900

In 1850, the first road from Honolulu to Waialua was built. Economic changes also impacted life within Waialua District at this time.

> Although the whaling industry in the Pacific Ocean reached its peak in 1859, prices for whale oil collapsed five years later. This price decline during the 1860s led to far fewer whaling ships taking long layovers in the islands. The paucity of whaling ships caused a decline in demand for provisions that adversely impacted the Hawaiian economy, which had been dependent on the heightened demands for goods and services by the whalers. Many residents of districts like Waialua, whom had been dependent on cultivating crops for trade, migrated to Honolulu and other parts of O‘ahu. Twenty-two percent of Hawai‘i’s population resided in Honolulu by 1860 (Juvik and Juvik 1998:174).

Government censuses during the second half of the 19th century document the diminishing population of the Waialua District and, presumably, Kamananui Ahupua‘a. In 1853 a total of

1,126 persons was recorded in Waialua. Nineteen years later, in 1872, the total district population had dropped to 851 (Schmitt 1977: 12-13).

The diaries of Robert C. Perkins, an entomologist and ornithologist, who collected specimens in the Waialua District in 1892-1893, reveal aspects of life in the area near the end of the 19th century:

> The end of 1892 and early months of 1893 were not very favorable for collecting, the weather being generally wet in the mountains and there were three big spates of the mountain streams, these did very much damage to the system of flumes belonging to the Chinese of the district on more than one occasion during the winter months. (Perkins 1892-1893)

The “Chinese of the district” mentioned above were the rice growers who had settled in the area after fulfilling their sugar plantation contracts. In 1852, the first Chinese contract laborers arrived in the islands. Contracts were for five years, and pay was $3 a month plus room and board. Upon completion of their contracts, a number of the immigrants remained in the islands, many of whom became merchants or rice farmers. As was occurring in other locales in the 1880s, groups of Chinese began leasing and buying (from the Hawaiians of Waialua) former taro lands for conversion to rice farming. The taro lands’ availability throughout the islands in the late 1800s reflected the declining demand for taro as the native Hawaiian population diminished.

The Hawaiian Islands were well positioned for rice cultivation. A market for rice in California developed as increasing numbers of Chinese laborers immigrated there beginning in the mid-nineteenth century. Similarly, as Chinese immigration to the islands also accelerated, a domestic market opened.

> By 1876 there was still a considerable amount of former taro land available for rice farming. The great demand for rice land brought disused taro patches into requisition — especially because water rights attached to them...
>
> As the demand for rice continued, it became profitable to bring into use land hitherto unused. The land most easily rendered fit for rice cultivation was swamp or marsh land of which there was a large amount in the islands...At Waialua on Oahu, about three hundred acres of swamp land were reclaimed for rice farming. (Coulter and Chun 1937: 11)

Additionally, as Chinese immigration to the islands increased, a domestic market for rice developed. The immigrant Chinese may account for the rise in the Waialua District population during the last quarter of the 19th century: Government censuses record populations of 939 in 1878, 1,265 in 1884 and 1,286 in 1890 (Schmitt 1977:13). In 1892, 180 acres of rice were under cultivation in the Waialua District; these rice fields were located in the *ahupua‘a* of Mokulē‘ia, Kamananui and Kawailoa (Coulter and Chun 1937:12, 21).

In addition to agricultural changes, western entrepreneurial interests would also alter the Kamananui landscape. The Oahu Railway and Land (OR&L) Company, organized by Benjamin Dillingham in 1889, connected outlying areas of O‘ahu to Honolulu. During the last decade of the 19th century, the railroad extended from Honolulu to Pearl City in 1890, to Waianae in 1895, to Waialua in 1898, and to Kahuku in 1899 (Kuykendall 1967:100).

In 1899, Dillingham recognized the economic advantage of providing additional services for the increasing numbers of visitors to the north shore of O‘ahu. The two-story Hale‘iwa Hotel at Waialua Bay in neighboring Pa‘ala‘a Ahupua‘a had its grand-opening in 1899. The hotel was built at a cost of more than $50,000 on land leased from the Bernice Pauahi Bishop Estate. The hotel’s name – Hale‘iwa - eventually became synonymous with the area above the bay and the “town” which comprised the hotel, a church, and a courthouse.

The development of a railroad system also spurred the development of large-scale sugar farming in Waialua. John Emerson, a missionary, cultivated the first sugarcane in Waialua earlier in the century. He constructed a small sugar mill that also produced molasses. During subsequent decades, other missionaries and western entrepreneurs continued expanding sugar cultivation in the district although still on a small-scale. Benjamin Dillingham, pursuing new business for his railroad, persuaded Castle & Cooke to lease Waialua land already under cultivation of sugar. In 1898, Castle & Cooke organized the Waialua Agricultural Company and soon began a program of land purchases and leases to increase the plantation’s capacity.

A description of the original state of the lands within the plantation at its inception is provided by William Warren Goodale, the Waialua Agriculture Company’s plantation manager:

> At the time Waialua Agricultural Co., Ltd., was organized in October, 1898, it took over the old Halstead Plantation with about 600 acres of cane, certain leases of large tracts of unimproved lands covered with lantana and stones, several hundred acres of rice and ranch land, a small mill, one five million gallon pumping station, no reservoirs or railroads, one small set of steam plows and other equipment of a small plantation. (Clark 2007:58)

3.6 1900s

Waialua Agricultural Company — later named Waialua Sugar Company — continued to expand during the first decades of the 20th century, eventually reaching more than 12,000 acres, including extensive portions of Kamananui and Pa‘ala‘a Ahupua‘a. The expansion of the sugar plantation is reflected in government censuses of the early 1900s. While in 1896 there were only 1,349 persons recorded in Waialua District, subsequent censuses recorded 3,285 persons in 1900; 6,083 in 1910; 7,641 in 1920; and 8,129 in 1930 (Schmitt 1977:13-14). The center of operations was the mill and mill village located in coastal Waialua Town..

Into the 20th century, rice continued to be cultivated in well-watered areas of Kamananui, the Waialua District, and other areas within the Hawaiian Islands. However:

> Rice farming went into a steady decline for several decades before phasing out almost completely just before the beginning of World War II. In 1921, Hawai‘i exported seven hundred thousand pounds of rice as compared to the ten million pounds produced at its height in 1890. In 1929 there were only twenty-five hundred acres of rice grown in Hawai‘i by less than seven hundred laborers, nearly five thousand laborers less than in 1903 when there were 5,643 rice planters. (Chong 1998:53)

On the North Shore, the Hale‘iwa Hotel continued to operate in the first decades of the 20th century. It was taken over by the U.S. Army in the 1930s, serving as a center for recreational

activities by military personnel in Hale‘iwa during World War II. The uplands of Kamananui were divided into a large number of relatively large land grants by the Territory of Hawaii circa 1913. The Waianae Uka U.S. Military Reservation lands that became Schofield Barracks were ceded to the U.S. Government in 1899. Construction of the military post began in 1908 and by 1914, 6,000 men resided on the base (Tropic Lightning Museum 2005). The 10,064 acre federal Schofield Barracks lands [TMK (1) 7-7-001:001] extend from the summit plateau of Mount Ka‘ala as far east as Lake Wilson

The 1919 U.S. War Department map (Figure 8) shows no development in the vicinity of the summit of Mount Ka‘ala.

A 1928/1929 U.S. Geological Survey map (Figure 9) shows two trails but no other development. The trail to Waialua extends west from the present study area along the north edge of the summit plateau before turning almost due north descending a prominent steep ridge towards Mokulē‘ia. A second, Schofield Barracks trail, leaves the vicinity of the present study area along the northeast edge of the summit plateau before turning east descending a steep ridge to the vicinity of Schofield Barracks on the central plateau.

A 1943 War Department map (Figure 10) shows the same two trails as the 1928/1929 map but also shows two additional trails. A trail is shown continuing along the north edge of the Ka‘ala Plateau west of where the trail to Waialua heads north and then continuing along the crest of the Wai‘anae Range towards the upland above Ka‘ena Point. A fourth trail winds across the central portion of the summit plateau from the present study area towards the southwest and then extends due west down a steep ridge towards Wai‘anae. No other development is shown.

During World War II, an aircraft control and warning squadron (ACWS), very high frequency communication station, and base camp were established near the summit of Mt. Ka‘ala. During this period access to the facility was provided by an aerial tram system approximately 2 miles (3.2 kilometers) long. The facility was inactivated after the war until 1963 when construction of the existing facility began.

A 1953 U.S. Army Mapping Service map (Figure 11) shows the same four trails as the 1943 map and now shows the first real development – the establishment of the aerial tram from the immediate vicinity of the present study area down to the southeast to Schofield Barracks. Three small structures are shown just south (outside) of the present study area that are understood to have been associated with the tram way.

Due to their similar mission needs, the FAA and the Hawaii Air National Guard (HIANG) agreed to jointly develop the Mt. Ka‘ala facility in 1962. The facility became fully operational for its current mission in July 1965.

A 1977/178 aerial photograph (Figure 12) clearly shows the summit as having been graded for radar/communications facilities and the present paved Mt. Ka‘ala Road extending to the west of the present study area.

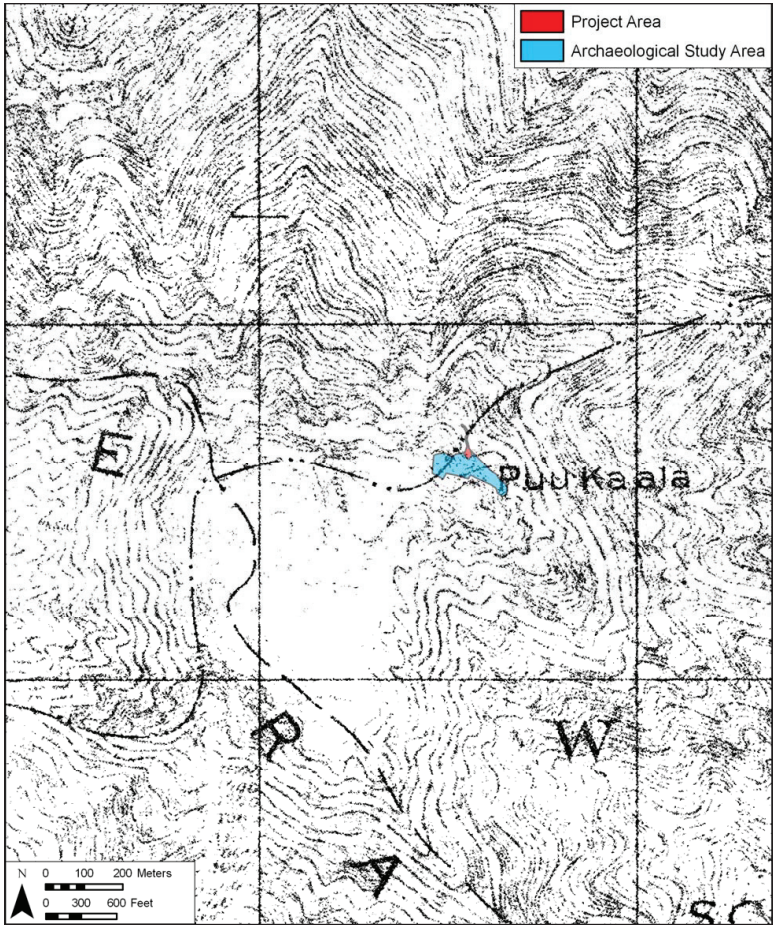

Figure 8.Portion of 1919 U.S. War Department map, Waianae and Wahiawa quadrangles, showing the project area

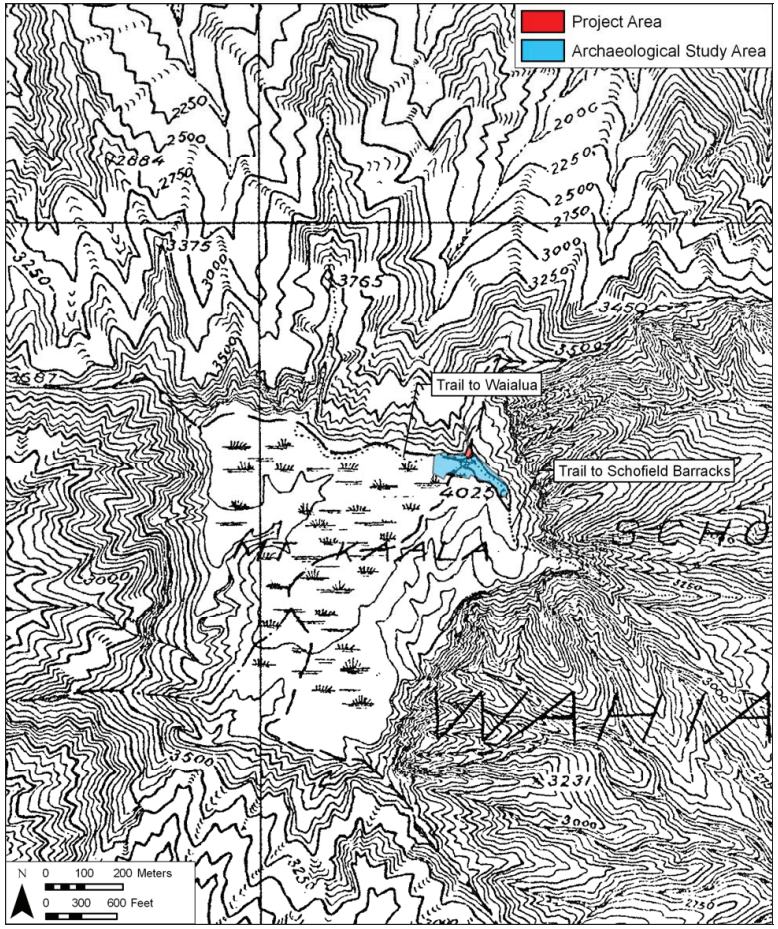

Figure 9. Portion of 1928-1929 U.S. Geological Survey map, Schofield and Wahiawa quadrangles, showing the project area

Figure 10. Portion of 1943 U.S. War Department map, Haleiwa, Paalaa, and Schofield Barracks quadrangles, showing the project area

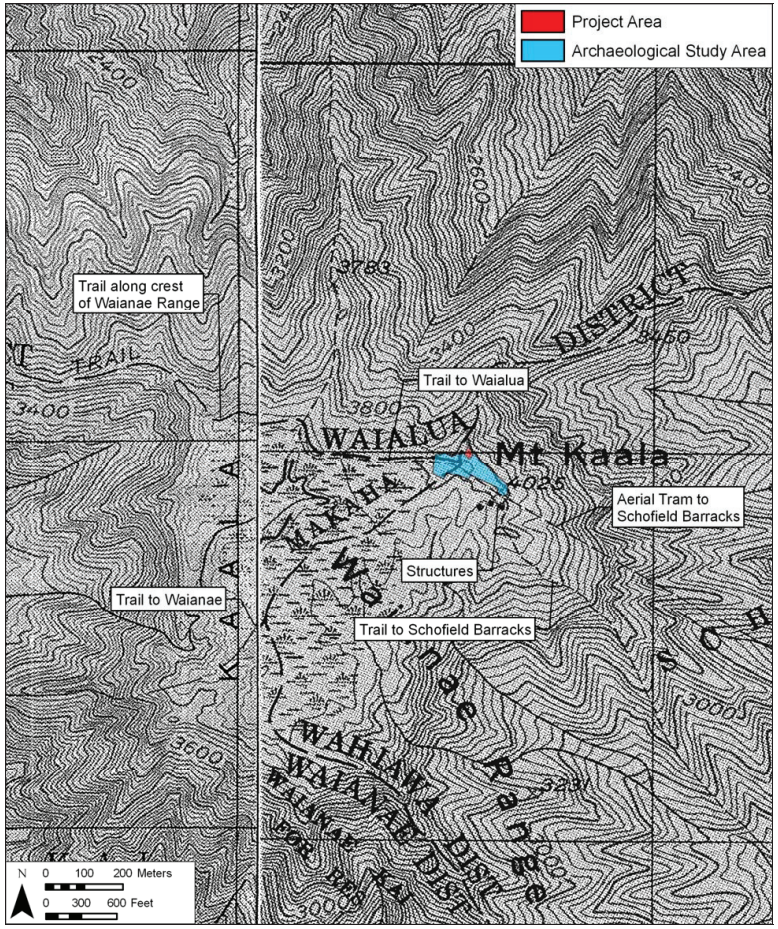

Figure 11. Portion of 1953 U.S. Army Mapping Service map, Haleiwa and Schofield quadrangles, showing the project area

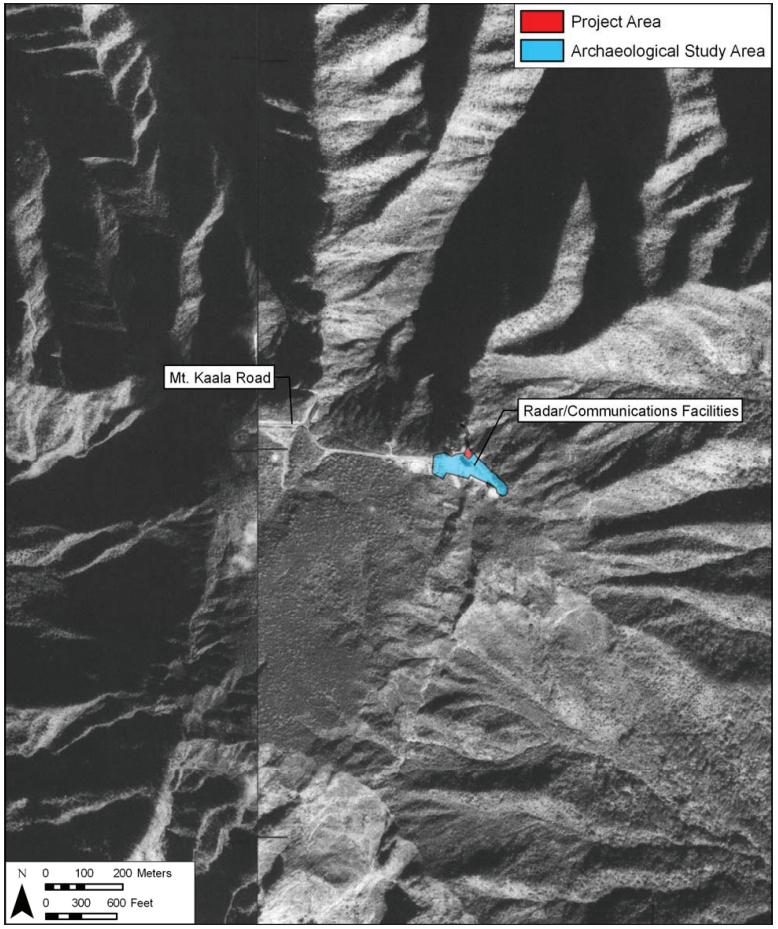

Figure 12. 1977-1978 aerial photograph showing the location of the project area (U.S. Geological Survey Orthoimagery 1977-1978)

Section 4 *Mo‘olelo* of Mount Ka‘ala

Mount Ka‘ala, as the highest point on the island of O‘ahu was the subject of a good deal of Native Hawaiian cultural expression. Sayings and legends of Mount Ka‘ala are explored below.

4.1 *‘Ōlelo No‘eau* (Poetical Sayings) of Mount Ka‘ala

He lā‘au ku ho‘okāhi, he lehua no Ka‘ala

A lone tree, a *lehua* of Ka‘ala

An expression of admiration for an outstanding person, unequaled in beauty, wisdom or skill. (saying 714 Pukui 1983:79)

Ka ua Kolowao o Ka‘ala

The Mountain-creeper rain of Ka‘ala.

This rain is accompanied by a mist that seems to creep among the trees.

(saying 1573 Pukui 1983:169)

Ka wahine hele lā o kaiona,

Alualu wai li‘ulā o ke kaha pua ‘ōhai

The woman, Kaiona, who travels in the sunshine pursuing the mirage of the place where the *‘ōhai* blossoms grow.

Kaiona was a goddess of Ka‘ala and the Wai‘anae Mountains. She was a kind person who helped anyone who lost his way in the mountains by sending a bird, an *‘iwa*, to guide the lost one out of the forest. In modern times Princess Bernice Pauahi Bishop was compared to Kaiona in songs. (saying 1643 Pukui 1983:177)

Ke kaha ‘ōhai o Kaiona

Kaiona’s place where the *‘ōhai* grows.

Kaiona is a benevolent goddess whose home is Mt. Ka‘ala and vicinity. The *‘ōhai* grew in profusion there. Because of her graciousness, Princess Bernice Pauahi Bishop was compared to this goddess in songs. (saying 1714 Pukui 1983:185)

Nani Ka‘ala, he ki‘owai na ke kēhau

Beautiful Ka‘ala, a pool that holds the dew.

Praise of Mt. Ka‘ala, on O‘ahu, a depository for the dew. . (saying 2273 Pukui 1983:248)

In these *‘ōlelo no‘eau* (Poetical Sayings) of Mount Ka‘ala common themes are precipitation (rain, pool, dew), verdure (*lehua* and *‘ōhai plants),* and the goddess Kaiona (discussed further below).

Mauna Ka‘ala is usually understood as having been named for the pleasant fragrance (“*ka ‘ala*”) of plants growing there. Pukui (June 1954, cited in Sterling and Summers 1978:133)

relates: “ Kaala – (an archaic word can mean - - Lizard - - widow or widower - - (forbidding aspect, aloof, not friendly) - - This latter may be the meaning that applies.

Pukui relates a second brief account pertaining to Ka‘ala:

> Kaiona was a goddess who dwelled in the Wai‘anae mountains near Ka‘ala. She was referred to as “the lady of sunshine”. Mrs. Pukui says that she has never found anything that suggests that this goddess has ever done an unkind thing. Never harmed anyone.
>
> Was an ‘aumakua of Mrs. Pukui’s relative. Pauahi Bishop was sometimes known by this name, probably because of her good and kind ways. Pukui (July 16 1953, cited in Sterling and Summers 1978:133)

As noted above, ‘*ōlelo no‘eau* associate Ka‘ala with a *ki‘owai* or pool of water. McAllister (1933:133) designated a “Site 212 Luakini fishpond” that he states as “once located on the summit of Mount Kaala.” McAllister (1933:133) goes on to relate that:

> According to Hookala, his father often obtained fish from the fresh-water pond. In it were to be found many shore fish, hinalea, wuwoa, a kind of mullet, and others. Kamaoha was the moo or goddess of the pond. There is now only a swamp at the site.

4.2 Legends of Ka‘ala

4.2.1 The Legend of Aukelenuiaiku

In Fornander’s account of the Legend of Aukelenuiaiku (“*He Mo‘olelo No Aukelenuiaiku*”; Fornander 1917 Volume IV Part II: 104-105) is a passing reference to high peaks being “as high as that of Ka‘ala mountain” (“*Ua like paha ke kiekie o ia aina me ke kuahiwi o Ka‘ala*”). The context is that Ka‘ala is a well-known high mountain to which the height of other high mountains may be compared.

4.2.2 The Legend of Kalelealuaka and Keinohoomanawanui

In Fornander’s account of the Legend of Kalelealuaka and Keinohoomanawanui (“*Ka‘ao No Kalelealuaka a Me Keinohoomanawanui”;* Fornander 1917 Volume IV Part III: 464-465) is a passing reference to the geographic location of “Lihue [O‘ahu]” as “… situated below and to the east of the Ka‘ala mountains on O‘ahu.” (*Lihue e waiho ana malalo hikina o ka mauna o Ka‘ala i O‘ahu*.”). In this context Ka‘ala mountain takes on a meaning almost synonymous with the “Wai‘anae Range”

4.2.3 The Legend of Kawelo

Another passing account is found in Fornander’s account of the Legend of Kawelo (“*He Mo‘olelo No Kawelo”;* Fornander 1917 Volume V Part I: 12-13).b The folk hero Kawelo is fishing at a Ka‘ena Point, Wai‘anae fishing ground and catches the fabulous fish-god Uhumakaikai who tows Kawelo and a fisherman colleague out to sea “until the Ka‘ala Mountain disappeared” (“… *a nalowale ke kuahiwi o Ka‘ala*…”) (see also Fornander 1959:42,45). While this is just meant to indicate that the fishermen are towed far from shore; Ka‘ala could

reasonably be construed as symbolic of O‘ahu, a last remembrance of O‘ahu or a longing for O‘ahu..

Pukui’s (1951:97-122) account of Kawelo of Kaua‘i has a similar account that as the fishermen are being dragged out to sea, Kawelo’s anxious companion: “…could not even see Mount Ka‘ala. O‘ahu had disappeared…” (Pukui 1951: 107)

The Green and Pukui (1936: 28-112) account of “The Legend of Kawelo” also relates Kawelo’s attempts to catch the fabulous fish-god Uhumakaikai. At one point Kawelo becomes so angry and frustrated at the failure of his attempts:

> That pole and this were thrown into the canoe, Kawelo breaking them to pieces (in his rage). When his companion saw him in such a passion and all the poles broken he said, “Do you never want to go fishing again, Kawelo? It is tedious work obtaining poles; the forests are on Ka‘ala Mountain.”
>
> *Ia Manawa o Kawelo i huki mai ai I kana upena. O kela, o keia, kau ana iluna o ka wa‘a, pau aela nā la‘au i ka haihai. A ike aku la kona hoa Makuakeke i ka lele li‘ili‘i o ka ehu kai, pau maila nā la‘au i ka haihai, - pane aku la ‘oia ia Kawelo, “Manao lawai‘a hou ‘ole, e Kawelo? He mea luhi ka la‘au o ka huli hou ana ‘ku – aia ka la‘au la iluna o Ka‘ala !!!* Green and Pukui (1936: 54-55)

Thus Ka‘ala is associated with forest resources – specifically poles for fishing – but the nuance is that it is a really tiring matter to obtain things from way up on Ka‘ala!

4.2.4 The Legend of Kahalaopuna

In Fornander’s account of the Legend of Kahalaopuna (“He *Ka‘ao No Kahalaopuna”;* Fornander 1917 Volume V Part I: 188-189) is a passing reference to the geographic location of Pōhākea [Pass] as “… a place above ‘Ewa lying close to the Ka‘ala mountain.” (“…*Pōhākea, ma uka o ‘Ewa, e pili la me ke kuahiwi o Ka‘ala*.” The reference helps the listener understand the location of the less well-known Pōhākea and adds a poetic quality (more so than precise geographic reference as the Ka‘ala summit is more than 10 kilometers from Pōhākea Pass).

Kalākaua’s (1990: 511-522) account of “Kahalaopuna, the Princess of Manoa” has a quite similar location gloss reference: “to Pōhākea, on the ‘Ewa slope of the Ka‘ala mountains.” (Kalākaua 1990: 515)

Thrum’s (1998:118-132) account of “Kahalaopuna, Princess of Manoa” also has an account of Kahalaopuna’s murder “at Pōhākea, on the ‘Ewa slope of the Ka‘ala mountains.” (Thrum (1998:125)

4.2.5 The Legend of Halemano

In Fornander’s account of the Legend of Halemano (“*Ka‘ao No Halemano”;* Fornander 1917 Volume V Part II: 188-189) the folk-hero Halemano recites a remembrance song (*mele*) for the lovely Kamalalawalu including a passing reference to Ka‘ala and the lands in which they roamed:

... He anu au la he koekoe	I am cold and chilly
Ma ka poli au e ku aloha e	Let me lie in your bosom, love
Holo i Kalena ia uka o Halela‘au,	We have roamed over Kalena in the uplands of Halela‘au
Ka nahele anu i Wahiawa e.	In the cold thickets at Wahiawa
He wa olelo na ka noe i Ka‘ala,	It was during the days of the heavy fog at Ka‘ala
Ke huea mai la e ke Kehau,	For the cold was brought forth by the dew
Ka noenoe ‘a‘ala a ke kupukupu o Lihue ...	Together with the fragrance of the *kupukupu* of Lihue … (see also Fornander 1959:278-279)

Halemano is evoking a sense of intimacy and closeness and is linking the mountain “Ka‘ala” (often translated as “the Fragrance”) with the sweet-smelling (“*‘a‘ala*”) of the *Kupukupu* fern.

4.2.6 An Account of Kahahawai

In Fornander’s accounts of “Famous Men of Early Days” (“*Po‘e Kaulana o ka Wā i Hala”*; Fornander 1917 Volume V Part II: 498-499) is an account of Kahahawai (“*No Kahahawai*”) a military leader under the ruling chief of Maui, Kahekili who carried out a final defeat of the O‘ahu forces loyal to the O‘ahu ruling chief Kahahana. After the defeat of the O‘ahu forces in the decisive battle of Niuhelewai (Kapālama, Kona, O‘ahu) a loyal remnant of O‘ahu “retreated and encamped on the mountains of Ka‘ala” (… *he‘e aku nei nā ‘li‘i a me nā koa a noho iluna o ke kuahiwi o Ka‘ala*.”). “But Kahahawai and his men arose and destroyed all the people who were asleep on the hills and mountains of Ka‘ala.” (*Ia lākou i lele ai peia, ala maila o Kahahawai ma a luku i nā kānaka e moe ana maluna o na pu‘u a me na kuahiwi o Ka‘ala*).”

In this account the reference to “Ka‘ala” is again something of a generic reference to give the audience a general understanding of the geographic area in which the O‘ahu remnant was encamped – under the hills and uplands of Ka‘ala (the actual round-up and slaughter of the O‘ahu forces is indicated to have been close to “a cliff called Kolekole” (“*kekahi pali i kapa ia o Kolekole*”) – in other words at Kolekole Pass well to the south of the Ka‘ala summit area.

4.2.7 Hua, King of Hāna

Kalākaua (1990: 155-173) relates a story of “Hua, King of Hana”. The ruling chief Hua of Hāna, Maui slays the kahuna Luaho‘omoe who has cursed those who would participate in his murder. Wherever Hua and his attendants go is afflicted – particularly by drought and blight. The scourge follows a Hāna chief and his retainers to Waimalu, ‘Ewa, O‘ahu where a celebrated prophet, Naula-a-Maihea lived. Alarmed at the threat of destruction the prophet Naula-a-Maihea “ascended the highest peak of the Wai‘anae Mountains” (Kalākaua (1990: 170). Naula-a-Maihea observes the patterns of clouds and determines what to do. “Naula descended from the mountain and the same night embarked alone in a canoe for Maui.” Naula-a-Maihea carries out a course of rituals with the sons of Luaho‘omoe and the rains and fertility of the land is restored.

In this account Ka‘ala is indicated to be a particularly good place to observe and interpret clouds for their meteorological import and their signs of supernatural matters.

Pukui’s (1951:201-207) account of “The Punishment of Hua” has a slight variant in which it is a kahuna of Kaua‘i who climbs a mountain on Kaua‘i and then Mount Ka‘ala to study atmospheric signs to end the drought. “He reached O‘ahu and climbed Ka‘ala to study the clouds once more. He did not find the sign he looked for … ” (Pukui 1951:206) and then heads on to Maui. For Pukui’s Kaua‘i Island kahuna, Ka‘ala does not provide direct answers but rather is tried and is eliminated as a source of answers to the cause of the drought. For Naula-a-Maihea Ka‘ala offers insight leading to rejuvenation – but the long hike provides no insight for Pukui’s Kaua‘i Island kahuna

4.2.8 Kaulula‘au

Kalākaua (1990: 209-225) relates a story of “The Sacred Spear-point”. The folk-hero Kaulula‘au of Maui and his attendant journey around the archipelago and land at Waialua, O‘ahu. They proceed to head toward Waikīkī to meet the O‘ahu ruling chief Kalona-iki “proceeding along the foot of the Ka‘ala range of mountains” (Kalākaua 1990: 220) – where they hear screaming and tumult. A monstrous bird has slain a woman’s only child.

> They could still see it in the distance, like a dark cloud against the mountain. After following it for some time the bird swooped down to commit some fresh depredation, and then rose and alighted upon a rocky ridge with precipitous face sweeping down from the main summit of Ka‘ala.” (Kalākaua 1990: 220).

Kaulula‘au slays the giant bird with his magic javelin. It is related that the bird’s feathers were seven paces in length and that the bird was in fact a bird-god relative of the Hawai‘i Island chief Hilo-a-Lakapu (who had previously invaded O‘ahu and been slain in the fighting). Ka‘ala is an abode of dangerous and unknown forces.

4.2.9 The Legend of Lo-lale, the Eccentric Prince of O‘ahu

Kalākaua (1990: 229-246) relates a story of “Kelea, the surf-rider of Maui: The Legend of Lo-lale, the Eccentric Prince of O‘ahu” in which Kelea, sister of the Ruling Chief of Maui, marries Lo-lale, the brother of the ruling chief of O‘ahu and they live at Lihue, O‘ahu. She leaves Lo-lale and marries his brother Piliwale (the ruling chief of O‘ahu). There is a passing reference to Lo-lale who “spent the remainder of his days in Lihue [O‘ahu] caring for the welfare of his people and dreaming in the shadows of the hills of Ka‘ala” (Kalākaua 1990: 246). A theme of the story is that Lo-lale “abhorred the sea” which had taken the life of a prior love and that Kelea loved the sea and surfing. A nuance of the reference to Ka‘ala is that it is symbolically about as far inland as you can get.

4.2.10 The story of Laieikawai

Kalākaua (1990: 455-480) relates “The story of Laieikawai” in which a great prophet of Kaua‘i, Hulumaniani by name, observes a curious rainbow for twenty days in succession. He follows the sign by canoe landing at Wai‘anae, O‘ahu. Soon, “he ascended Mount Ka‘ala, when he saw the rainbow over the island of Molokai.” (Kalākaua 1990: 458). As in Kalākaua’s (1990: 155-173) story of “Hua, King of Hana” we see a kahuna searching for atmospheric signs from Mount Ka‘ala.

4.2.11 Hi‘iaka and Ka‘ala

In Emerson’s (1915:99-100) translation of the Pele and Hi‘iaka Saga the goddess Hi‘iaka is on her way to Kaua‘i to fetch Lohiau for her elder sister the volcano goddess Pele.

From the plain near Lau-hulu Hi‘iaka took a fresh view of Mount Ka‘ala and, in a tone of bantering apology, said, “Forget me not, O Ka‘ala. Perhaps you complain that I have not chanted your praises:

O Ka‘ala, kuahiwi mauna kēhau,	Ka‘ala dewy and forest clad,
Ke opu mai la, la, i Ka-maoha;	Belies the plain at Ma-oha
Poluea iho la ilalo o Hale-auau;	As it slopes to the land below.
Ke kini ke kēhau anu o Ka-lena.	The cool dew fall comforts Ka-lena:
Akahi no ka nele o ka la pomaikai:	First pinch this of want mid good luck -
Aohe moe-wa‘a o ka po nei –	No dream of canoe voyage last night
Ka moe-wa‘a e!	No dream of disaster at sea.

The Emerson account (1915: 160-165) describes the vignette of Hi‘iaka at Pōhākea Pass (as Hi‘iaka and Lohiau are heading back to Hawai‘i Island) at some length but makes no reference to Ka‘ala per se in that context.

In Kalākaua (1990: 483-497) account of the story of “Lohiau, the Lover of a Goddess” he relates a famous scene of Hi‘iaka seeing her beloved *lehua* groves in Puna, Hawai‘i Island being destroyed by her older sister - the volcano goddess Pele. While most accounts place this vision of Hi‘iaka’s at Pōhākea Pass, the Kalākaua account (1990: 490) relates that “Hi‘iaka ascended the Ka‘ala mountains and saw that her beautiful *lehua* and *hala* groves near the beach of Puna, on the distant island of Hawai‘i, had been destroyed by a lava flow.” Again reference to “Ka‘ala” is somewhat generic for the Wai‘anae Mountain Range.

4.2.12 The Punahou Spring

Thrum’s (1998:133-138) account of “The Punahou Spring” associates the creation of the new spring with a benevolent water *mo‘o,* named Kakea who was an ancestor of the persecuted twin children Kauawa‘ahila (the boy named “Waahila Rain”) and Kauakiowao (the girl named “Mountain Mist”). In this account the twin’s father, Kahaakea, “formerly lived on the Ka‘ala Mountains” (Thrum 1998:133) and the twins’ evil step-mother, Hawea, “told [the twins] to return to Ka‘ala, where they would be constantly under her eye.” (Thrum 1998:134). “Ka‘ala seems to be a somewhat generic geographic reference to the northern Wai‘anae Mountain Range. Possibly the story picks up on Ka‘ala as a place of danger and the unknown where mo‘o, monstrous birds and evil step-mothers reside.

4.2.13 Legend of Pa‘alua and Kawelu

Thrum’s (1923: 136-148) account of the “Legend of Pa‘alua and Kawelu” relates a passing reference that when an old chief of Kaua‘i sends his son, Pa‘alua, to O‘ahu “… at early dawn the high table mountain of Ka‘ala was visible on the far southern horizon…”. While this is

eminently reasonable as a geographic account it seems common for Ka‘ala to assume a kind of symbolic reference to O‘ahu.

4.2.14 History of Kūali‘i

In Fornander’s account of the “History of Kūali‘i” (“*Mo‘olelo o Kūali‘i”;* Fornander 1917 Volume IV Part II: 390-391) relates a song (*mele*) that compares Kūali‘i with a miracle-working ruling chief of Hawai‘i named Keaweikekahialiiokamoku with the following account:

Ka limu kau i ka la‘au	The moss that hangs on the wood,
Ka elemihi ‘ula i ka luna o Ka‘ala-la	The red crab on the top of Ka‘ala
Aole i like Kū	Not like unto these art though, Kū.
Aole i like Kū	Not like the *kukui*,
Aole I like I ke aalii	The rough barked *kukui*

By way of partial explanation, Fornander (1917 Volume IV Part II: 390) relates in a footnote that “There is said to be a pond on the summit of Ka‘ala in which is found a fresh-water crab.” There is reason to believe that there were in fact land crabs in the Hawaiian Islands in pre-Contact times.

In consultation on the project, the Office of Hawaiian Affairs (Letter of November 7, 2011 Nāmu‘o to Sato) comments regarding this account:

> OHA understands why traditional and historical accounts which identify a pond containing marine species at the highest point (4,025 feet above mean sea level) on the Island of O‘ahu could be difficult to conceive from certain perspectives. It is important to note that the knowledge of our ancestors often extends beyond the consciousness of modern thought and transcends from the mundane to the profound. …
>
> OHA advocates that Fornander’s reference and McAllister’s publication [see following Section 5.1] be viewed for what they are, accounts which describe the presence of a pond containing marine species at the Ka‘ala summit.

Sterling and Summers (1978:132) relate an account from a Thomas McGuire dated September 26, 1953) regarding the Ka‘ala “Summit Swamp” that:

> Swamp on the top of Ka‘ala not likely to have been used as fishpond. There is a deep depression on side towards Wai‘anae and there is no trace of stone walls or dykes which would have been necessary to keep water from flowing out. Also Lehua trees growing in swamp have moss and other growth indicating they have been growing there a very long time. The age of these trees is obvious and had there been a pond these trees would not be there or have the appearance they do if of recent growth.

4.3 Summary of Traditions of Mount Ka‘ala

As with other highest summits of the Hawaiian Islands Mount Ka‘ala is symbolic, for purposes of comparison, of that which is beyond compare or unequaled. Ka‘ala, as the highest point of the Wai‘anae Range and of the Island of O‘ahu becomes symbolic of the Wai‘anae Range and of the Island of O‘ahu.

The associations with a *mo‘o* goddess emphasizes the wetness of the summit and at least to some extent the general wildness of the area and the potential for danger. The account of Ka‘ala as the abode of a monstrous bird and evil step-mother also emphasizes danger.

While Ka‘ala is associated with forest resources – specifically poles for fishing –the nuance is that it is a tiring matter to obtain things from way up on Ka‘ala! It is a “*mea luhi*” (laborious thing) to get up there on foot.

Section 5 Previous Archaeological Research

5.1 McAllister’s Documentation of Sites at Kamananui

The first systematic archaeological study of Kamananui was conducted by J. Gilbert McAllister of the Bernice P. Bishop Museum in the 1930s. McAllister (1933) consulted with knowledgeable informants about both physical and legendary sites of each district during his island-wide survey of O‘ahu. McAllister identified 13 sites (see Figure 13) within Kamananui Ahupua‘a (sites 197-200, 202, 203 and 205-211) described as follows:

> Site 197. Kalakiki Heiau in Kamananui, on the slope back of the Waialua mill beneath Puu Kaupakuhale
>
> Located on the crest of the ridge, with a slope on all except the mountain side, a large front terrace is about all that remains of the structure, and only that portion which is rock-paved is visible. The remainder of the heiau is covered with a dense growth of Lantana. The mountain-ward portion has undoubtedly been covered by dirt washed down from the almost bare slope behind. The heiau was probably of two or more terraces, with several small divisions. The highest wall is 1.5 feet, but terrace facings are as much as 6 feet high.
>
> Thrum (79, 14) says: “it is deemed unwise to express an intent to go a-fishing abrest of Kalakiki unless in an indirect or figurative way, else Keanini, the shark-god deity of the heiau, which is a huge rock lying awash a few hundred feet from the shore, will cause the phosphorescent lights to so dog one’s efforts as to render the attempt futile. A still further superstition is, that a house built within the range from the temple to its deity must not have its doorway face the hills, else trouble, sickness and death to the household are sure to follow.” (McAllister 1933:129)
>
> Site 198. Burial cave, Kaumoku Gulch, Waialua
>
> Powdered skeletal material was noticed on the side of a cliff beneath several very small caves. Upon examination portions of two skeletons were found in a lava tube whose entrance was so cleverly sealed that the material would not have been discovered had there not been a hole into a lower cave larger than a man’s head. From the inside, light was noticed through the cracks of the rocks, and the entrance then discovered. No mortar had been used, but sharp-edged rocks had been carefully fitted together. There were no artifacts with the burial. The bones had probably been bundled together, but had evidently been disturbed by animals, as several had been recently gnawed. There was one skull but no mandible, one humerus, one radius, two ulnas, four femurs, three tibiae, and many fragments. (McAllister 1933:130)

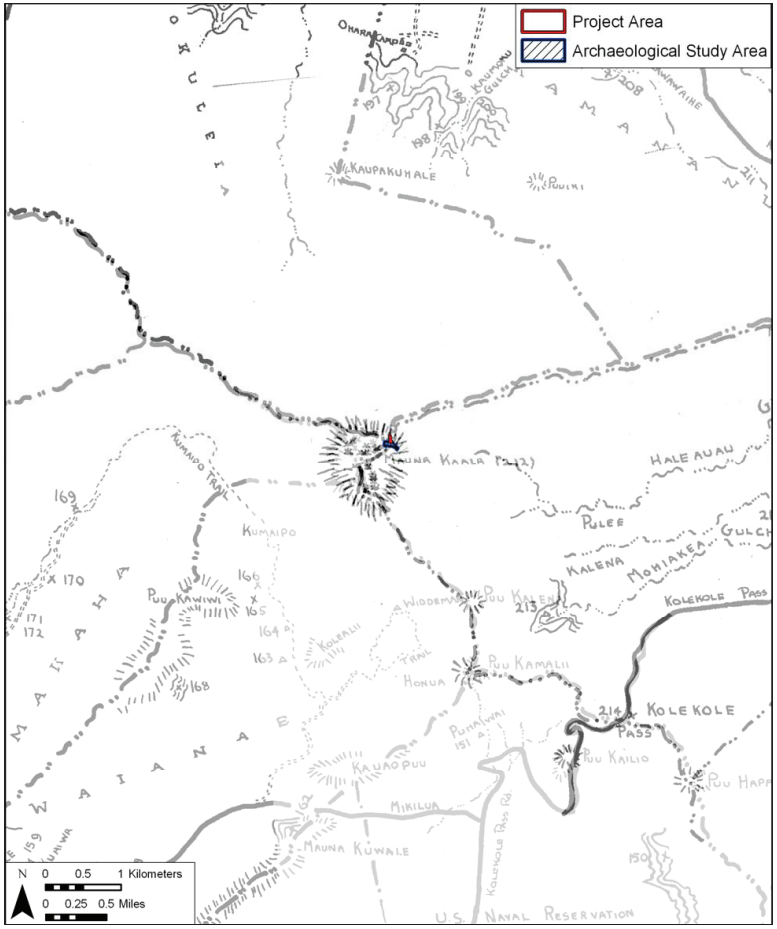

Figure 13. Map of Vicinity of Mount Ka‘ala (adapted from Sterling and Summers 1978) showing location of McAllister sites and present project area

Site 199. Pile of stones, near the mouth of Kaumoku Gulch, Waialua.
Near the mountain side of the siphon put in 1930 by the Waialua Agricultural Company are many piles of stones which, as I was told by Mr. Low, who is of the opinion that they are old Hawaiian, were there 24 years ago when cane was first planted on this land. The larges pile is oval in shape, 28 by 15.5 feet by 7 feet high. There are six piles in a group averaging from 50 to 200 feet apart, evenly faced but with the top comparatively level. Just west of this group are a number of stone walls and one or two small inclosures [sic]. The whole site is in the mouth of the gulch. The stones may have been cleared away for agricultural purposes before the plantation took over the land. A large field on the mountain side and east of the Dillingham ranch which had also formerly been planted in cane has similar mounds of stone. I was also told that these stones were there in 1908 when the plantation took over the land. Hookala says they were pile in this manner to clear the land for agricultural purposes. (McAllister 1933:130-131)

Site 200. Cave in Kaumoku Gulch, Kamananui, Waialua.

At present one can squirm about 200 feet into the interior but comes in contact with large stones which obstruct the passage. It is believed that in the construction of the water tunnel just above, the blasting dislocated these stones. Water also constantly drips from the roof making shallow pools in the passageway. Twenty years or more ago the cave is said to have contained skeletal material, though there is no evidence now of such remains, which undoubtedly would have decayed with so much moisture. (McAllister 1933:131)

(Site 201 is understood as located within Mokulēi‘a Ahupua‘a.)

Site 202. Skeletal remains, near Puuiki station, Waialua.
In the sands near the present station a number of skeletons have been uncovered at a depth of approximately 4 feet by plantation workers who were removing sand. The skeletons are said to have been in good condition. One skull which I saw was well preserved. (McAllister 1933:132)

Site 203. Heiau, near Kaukonahua Stream, Waialua.
It is said that a small heiau once occupied the site where the Waialua Agricultural Company has installed their Pump Number 1. This is near the mountain side of the bridge which crosses Kaukonahua Stream near the plantation settlement. The name is not known. (McAllister 1933:132)

(Site 204 is understood as located within Waianae-Uka Ahupua‘a.)

Site 205. Akua stone, Poloa grove, Kamananui (pl. 11, *B*).
The grove, once sacred to Pele, has been left untouched in the midst of cane, and covers an area of approximately 80 by 170 feet. On the eastern side is a stone, triangular in cross section, standing 1.7 feet high, 0.6 foot thick, surrounded by eight small stones. The plantation placed a small iron fence about this stone many years ago and it is now almost completely rusted. The stone was believed by Oscar Cox to be called Kaneaukai, but his uncle Hookala does not remember that name applied to this stone. Hawaiians have been buried in the grove within the

last 50 years, though there is nothing to indicate such graves, which are shaded by breadfruit, mango, kukui, and Pride of India trees. (McAllister 1933:132)

Site 206. Kahakahuna heiau, Pala-kai, was once located on the sea side of the road and north of the old mill site. The stones have been removed and the slightly elevated ground upon which it was built it is used for agricultural purposes. (McAllister 1933:132)

Site 207. Kawai heiau was located just below the junction of Poamoho and Kaheeka gulches, on the elevation below the Waialua Plantation manager’s house. It was one of the first heiaus to be destroyed. (McAllister 1933:132)

Site 208. Irrigation ditch, Kamananui, Waialua.

The longest irrigation ditch of which there is any memory. The intake was from the Kaukonahua Stream, just before it issues from the gulch, about 2 miles inland from the mill. According to Tom Low, the ditch could be traced as far as the intersection of the Mokuleia, Haleiwa, and Honolulu roads. The most distant land watered surrounded the site of the old mill one and one-third miles away. This ditch was for many years used by the plantation. The cemented intake and portion of the rebuilt walls are still to be seen. Along part of its course the ditch flowed along the side of a hill about 50 feet high. According to Low, the old ditch was made by piling stones on the lower side, with a rubble fill. Consequently there was much seepage and loss of water. Aside from following the old course, the plantation had practically to reconstruct the walls. (McAllister 1933:133)

Site 209. Worked stones, found some years ago in Poamoho Gulch.

When the shaft for the pump in Poamoho Gulch was being dug, a number of artificially worked stones were found at depths of 13 to 18 feet. Gravel and silt were found above the artifacts, according to G. L. Trist, who was in charge of the work. The stones are said to have resembled ulumaika. (McAllister 1933:133)

Site 210. Indications of former habitations, Kaukonahua Gulch, Waialua.

House sites on both sides of the stream and in the south bank a small cave with the decayed remnants of skeletal material. Four piles of large stones approximately 3 feet in height are built in a perfect line, with an interval of approximately 20 feet between each pile. It was at first thought that these were supports of a former flume, but there has never been a pipeline in this section, though cane is planted in this gulch on a small plain just above these stones. No explanation has been obtained. The Hawaiians say that the stone piles were built by Europeans. (McAllister 1933:133)

Site 211. Burial cave, immediate vicinity of the Waialua Agricultural Company pumping plant (known as K.P.P.).

A small cave. The mouth had been walled up, but has since been broken into and the burials disturbed. Much of the skeletal material had evidently been removed. Bits of cloth and shoes indicate that it was post-European, though it may also have been used earlier. Just across the stream are indications that the narrow

> fertile plain was used for the cultivation of taro, and also the foundations of several frame houses. In the side of the bank is another burial cave, 10 feet wide and high and 15 feet deep, said to have been used by the Keloha family for many generations. When soldiers became troublesome the family built a doorway to the vault, which was locked. Later a party of soldiers destroyed the door, looted the coffins, scattered the remains, and took skulls and long bones for souvenirs.
>
> 212 Luakini fishpond, once located on the summit of Mount Kaala.”

McAllister (1933:133) goes on to relate that:

> According to Hookala, his father often obtained fish from the fresh-water pond. In it were to be found many shore fish, hinalea, wuwoa, a kind of mullet, and others. Kamaoha was the moo or goddess of the pond. There is now only a swamp at the site.

While the summit of Mount Ka‘ala is much associated with a swamp (or in this case with a “fresh-water pond”; see also the discussion under “History of Kūali‘i” above) there is no lake, pond or other body of water near the present project area other than the Mt. Ka‘ala bog area nearby.

The nearest of these McAllister Kamananui sites (other than the summit fishpond not personally surveyed by McAllister, but reported by the informant Hookala, and listed as site 212) is site 198 four kilometers NNE.

5.2 Subsequent Archaeological Studies in the Vicinity

Subsequent archaeological studies in the vicinity are shown on Figure 14, summarized in Table 2, and are discussed below in chronological order. No Kamananui Ahupua‘a studies have been previously conducted within the vicinity of the project area; the closest studies are more than 2.5 kilometers away.

Neller (1984) carried out an archaeological reconnaissance survey of the Mokuleia Exploratory Well Site in Kamananui. No finds were reported other than irregular rock structures found just to the north that were possible pre-contact burial platforms.

The most extensive and significant archaeology that has been conducted in the Waialua region was organized by Kirch and Sahlins (1992) in what was called the “Anahulu Valley Research Project”. In 1971, Marshal Sahlins and several staff members of the Bishop Museum began investigating local Hawaiian society and economy in the late prehistoric and early historic periods. Archaeological investigations in the Anahulu Valley were first undertaken in 1974 and 1976. In 1979, Kirch surveyed the Anahulu Valley archaeological remains and excavated two significant habitation sites and in 1974 and 1976, eight more archaeological sites were identified and described, including two burial caves, five overhanging rock shelters, and a terraced habitation complex.

Kirch and Sahlins defined the proto-historic settlement pattern in Waialua District as follows:

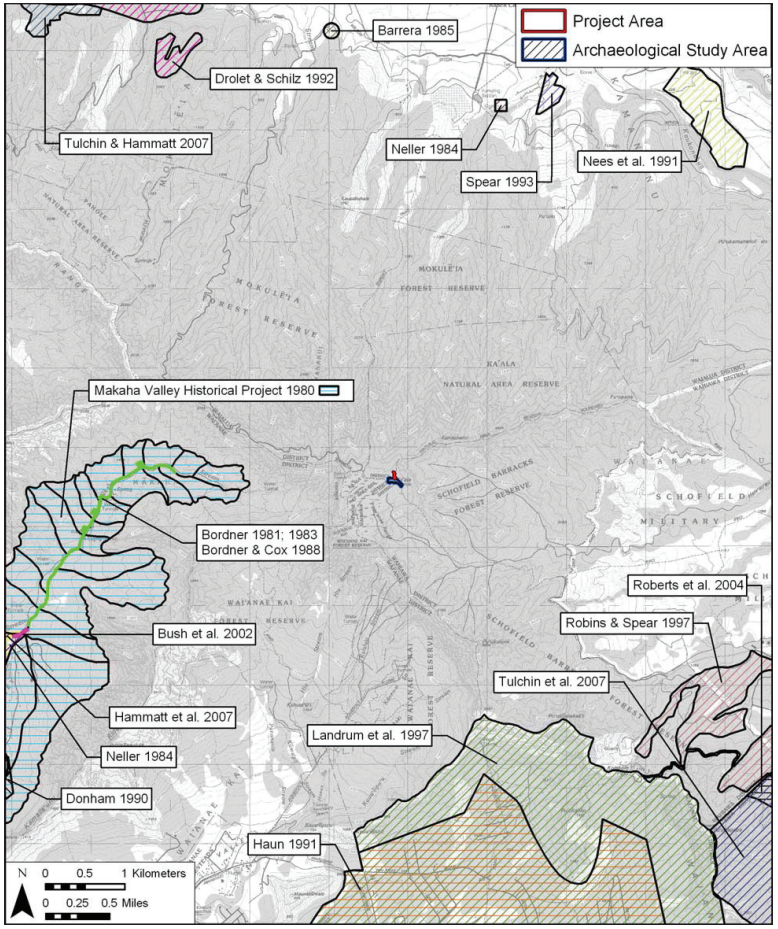

Figure 14. U.S. Geological Survey 7.5-minute series topographic map, Haleiwa (1999) and Schofield Barracks (1998) quadrangles, showing previous archaeological studies in the general vicinity of the project area

Table 2: Archaeological Studies in Kamananui Ahupua‘a and Near the Project Area

Author(s)/ Date	Location	Nature of Work	Findings
McAllister 1933	Kamananui Ahupua‘a	Island-wide survey	Identified 13 sites at Kamananui Ahupua‘a : Site 197 Kalakiki Heiau, Site 198 Burial Cave, Kaumoku Gulch, Site 199 Piles of stones, near the mouth of Kamoku Gulch, Site 200 Cave in Kaumoku Gulch, Site 202 Skeletal remains near Puuiki Station, Site 203 Heiau near Kaukona Stream, Site 205 Akua stone Poloa Grove, Site 206 Kahakahuna Heiau, Site 207 Kawai Heiau, Site 208 Irrigation Ditch, Kamananui, Site 209 Worked stones Poamoho Gulch, Site 210 former habitations, Kaukonahua Gulch and Site 211 Burial Cave
Yent 1981	TMK 6-7-01:51 Across Kaiaka Bay from State Rec Area, coastal Kamananui	Archaeological inspection	An eroding cultural deposit circa 1900 was noted
Neller 1984	Mokuleia Exploratory Well Site	Archaeological Reconnaissance Survey	No finds in specific area but notes possible pre-contact burial platforms just to the north
Kennedy 1991	TMK: 6-7-02:por 27	Surface Examination	Found one rock structure that may be remains of the Kalakiki /Olohena Heiau described by McAllister (Site 50-80-04-197).
Nees et al. 1991	Proposed Kaukonahua Quarry (TMK 6-5-01)	Archaeological Survey and Literature and Document Search	No pre-contact sites found due to sugar cultivation; one pill box and cane irrigation systems were noted
Spear 1993	Hidden Valley Ranch TMK 6-7-03: por. 5 &. 9	Reconnaissance Survey	No significant finds

Author(s)/ Date	Location	Nature of Work	Findings
Moore et al. 2004	TMK 6-7-01:51 & 52	Archaeological Inventory Survey	51 backhoe trenches were excavated. Finds included a previously disturbed collection of osteological remains (SIHP 50-80-04-6532), Waialua Dairy structures (-6533), two WWII pillboxes (-6534), & a reinterment location
Hammatt and Shideler 2006a	Waialua High and Intermediate School, TMK [1] 6-7-02:9	Archaeological Literature Review and Field Check	Identified no concerns, recommended no further work
Hammatt and Shideler 2006b	Kupahu Subdivision, Waialua Town, TMK: [1] 6-7-009:003	Archaeological Field Check and Literature Review	Project area lands very disturbed by decades of agricultural use. The Waialua Sugar Company building was recommended for evaluation by an architectural historian prior to any significant modification of this structure.
Moore and Kennedy 2008	Property Located at TMK (1) 6-6-021:001	Archaeological Assessment Report	No historic properties identified
Vitousek 2010	Waialua Beach Road Guardrail Improvement Project, TMK [1] 6-6-022:004	Inadvertent Discovery of Human Skeletal Remains During Monitoring Activities, SHPD letter report	Addresses single human vertebra encountered in imported beach sand fill

Four main zones of taro irrigation had been developed on these alluvial lands [of Waialua] Handy (1940:85) refers to “large terrace areas along the flatlands between the junction of Helemano and Poamoho Streams and the flatland west of Poamoho.” One of these zones has been totally obliterated by the Waialua Agriculture Company mill and town (Handy and Handy 1972:465). This was the pond field system water by site 208, described by McAllister as “the longest irrigation ditch of which there is any memory” (1933:133; see also Handy 1940:85-86). This ditch or canal, which evidently tapped Kaukonohua Stream about 3 km inland, was later cemented in and used for many years by the plantation. In addition to the main irrigation complexes shown in figure 1.7, there

were smaller pond field systems adjacent to the streams as they followed their incised valley courses inland (Kirch and Sahlins, 1992 vol. 1:17)

Kennedy (1991) carried out a surface examination of TMK: 6-7-02:por 27 identifying one rock structure that may be the remains of the Kalakiki/Olohena Heiau described by McAllister as Site 197 (SIHP 50-80-04-197).

Spear (1993) carried out a reconnaissance survey of a 15-acre parcel (Hidden Valley Ranch) at 200 foot elevation. No historic properties or cultural material were found.

In 1999, Cathleen Dagher a Staff Archaeologist at the State Historic Preservation Division responded to the inadvertent discovery of isolated human skeletal remains on Bishop Estate Land in Hale‘iwa (Kamananui), approximately 7 km northwest of the current project area. The remains consisted of an isolated cranium that was found on the surface of a sand pile. The sand fill contained bits of rusted metal, coral, marine shell, and organic materials, although no other skeletal remains were present. There was no archaeological context for the deposit, however the cranium was identified to be “possible native Hawaiian” and of female gender, over fifty years at the time of death.

As part of an Inter-Island DOE Cesspool Project, CSH (Hammatt and Shideler 2006a) carried out an archaeological literature review and field check at Waialua High and Intermediate School but found no indications of archaeological deposits or burials and recommended no further work.

In 2006, CSH (Hammatt and Shideler 2006b) conducted an archaeological literature review and field inspection within a 26.525-acre project area (TMK [1] 6-7-009:003) on what appeared to be bottom lands of a flood plain on the west side of the Ki‘iki‘i Stream (also known as Kaukonahua Stream). Field observations concluded that the vast majority of the project area was highly disturbed by modern agricultural activities, and was almost entirely under cultivation for cacao (*Theobroma cacao*). No pre-contact cultural remains were identified, however, a number of historic features, largely agricultural features, were noted during the field inspection.

The two previous studies (see Figure 14) shown within Schofield Barracks (Roberts et al. 2004, Robins and Spear 1997) are in Wahiawa District. Of interest and pertaining to the current study is the fact that “historic and modern land use activities, predominately pineapple production, have effectively obliterated the ground surface of a vast majority of the level plateau landform” (Roberts et al. 2004:85).

5.3 Addressing SHPD’s Specific Stated Concerns

The SHPD and the National Register of Historic Places do not list Mt. Ka‘ala as a registered historic property.

According to the SHPD in a letter dated April 5, 2002, a review of their records shows that there are no known historic properties at this location. In addition the SHPD stated that because the proposed action [the proposed action at the time was tower replacement] is located within the existing fenced portion of the installation (which was evaluated in the Cultural Resource Management Plan for Five Satellite Installations 15th Air Base Wing, Hickam Air Force Base, Hawai‘i, IARII, June 2000), they believe that this project will have “no effect” on archaeological sites or historic buildings. However, they add that: “We do, however, recognize that the summit

of Mount Kaala is probably eligible as a ‘traditional cultural property’ and that due to the prominence of legendary and cultural practice associations regarding the summit, consultation with the Hawaiian community should occur before any proposed undertaking.” Further discussion of Ka‘ala as a traditional cultural property’ is presented in the following Section 8.1 summary discussion.

As noted above, construction of the existing facility is understood to date to 1963/1965, but there are believed to have been phases of modification since then.

The Section 6E-8 Historic Preservation Review (Aiu to Unoki, April 8, 2011, Log No 2011.0679, Doc No. 1103RS62) for this project (present Appendix A) asserts:

> Archaeology: SHPD will withhold full comments until development of the EA. Please be advised that our records show multiple archaeological sites with parcel (1) 7-1-001:001 which should be identified in relation to the proposed development.

It seems certain this TMK reference has a typo reporting the wrong Section (7-1-001:001 is a 35 acre parcel adjacent to Wilikina Drive 10 kilometers to the east). It seems highly probable what was meant was TMK Zone 7 Section 7 Plat 001 Parcel 001 (as cited correctly in the letter’s subject line). That Tax Map Key reference [(1) 7-7-001:001] refers to the 10,064 acre federal Schofield Barracks lands extending as far east as Lake Wilson. There are indeed multiple archaeological sites within the 10,064 acre parcel (1) 7-7-001:001 but to the best of our knowledge none of these lie within two kilometers of the present 0.15 acre project area.

5.4 Background Summary and Predictive Model

In Kamananui Ahupua‘a, the pattern of residences and burials appear to have been nearer the coast.

Although McAllister identified thirteen sites within Kamananui all of the sites are located some distance away. There have been few archaeological studies in the vicinity upon which to base inferences. Inland studies (Neller 1984, Spear 1993, Nees et al. 1991) have reported no finds other than the irregular rock structures noted by Neller far inland. The majority of documented burials within Kamananui seem to be specific to coastal Jaucas sand deposits.

It seems unlikely any traditional Hawaiian archaeological finds will be made anywhere in the vicinity of Ka‘ala with the possible exception of trail alignments traversing the cliffs.

Section 6 Results of Fieldwork

6.1 Field Inspection

Access to the Ka‘ala summit was via Wahiawa where a good view of the summit is to be had (Figure 16) and the paved Mount Ka‘ala access road. Most of the summit facilities are enclosed within a high chain link and barbed wire topped fence (Figure 17) Ka‘ala is proverbial for good views (Figure 18 and Figure 19) but few signs of human endeavor in the vicinity are to be seen other than the FAA and DAGS facilities. While we were not able to actually enter the enclosure, the immediate area of the modest proposed alterations were clearly visible and had clearly been graded for the contemporary constructions (Figure 20 and Figure 21). The enclosure was encompassed (see track log on Figure 15) and nothing of archaeological interest is believed to be present. A main focus was the short stretch of ridge extending to the north where a replacement antennae and additional conduit are proposed. The ridge is steep, narrow and heavily vegetated (Figure 22). The proposed lower antennae location has been previously modified for an existing dish antennae (Figure 23 to Figure 26). It seems unlikely there ever was any modification of this heavily vegetated ridge (Figure 27) until modern times (major trails follow other more suitable ridges).

Pedestrian inspection of the project area confirmed the findings of the background research. No pre-contact features, were located during the field inspection.

No historic properties, cultural deposits, or cultural material were found within the proposed project area. Although there were no historic sites found within the project area, the summit of Mt. Ka‘ala is likely eligible for inclusion in the National Register of Historic Places (NRHP) (see Section 8.1 Summary Discussion.

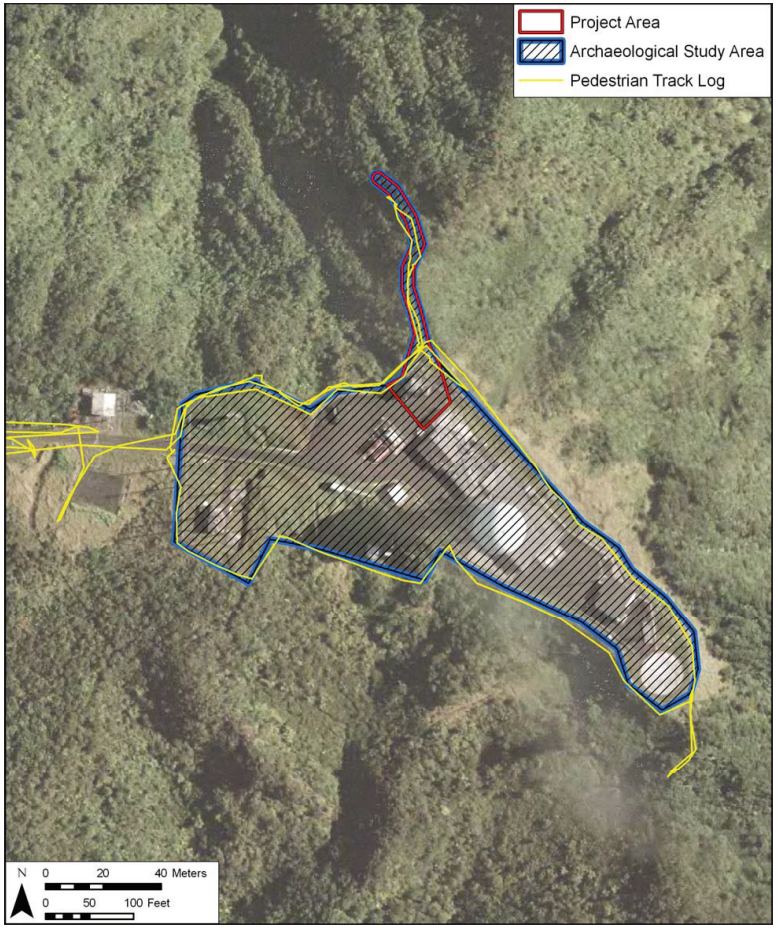

Figure 15. Track log of one of two archaeologists’ pedestrian survey route of the project area

Figure 16. General view of FAA installation at the summit of Mount Ka‘ala from Kaukonahua Road, view to northwest

Figure 17. Close-up view of FAA installation enclosure at the summit of Mount Ka‘ala, view to northwest

Figure 18. General view from FAA facility at summit of Mount Ka‘ala toward Waialua, view to northwest

Figure 19. General view from FAA facility at summit of Mount Ka‘ala, view to west

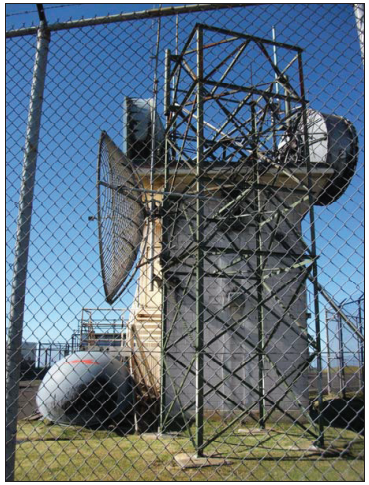

Figure 20. View of existing 25-foot tall tower within FAA facility enclosure (to be replaced with a 50-foot tower)

Figure 21. General area between two small buildings within FAA facility enclosure to be subject to utility trenching

Figure 22. General view of utility corridor route descending from the north side of the FAA facility enclosure to the north, view to north

Figure 23. General view of existing dish near down slope end of proposed utility lines

Figure 24. Close up of cement and basalt boulder terrace for existing dish

Figure 25. Close up of cement and basalt boulder terrace for existing dish

Figure 26. General view of down slope end of proposed utility lines

Figure 27. General view of FAA facility from proposed utility line corridor, view to southeast

Section 7 Consultation

By way of cultural consultation, a draft of this *Archaeological Assessment* report was circulated to seven parties (listed in Table 3 below) on June 6, 2011 by mail with a cover letter (see Appendix B) request for comment. Two weeks later on June 21, follow-up occurred by e-mail. A third effort at consultation was carried out by e-mail on July 9th and July 11th. See Table 3 below for the responses listed within the comments column.

Substantive comments were received from Mr. Thomas Shirai (“I support this necessary upgrade”), Mr. Shad Kane emphasizing the importance of Ka‘ala as the receptacle of Kane's water, "*Wai 'O Kane*", and Mr. Tom Lenchanko – the thrust of which appears to be to raise the issue of the jurisdiction of United States law on Hawaiian Kingdom national lands and to formally requests confirmation of lawful ownership of the subject land.

Table 3. Parties Sent a Draft of this *Archaeological Assessment* with a Request for Comment on the Study and/or Project

Parties Contacted	Background	Comments
Au, Kawika	President, Waialua Hawaiian Civic Club	On 6/21 an email was received requesting CSH to email documents as they had not arrived by mail. CSH responded on 6/21 by e-mail supplying a copy of the cover letter and an electronic link to the *Archaeological Assessment* report as requested. No further response has been received
Ayau, Halealoha	Hui Mālama I Na Kupuna ‘O Hawai`i Nei	No response has been received
Cachola, Fred	Knowledgeable about Historic Sites, Wahipana, Heiau	On 6/21 an email was received explaining the delay in response due to being on vacation and will review the report soon. On 6/25 Mr. Cachola responded that he received the document and will review and respond. No further response has been received
Kāne, Shad	O‘ahu Island Burial Council, Nā Koa ‘O Pālehua, Assocation of Hawaiian Civic Club’s Historic Preservation Committee	Mr. Shad Kane responded on July 10th as follows: Kala mai ia‘u. Just back from Midway Island and away from my email. I have never been to Mt. Ka‘ala and know very little of it. I have reservations about commenting on a place that I have never been to. I have been trying to contact several people I know who may be familiar with Ka‘ala from a cultural perspective however none of them responded. The project seems to be one of renovation with minimal impact and within the previous footprint. I can support it from that perspective however I know very little of its historical significance from a cultural perspective. The fact that Ka‘ala is the receptacle of Kane's water, "Wai 'O Kane", and it resides on a natural elevated platform it would have an enormous amount of cultural significance anciently. I do know that there are efforts to protect its eco system and the native plants and wetlands. It appears from the report that it will be unaffected by the project. The cultural significance again resides in the "Wai 'O Kane" and its elevation. If this project is as I suspect and Ka‘ala is afforded all these protections I can support it. I hope this helps David.

Kekipi, Velma Aloha	Hawaiian Civic Club of Wahiawa	No response has been received
Lenchanko, Tom	Hawaiian Civic Club of Wahiawa, President	Mr. Tom Lenchanko responded on 6/21/2011 by e-mail as follows: Aloha, Thanks for responding... How do we continue to relate that all things are connected to each other on a limited land mass known to be the Hawaiian Archipelago, Ko Hawaii Pae Aina, H.I. Still disconnected to our metaphysical beliefs, practices and traditional comprehension... Pose the query once again: prove Hawaiian Kingdom “exclusive territorial jurisdiction” transferred to any other sovereign entity? Is United States law applicable and mandatory on foreign Hawaiian Kingdom national lands? Mr. Tom Lenchanko responded again on 7/12/2011 by e-mail as follows: Thomas Joseph Lenchanko, Hawaiian national and Private Citizen Spokesperson for Hawaiian Lineal Descendants 931 Uakanikoo Street Wahiawa, Island of O’ahu Ko Hawaii Pae Aina, H.I. (96786) July 12, 2011 Cultural Surveys Hawaii, Inc. PO Box 1114 Kailua, HI 96734 Attention: David Shideler Office of Hawaiian Affairs (OHA) 711 Kapiolani Boulevard Suite 500 Honolulu, Hawaii 96813 Attention: Clyde Namu‘o Colette Machado Esther P. Kia’ania and staff

		‘ano ‘ai kakou Hawaiian National lands have never been transferred to United States “exclusive territorial jurisdiction” ‘Aha Kukaniloko/Koa Mana formally requests confirmation of lawful ownership of the subject land, not just title, by obtaining a lawful and complete title search confirming a continuous and rightful chain of ownership, by requesting a perfected, unbroken Chain of Title back to the date of initial ownership recording of said subject land by the Hawaiian Land Commission (from 1846-1855) documenting lawful title as well as ownership of said land. This request is only proper and lawful to eliminate land fraud, which may be occurring throughout the Hawaiian Archipelago. We await a lawful response from both parties listed above... ‘oia ua ‘ike a ‘aia la Thomas Joseph Lenchanko, Hawaiian National kahuaka’i ola ko laila waha olelo ‘Aha Kukaniloko/Koa Mana mea ola kanaka mauli
Shirai, Thomas	OHA-Native Hawaiian Historic Preservation Council, Past Member Oahu Island Burial Council, Lineal Descendant, Cultural and Historical Traditions of Waialua	On 6/21 an email was received thanking CSH for the hardcopy and expressing support for the upgrade and stating he would send in comments. No further response has been received

Section 8 Summary and Recommendations

8.1 Summary

CSH conducted an archaeological inventory survey investigation for the proposed DAGS ICS Radio Facility Project. Per the requirements of Hawai‘i Administrative Rules (HAR) Chapter 13-13-276, the study was conducted to identify, document, and make Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the survey area's historic properties. Because no historic properties were identified in the survey area, this investigation is termed an archaeological assessment per HAR Chapter 13-13-275-5. This archaeological assessment report was prepared to support the proposed project's historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and HAR Chapter 13-13-275. This archaeological assessment report was prepared to support the proposed project's historic preservation review and any other project-related historic preservation consultation.

As part of its archaeological assessment field effort, CSH conducted systematic pedestrian inspection of the project area. No historic properties were identified. Furthermore, virtually the entire project area has been impacted by the present facilities. These findings are largely in keeping with expectations for the project area, based on historical and previous archaeological research.

A good faith effort was undertaken at cultural consultation (see Section 7 above). No specific cultural concerns were raised (other than the issue of the jurisdiction of United States law).

Although there were no historic sites found within the project area, the summit of Mt. Ka‘ala is likely eligible for inclusion in the National Register of Historic Places (NRHP) as a traditional cultural property due to the prominence of legendary and cultural associations, Hawaiian deities, and the location of the former Luakini Fishpond as related by McAllister (1933:133) as his site 212.

The Office of Hawaiian Affairs (OHA) assigns cultural and religious significance to the summit of Mt. Ka‘ala and believes it qualifies as a traditional cultural property (letter of November 7, 2011). The SHPD has also stated that the summit is probably eligible for inclusion in the NRHP as a traditional cultural property in their April 5, 2002 letter. In view of the SHPD and OHA positions Mt. Ka‘ala is likely eligible as a TCP.

8.2 Recommendations

8.2.1 Project Effect

No historic properties, cultural deposits, or cultural material were identified within the proposed project area. Land clearing for existing facilities likely impacted or destroyed any possible surface or subsurface historic properties that may have existed within the project area. Consequently, CSH's effect recommendation for the proposed project is "no adverse effect."

8.2.2 Mitigation Recommendations

CSH recommends no additional archaeological work for the proposed facilities on Mt. Ka‘ala.

Section 9 References Cited

Barratt, Glynn
1988 *Russian View of Honolulu: 1809-26*. Carleton University Press, Ottawa, Canada.

Bingham, Hiram
1847 *Residence of Twenty-One years in the Sandwich Islands; or the Civil, Religious, and Political History of Those Islands...* Praeger Publisher, Hartford, CN, and Huntington, Convers, NY.

Chinen, Jon J.
1958 *The Great Māhele, Hawai‘i’s Land Division of 1848*. University of Hawai‘i Press, Honolulu.

Clark, John R. K.
2007 *Guardian of the Sea: Jizo in Hawai‘i*. University of Hawai‘i Press, Honolulu.

Coulter, John W. and Chee Kwon Chun
1937 *Chinese Rice Farmers in Hawaii*. University of Hawaii, Honolulu.

Dagher, Cathleen
1999 Inadvertent Isolated Human Remains on Bishop Estate land in Hale‘iwa, Hawai‘i, Kamananui, Waialua, O‘ahu. State Historic Preservation Division, Honolulu.

Emerson, Nathaniel B.
1915 *Pele and Hi‘iaka*, Copyright 1993, University of Hawaii at Manoa

Emerson, Oliver Pomeroy
1928 *Pioneer Days in Hawaii*. Doubleday, Doran & Company, Garden City, N.Y.

Foote, Donald E., E.L. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kaua‘i, Oahu, Maui, Molokai and Lanai, State of Hawaii, U.S. Dept. of Agriculture*. U.S. Government Printing Office, Washington, D.C.

Fornander, Abraham
1985 *Collection of Hawaiian Antiquities and Folklore*, T.G. Thrum edit., Memoirs of the Bernice Pauahi Bishop Museum (Vol. VI, Part III) Reprint of 1920 edition., Bishop Museum Press, Honolulu, HI.
1959 *Selections from Hawaiian Antiquities and Folklore*, University of Hawaii Press, Honolulu

Giambelluca, Thomas W., Michael A. Nullet, and Thomas A. Schroeder
1986 *Rainfall Atlas of Hawai‘i*. Department of Land and Natural Resources, Honolulu.

Green, Laura C.S. and Mary Kawena Pukui
1936 *The Legend of Kawelo and other Hawaiian Folk Tales*, Unknown publisher, Honolulu.

Hammatt, Hallett H. and David W. Shideler
2006a *Archaeological Literature Review and Field Check Study of Six DOE Schools, Island of O‘ahu Hawai‘i Inter-Island DOE Cesspool Proje*ct. Cultural Surveys Hawai‘i, Kailua, HI.

2006b *Archaeological Field Check and Literature Review for the Kupahu Subdivision (Waialua Town), Kamananui Ahupua‘a, Waialua District, O‘ahu TMK: [1] 6-7-009:003*. Cultural Surveys Hawai‘i, Kailua, HI.

Handy, E. S. Craighill
1940 T*he Hawaiian Planter, Volume 1. His Plants, Methods and Areas of Cultivation*. Bernice P. Bishop Museum Bulletin 161, Bishop Museum Press, Honolulu.

Hawai‘i TMK Service, 222 Vineyards St., Suite 401, Honolulu
1984 Portion of TMK: [1] 6-5-02.

Juvik, Sonia P. and James O. Juvik
1998 *Atlas of Hawaii*, Edition: 3. University of Hawaii Press, Honolulu.

Kalākaua, David
1888 *The Legends and Myths of Hawaii*, Charles L. Webster, (Reprint of three volumes published in 1877-85), Charles L. Webster, New York, NY.

Kamakau, Samuel M.
1992 *Ruling Chiefs of Hawaii*. Kamehameha Schools Press, Honolulu.

Kennedy, Joseph
1991 Surface Examination of TMK: 6-7-02:por 27, Archaeological Consultants of Hawaii, Inc., Haleiwa, HI.

King, Pauline (ed.)
1989 *Journal of Stephen Reynolds: 1823-1829*. Ku Pa‘a, Inc., Honolulu.

Kirch, Patrick V. and Marshall Sahlins
1992 *Anahulu: The Anthropology of History in the Kingdom of Hawaii*, 2 vols. Volume 1. *Historical Ethnography* by Marshall Sahlins. University of Chicago Press, Chicago.

Kuykendall, Ralph
1965 The Hawaiian Kingdom, Volume I. The University Press of Hawaii, Honolulu.
1967 The Hawaiian Kingdom, Volume 3, 2nd printing. University Press of Hawai‘i, Honolulu.

McAllister, J. Gilbert
1933 *Archaeology of O‘ahu*, Bulletin 104. B.P. Bishop Museum, Honolulu.

Moore, James R., Michelle Elmore, and Joseph Kennedy,
2004 *An Archaeological Inventory Survey Report for a Property Located at TMK 6-7-01:51 & 52, Kamananui Ahupua‘a, Waialua District, Island of Oahu*. Archaeological Consultants of Hawaii, Inc., Haleiwa, HI.

Moore, James R., and Joseph Kennedy
2008 *An Archaeological Assessment Report for a Property Located at TMK (1) 6-6-021:001 in Kamananui Ahupua‘a, Waialua District, Island of Oahu*. Archaeological Consultants of the Pacific, Inc., Haleiwa, HI.

Nees, Richard C., Christopher Rundell, Roger Blankfien, and Barry Nakamura
1991 *Archaeological Survey and Literature and Document Search of the Proposed Kaukonahua Quarry, Waialua, Island of O'ahu (TMK 6-5-01).* Public Archaeology Section, B, P. Bishop Museum, Honolulu.

Neller, Earl
1984 *An Archaeological Reconnaissance Survey of the Mokuleia Exploratory Well Site, Kamananui, O'ahu*. On file at SHPD, Kapolei, HI.

Office of Hawaiian Affairs (OHA)
2011 Letter Re: *National Historic Preservation Act Section 106 Consultation Mount Ka'ala Radio Facility Improvements Project, Island of O'ahu* (from Clyde Nāmu'o to Ronald Sato, dated November 7, 2011

Perkins, Robert C
1892-1893 *Transcript of Diary in Papers of George C. Munroe*. B.P. Bishop Museum Archives, Honolulu.

Pratt, Elizabeth Kekaaniau
1920 *History of Keoua Kalanikupuapa-i-kalani-nui, Father of Hawaii Kings, and His Descendants, with Notes on Kamehameha I, First King of All Hawaii.* Territory of Hawaii, Honolulu.

Pukui, Mary Kawena
1983 *'Ōlelo No'eau: Hawaiian Proverbs and Poetical Sayings, Bishop Museum Special Publication No.71,* Bishop Museum Press, Honolulu, HI.

Pukui, Mary Kawena and Caroline Curtis
1976 *The Water of Kane and Other Legends of the Hawaiian Islands*, Collected or Suggested by Mary Kawena Pukui, retold by Caroline Curtis, Illustrated by Richard Goings, The Kamehameha Schools Press, Honolulu, HI.

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini
1974 *Place Names of Hawaii*. University of Hawai'i Press, Honolulu.

Roberts, Alice K.S., Stephen Roberts, Michael Desilets, Amy L. Buffum, and Jennifer J. Robins
2004 *Archaeological Reconnaissance Survey of U.S. Army Schofield Barracks Military Reservation, South Range Land Acquisition, Oahu Island, Hawaii Contract No. DACA83-01-D-0013, Task Order No. 0011 TMK 9-2-05: 2, 13, 14*. Garcia & Associates, Honolulu.

Robins, Jennifer J., and Robert L. Spear
1997 *Research Design for an Intensive Archaeological Survey of Prehistoric Hawaiian Sites for Determination of Eligibility for Listing to the National Register of Historic Places, Schofield Barracks Military Reservation South Range, O'ahu Island, Hawai'i*. Scientific Consulting Services, Honolulu.

Schmitt, Robert C.
1977 *Historical Statistics of Hawaii*. University of Hawai'i Press, Honolulu.

State Historic Preservation Division (SHPD)
2002 *Chapter 6E-8 Historic Preservation Review – Environmental Assessment for Licensing of Additional Land for the Replacement of a 25-foot Tower with the Construction of a 50-foot Telecommunications Tower at Mount Kaala, O'ahu, Kaala, Wai'anae Uka, O'ahu TMK: 6-7-003* (Don Hibbard to J. M. Waller Associates, Inc, April 5, 2002

Spear, Robert
1993 *A Reconnaissance Survey of the Hidden Valley Ranch Project, Island of O'ahu, Waialua, O'ahu, Hawai'i [TMK: 6-7-03: Por. 5 and 9]*. Scientific Consultant Services, Honolulu.

Sterling, Elspeth P., and C. C. Summers
1978 *Sites of O'ahu.* Department of Anthropology, Bernice P. Bishop Museum, Honolulu.

Thrum, Thomas G.
1907 *Hawaiian Folk Tales: A Collection of Native Legends*. A.C. McClurg & Co., Chicago.
1908 *All About Hawaii. The recognized Book of Authentic Information on Hawaii, Combined with Thrum's Hawaiian Annual and Standard Guide*, Retrospect for 1907 (Plantation Matters), 168-186. Honolulu Star-Bulletin, Honolulu.
1923 *More Hawaiian Folk Tales*, Unknown publisher.

Tropic Lightning Museum
2005 Schofield Barracks: A Historic Treasure. http://www.25idl.army.mil/tropic%20lightning%20museum/history.htm.

U.S. Army Map Service
1953 U.S. Army Map Service, 7.5 Minute Series Topographic Map, Haleiwa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.
1953 U.S. Army Map Service, 7.5 Minute Series Topographic Map, Schofield Barracks Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

U.S. Geological Survey
1928-1929 U.S. Geological Survey 7.5 Minute Series Topographic Map, Schofield Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

U.S. Geological Survey
1928-1929 U.S. Geological Survey 7.5 Minute Series Topographic Map, Wahiawa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.
1977-1978 U.S. Geological Survey Aerial photograph, Haleiwa. On file at USGS Information Services, Box 25286, Denver, Colorado.
1977-1978 U.S. Geological Survey Aerial photograph, Schofield Barracks. On file at USGS Information Services, Box 25286, Denver, Colorado.

1998 U.S. Geological Survey 7.5 Minute Series Topographic Map, Schofield Barracks Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1999 U.S. Geological Survey 7.5 Minute Series Topographic Map, Haleiwa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

U.S. War Department

1919 U.S. War Department Map, Waianae Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1919 U.S. War Department Map, Wahiawa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1943 U.S. War Department Map, Paalaa Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

1943 U.S. War Department Map, Schofield Quadrangle. On file at USGS Information Services, Box 25286, Denver, Colorado.

Vitousek, Michael

2010 Inadvertent Discovery of Human Skeletal Remains During Monitoring Activities Associated with the Waialua Beach Road Guardrail Improvement Project, Kamananui Ahupua‘a, Waialua District, Island of O‘ahu TMK # (10 6-6-022:004). SHPD

Waihona ‘Aina

2000 The Māhele Database. Electronic document, http://waihona.com.

Yent, Martha

1981 *Archaeological Inspection of Lands Adjacent to Kaiaka State Recreation Area, Waialua, Oahu*. Memo to Roy Sue, Department of Land and Natural Resources, Division of State Parks, Honolulu.

APPENDIX A: SHPD 6E-8 Review

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
KAHUHIHEWA BUILDING
601 KAMOKILA BLVD, KAPOLEI HI 96706

DATE: April 8, 2011 **LOG:** 2011.0679
DOC: 1103RS62

TO: Charlene Unoki
Assistant Administrator
Land Division
State Department of Land and Natural Resources
Post Office Box 621
Honolulu, HI 96809

SUBJECT: **Section 6E-8 Historic Preservation Review / Draft EA Pre-Assessment Consultation DAGS ICSD Communications Upgrades at Mt. Kaala**
Building Owner: State of Hawaii
Location: Mt. Kaala, Oahu
Tax Map Key: (1) 6-7-003:023 and :025; (1) 7-7-001:001

This letter is in response to materials dated March 2, 2011, received by our office on March 7, 2011, re proposed communications equipment upgrades to the Department of Accounting and General Services (DAGS) Information and Communication Services Division (ICSD) facility atop Mt. Kaala. Work includes re-roofing and filling of cracks and leaks to an existing State-owned building; placing new conduit within an existing driveway to connect the building to a nearby generator building; replacement of an existing 25 foot tall tower with a 50 foot tower; installation of additional microwave and whip antennas to the new tower; relocation of existing corner reflector antennas from the building to an existing microwave antenna site located downhill off Kamaohanui and placement of a new camera there; and increasing the number of above ground antenna cables to five from the building to the microwave antenna site. The area of potential effect will be the three parcels listed above.

While no dates have been provided for the construction of these facilities, the fact that a request for comments has been issued for the Pre-Assessment Consultation for a Draft Environmental Assessment leads us to determine that the complex contains structures are over 50 years old. This could make the Mt. Kaala facility eligible as a Cold War facility under Criteria A (Events). We appreciate the submission of maps and photographs as documentation for the request.

Our comments are divided into two sections.

Archaeology: SHPD will withhold full comments until development of the EA. Please be advised that our records show multiple archaeological sites with parcel (1) 7-1-001:001 which should be identified in relation to the proposed development.

Architecture: We do not, in concept, object to these renovations. However, in order to provide any full determination we will need more detailed information as to the proposed placement of these alterations on the existing structures (especially in terms of visual impacts).

Any questions should be addressed to Ross W. Stephenson, SHPD Historian, at (808) 692-8028 (office), (808) 497-2233 (cell) or ross.w.stephenson@hawaii.gov.

Mahalo for the opportunity to comment.

Pua Aiu
Administrator

Appendix B: Consultation Outreach Letter

CULTURAL SURVEYS HAWAI'I

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL DOCUMENTATION SERVICES - SINCE 1982

O'ahu Island
P.O. Box 1114
Kailua, Hawai'i 96734
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Branch Offices:
Hilo, Hawai'i
Lanai, Hawai'i

June 6, 2011

XXX

Subject: Consultation for an Information and Communication Services Division (ICSD) Mt. Ka'ala Radio Facility Improvements Project and Project's *Archaeological Assessment*

Aloha XXX:

The Information and Communication Services Division (ICSD) Division of the Department of Accounting and General Services (DAGS), State of Hawai'i proposes certain modest improvements in a Radio Facility Improvements Project on the summit of Mount Ka'ala.

We are writing to invite any comment the Waialua Hawaiian Civic Club may have regarding any historic or cultural issues pertaining to this project on Mt. Ka'ala and/or our draft *Archaeological Assessment* for this project. Other parties being consulted include:

- Mr. Kawika Au and the Waialua Hawaiian Civic Club
- Ms. Velma Aloha Kekipi and the Hawaiian Civic Club of Wahiawa
- Hui Mālama I Nā Kūpuna 'o Hawaii Nei (Mr. Halealoha Ayau)
- Mr. Fred Cachola
- Mr. Shad Kāne
- Mr. Tom Lenchanko, Hawaiian Civic Club of Wahiawa
- Mr. Thomas Shirai, OHA Native Hawaiian Historic Preservation Council

A project description is provided below and a copy of our draft *Archaeological Assessment* is attached for your consideration.

If you have any comment, or are likely to have any comment would you please be so kind as to get back to us. We may follow-up to see if you have any comment.

Project Description
Both interior and exterior repairs to the existing State building would be implemented to fix deficiencies. This includes re-roofing to address cracks and leaks and upgrading electrical service for the facility. A new conduit would be installed within the existing driveway to connect the State building with a nearby FAA generator building. Other repairs include replacing security lighting for the building, doors, and locks. Two 90-foot bare copper wires would also be placed above ground on each side of the ridge to serve as an electrical ground in the event the State facility is struck by lightning.

The State's existing 25-foot-tall tower will be replaced with a 50-foot-tall tower within the State's licensed area. Additional microwave and whip antennas will be installed on the new tower along with

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relocating existing antennas from the State building. The U.S. Coast Guard will be responsible for demolishing this existing radio tower, and designing and constructing the new taller tower.

A 48-inch-tall, 75-inch-wide corner reflector antenna will be relocated from the State building to the lower mount at the existing antenna site downhill of Kamaohanui Ridge. The lower mount will also be used to support a camera that will provide a view of the North Shore. The existing solid microwave dish antenna on the upper antenna mount is a standard grade antenna and does not have a radome cover. It will be replaced by DAGS ICSD with a high performance antenna that includes a shroud and a radome cover that will match the physical outline and electrical performance of the antennas within the main facility. There is one existing above ground microwave antenna feed line routed from the Mt. Ka'ala facility down Kamaohanui Ridge to the antenna site through a single PVC duct. A total of five (5) antenna feed lines and conduits are planned to be routed above ground from the State's radio facility to this antenna site. The existing cable supports extending down the ridge to the antenna site will be replaced with improved supports (about two feet high) following the existing route. A section of these cables would be located underground where they pass under the security fence to the radio facility building.

In addition to the tower changes, the State also intends to: 1) support the addition of high-capacity digital microwave links by the University of Hawai'i for its Hawai'i Interactive Television System (HITS) distance learning system; 2) add high-capacity digital microwave links for the Rainbow microwave as part of the Rainbow system wide transition to digital; and 3) upgrade and add to the State's critical land mobile radio systems that support public safety and critical government operations. Construction of these improvements are planned to start in the Fall of 2012 and be completed by the end of 2013.

Minimal excavations within the previously graded existing State compound is anticipated in association with trenching for a utility conduit and erection of a short (50-foot tower). The project area per se is approximately 0.15 acres. The archaeological study area [TMK: (1) 6-7-003:023 & :025 (State) and (1) 7-7-001:001 Federal)] is approximately 2.37 acres – conforming to the entire chain link fence enclosure as well as the short run to the proposed lower elevation antenna.

If you have any comment, or are likely to have any comment would you please be so kind as to respond by e-mail, fax, telephone or letter soon. *Mahalo* for your consideration of this matter.

Sincerely,

David W. Shideler

Cultural Surveys Hawai'i
tel 262-9972, fax 262-4950, e-mail dshideler@culturalsurveys.com, P.O. Box 1114 Kailua Hawaii 96734

Attachment: draft *Archaeological Assessment for the Information and Communication Services Division (ICSD) Mt. Ka'ala Radio Facility Improvements Project, Kamanamui Ahupua'a, Waialua District, O'ahu Island [TMK: (1) 6-7-003:023 por. & :025 por. (State) and (1) 7-7-001:001 por. (Federal)]*

Consultation For an Information and Communication Services Division (ICSD) Mt. Ka'ala Radio Facility Improvements Project and Project's *Archaeological Assessment*