



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105-3901

**PRELIMINARY FINDING OF NO SIGNIFICANT IMPACT**

To: All Interested Persons

In accordance with the National Environmental Policy Act (NEPA) and the U.S. Environmental Protection Agency (EPA) procedures for implementing NEPA (40 CFR part 6), the EPA completed an independent environmental review of the proposed project as described below:

Project Name: Pearl Harbor Aquifer Recovery Projects

Name and Address of Applicant: State of Hawaii – Kalanimoku Building, 1151 Punchbowl Street, Honolulu, Hawaii 96813

Project Location: Honolulu County, Hawaii

EPA Community Grant Amount: \$1,720,000

**Background**

The Fiscal Year 2023 Consolidated Appropriations Act (P.L. 117-328) included Congressional funding for water infrastructure projects which are awarded through the EPA Community Grant Program. The State of Hawaii was designated to receive appropriations funding support from the EPA for the Pearl Harbor Aquifer Recovery Projects (the Proposed Action).

The State of Hawaii has submitted a proposal for ongoing invasive plant removal, using established methods. The aim of the Project would be to protect native rainforests and mitigate future flood risks in the Pearl Harbor watershed in Honolulu County, Hawaii, on the Island of Oahu by increasing regional eradication efforts of the region's most threatening invasive species: miconia (*Miconia calvescens*) and cane tibouchina (*Tibouchina herbacea*). The control of these invasive species would focus on known seedbank areas, utilizing a buffering system based on seed biology and dispersal range. Surveys would be done by ground and/or air transects in a helicopter. Ground surveys would be conducted by crews of one to 12 people walking transects to locate and control invasive plant species. If helicopters are used, landing locations would be selected to avoid known occurrences of listed species. All fruits and flowers of mature trees would be removed and incinerated, and plants would be controlled by hand tools or by applying herbicide to stumps. Weed control would be performed within both fenced and unfenced surrounding areas. A cumulative area of less than 1 acre of invasive vegetation will be removed by hand, hand tool, and weeding. Herbicides would include registered products such as Triclopyr Garlon 4, Oust XP, Ranger Pro, and Roundup Pro. Both ground- and aerial-based herbicide application techniques (i.e., precision applicator sprayer or ball sprayer) would be used. The Hawaii Division of Forestry and Wildlife would follow occupational safety health laws and follow all products' registrations to determine the level of staff certification needed for use of each herbicide. All products

would be used in a manner consistent with labeling, including a data management system that tracks the herbicide use per acre per period of time.

### **Environmental Review**

The EPA completed an Environmental Assessment (EA) (EPA No. N2026058) for the Proposed Action and, based on the environmental impacts described in the EA (Enclosure 1), determined that no significant environmental impacts are anticipated from the issuance of the grant and the Proposed Action does not constitute a major Federal action significantly affecting the quality of the human environment, making the preparation of an Environmental Impact Statement (EIS) unnecessary. Therefore, the EPA is issuing this preliminary Finding of No Significant Impact (FONSI) to document this determination. The EPA determined that implementation of mitigation measures is required to avoid significant impacts. These mitigation measures are described below:

1. Adhere to herbicide use plan (see Proposed Action EA Attachment J)
2. The Proposed Action will adhere to Best Management Practices (BMPs) to avoid adverse impacts to sole source aquifer resources, including safe transport, mixing, and loading to prevent large spills, monitoring weather and avoiding herbicide application in areas when rainfall is expected in the following 24 hours.
3. The Proposed Action will adhere to the following conservation measures to reduce impacts to protect vegetation and wildlife resources:
  - a. *O'ahu 'Elepaio*
    - i. Helicopter use will be avoided during the breeding season (January through July).
    - ii. If an area is identified as an active territory for the O'ahu 'elepaio, trees determined to be used for nesting will be avoided during their breeding season.
    - iii. If vegetation removal is required, wildlife biologists will survey trees for the O'ahu 'elepaio prior to the beginning of vegetation removal.
    - iv. The State of Hawaii Division of Forestry and Wildlife (DOFAW) will avoid conducting activities within forest bird habitat that promote the spread of survival of invasive species, increase mosquito populations or stagnant water habitat, or increase wildlife threat to montane forest habitats.
  - b. *Hawaiian Seabirds*
    - i. There will be no nighttime work.
    - ii. Any new base yard lights will utilize full cutoff exterior down-lighting fixtures.
    - iii. Outdoor lights will be fully shielded such that bulbs will only be visible from below.
    - iv. Automatic motion sensor switches will be installed and/or controls on all outdoor lights will be turned off to ensure that lights are off when not in active use.
  - c. *'Ōpe'ape'a*
    - i. Any trees or woody vegetation 15 feet (4.6 meters) in height or taller will not be trimmed or cleared during the 'ōpe'ape'a pupping season (June 1 through September 15).
  - d. *Hawaiian picture-wing flies and Hawaiian damselflies*
    - i. DOFAW's invertebrate biologist (authorized to conduct surveys under the section 6 Cooperative Agreement with the Service) will conduct surveys if

Hawaiian picture-wing host plants or habitat for Hawaiian damselflies are present.

1. All host plants for Hawaiian picture-wing flies will be flagged, and herbicide spraying will not occur in those areas.

e. *Hawaiian Snails*

- i. DOFAW snail biologists will conduct thorough searches of vegetation for Hawaiian snails, flag their locations, and determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected.
- ii. DOFAW will select alternate helicopter landing areas if an area is occupied by Hawaiian snails.

f. *Hawaiian Plants and Critical Habitat*

- i. Prior to work being conducted in an area, a DOFAW botanist or the Plant Extinction Prevention Program staff (as determined by DOFAW) will determine if Hawaiian plants are present in the area prior to conducting invasive species removal activities. Surveyors will identify and mark all Hawaiian plant locations either with flagging or a Global Positioning System point that will be shared with staff and contractors prior to the commencement of work.
- ii. Helicopters will be crewed by staff trained in rare plant identification.
- iii. Surveys will occur on the day of the spray to identify spray areas as well as what the target species looks like to avoid non-target treatment.
- iv. A biologist with experience conducting invasive species removal around Hawaiian plants will be on-site or in a supervisory position when Proposed Action activities are being carried out.
- v. Vegetation clearing will be done by hand with the use of hand tools or weed machines (i.e., weed whackers, hedge trimmers, chainsaws).
- vi. Herbaceous weed control in the vicinity of native plants will be removed or cut back using hand tools and then by spot treating remaining individuals to minimize herbicide application.
- vii. Recommended windspeeds on the herbicide labels will be followed. Windspeeds will be taken at the application site immediately prior to work beginning to determine if herbicide application can occur.
- viii. Cut-stump method will be the preferred method and soil spray of pre-emergent will only be applied within patches of cane tibouchina.
- ix. Aerial-based herbicide application such as ball sprayer or herbicide-ballistic-technology will not be used in Hawaiian plants are downwind of the area of application.
- x. To mitigate drift, large droplet size will be maintained, and the spray rig will hover directly over the plant being treated no more than ten feet above the target plant. Aerial spray will not occur if there is a temperature inversion.

- Aerial-based herbicide applications will not occur on windy days. Flights will only occur when winds are less than ten miles per hour and provide for clear visibility.
- xi. The following measures will be implemented related to weeding:
    1. No more than 20 percent of the canopy will be treated or removed at a time above Hawaiian plants.
    2. Herbicides used will be as taxon-specific as possible to limit non-target effects (e.g., grass specific herbicide around listed herbs).
    3. Staff will only hand pull species with fibrous shallow roots, not weeds with tap roots.
  - xii. If locations of rare plants are known or are found while carrying out activities, propagule collection of those species will occur and collection will be secured ex situ (e.g., plants in nursery, viable seeds in seed bank/tissue culture) under the section 6 Cooperative Agreement with the Service.
  - xiii. Work will be conducted by using established trails and minimizing clearing to the furthest extent possible.
  - xiv. DOFAW will minimize vegetation clearing when determining helicopter drop zones and landing zones.
  - xv. Buffer distances in Table 1 will be adhered to for Proposed Action activities.

Table 1. Buffer distances for Hawaiian plants for Proposed Action activities.

Action		Buffer Distance from Hawaiian Listed Plant (feet)
Walking, hiking, surveys		3
Cutting and removing vegetation by hand or hand tools (e.g., weeding)		3
Mechanical removal of individual plants or woody vegetation (e.g., chainsaw, weed eater)		3
Use of approved herbicides (following label)	Ground-based direct application with precision applicator (no spray; spot treatment)	3
	Ground-based spray application; hand application (no wand applicator; spot treatment)	15
	Ground-based spray application; manual pump with wand, backpack	20
	Aerial spray (precision applicator)	50
	Aerial application – herbicide-ballistic-technology (individual plant treatment)	25

This preliminary FONSI determination will be made available for a 30-day public comment period as required by 40 CFR Part 6.203. An electronic copy of the EA is available for download from the EPA’s NEPA Compliance Database at <https://cdxapps.epa.gov/cdx-enepa-ii/public/action/nepa/search>.

Comments regarding this preliminary decision may be submitted for consideration to:

Clarice Olson  
 Project Officer  
 U.S. Environmental Protection Agency, Region 9  
 Water Division Community Grants  
 300 Ala Moana Boulevard

Honolulu, HI 96850  
[Olson.Clarice@epa.gov](mailto:Olson.Clarice@epa.gov)  
(808) 539-0546

After evaluating any comments received, the EPA will make a final decision. This preliminary decision and finding will then become final after the 30-day comment period expires if no new significant information is provided to alter this finding.

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Hector Aguirre                      Date  
Assistant Director  
Tribal and State Assistance Branch  
Water Division

Enclosure: Environmental Assessment of Pearl Harbor Aquifer Recovery Projects



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 9  
300 ALA MOANA BOULEVARD  
HONOLULU, HI 96850

Draft Environmental Assessment  
Of  
Pearl Harbor Aquifer Recovery Projects

February 23, 2026  
EPA No. N2026058

The U.S. Environmental Protection Agency (EPA) prepared the following Environmental Assessment (EA) for the Pearl Harbor Aquifer Recovery Projects (the Proposed Action). The EPA prepared this EA in compliance with the National Environmental Policy Act (NEPA) and the EPA's procedures for implementing NEPA (40 CFR Part 6). This EA discloses the reasonably foreseeable environmental impacts that may result from the Proposed Action and the alternatives considered. The EA is organized into the following nine sections that document the EPA's findings:

- 1) **General Information.** This section includes the name of the Proposed Action, grant identification number, and point of contact information for the grant applicant and responsible EPA official.
- 2) **Proposed Action Description.** This section describes the Proposed Action, implementation timeline, and current environmental conditions within the project area.
- 3) **Environmental Impacts of the Proposed Action.** This section describes the Proposed Action's potential reasonably foreseeable impacts to resources within the project area.
- 4) **Alternatives Considered.** This section describes the alternatives to the Proposed Action, the potential environmental impacts of each, and why each alternative was not identified by the EPA as the Proposed Action.
- 5) **Review of Applicable Environmental Laws or Executive Orders.** This section identifies the environmental laws and executive orders applicable to the Proposed Action.
- 6) **Required Mitigation.** This section presents the mitigation measures that are essential to render the impacts of the Proposed Action not significant and/or to avoid non-compliance with applicable environmental laws or executive orders.
- 7) **Individuals and Agencies Consulted.** This section presents a list of the individuals and agencies consulted during the development of the EA.
- 8) **List of References.** This section provides a list of any reference documents cited in the EA.
- 9) **List of Attachments.** This section provides a list of supporting documents attached to the EA.

<b>I. General Information</b>		
<b>Proposed Action Name</b>	<b>Program / Funding Authority</b>	<b>Grant ID Number (if known)</b>
Pearl Harbor Aquifer Recovery Project	EPA Community Grants	98T87201-0
<b>Grant Applicant Organization</b>		
State of Hawaii		
<b>Grant Applicant Contact Information</b>		
<i>Name/Title</i>	<i>Email</i>	<i>Phone Number</i>
Emma Yuen	emma.yuen@hawaii.gov	(808) 366-4788
<b>EPA Responsible Official</b>		
<i>Name/Title</i>	<i>Email</i>	<i>Phone Number</i>
Clarice Olson	Olson.clarice@epa.gov	(808) 539-0546
<b>Prepared By</b>		
<i>Name/Title</i>	<i>Email</i>	<i>Phone Number</i>
ERG Contractor Support Team	--	--
<b>Direct Comments to (if different from EPA Responsible Official)</b>		
<i>Name/Title</i>	<i>Email</i>	<i>Phone Number</i>
NA		

## II. Proposed Action Description

### Proposed Action Location and Site Description

Provide the address or general location of the Proposed Action (include state, county, and locality) and a brief description of the site characteristics. Examples of site characteristics include land use and zoning, population served by the existing water system, current infrastructure, and formally classified lands within the Proposed Action area.

The Proposed Action for the State of Hawaii is located in Honolulu County throughout the Pearl Harbor Watershed on the Island of Oahu, as shown in Figure 1. The Proposed Action spans approximately 20,000 acres of diverse habitats and land use including forest reserves and residential areas (HI LULC, 2025).

## EPA STAG Watershed Project

Projection: NAD83 UTM Zone 4N  
Basemap: USDA 2022  
Vector Data: OISC, SoHI  
Scale: 1:310,000  
Map Production Date: 9/3/2024

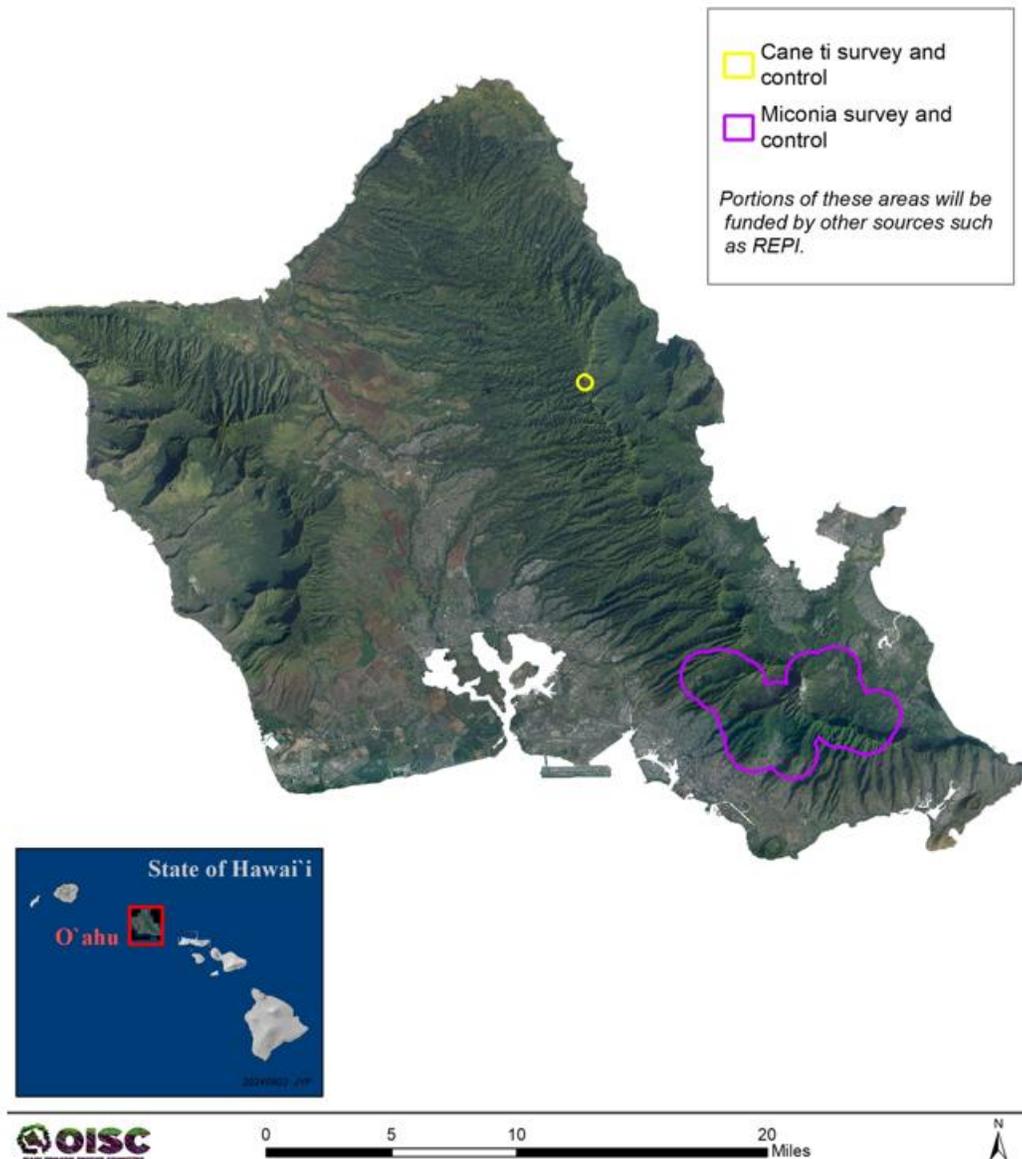


Figure 1. Proposed Action Location Map (see p.3 of Attachment A)

Check all land uses that occur within or adjacent to the Proposed Action area:

- |   |   |   |   |
|---|---|---|---|
| <input checked="" type="checkbox"/> Agriculture | <input type="checkbox"/> Military                   | <input checked="" type="checkbox"/> Private     | <input type="checkbox"/> Other (specify): _____ |
| <input checked="" type="checkbox"/> Commercial  | <input checked="" type="checkbox"/> Mixed Use       | <input checked="" type="checkbox"/> Residential |   |
| <input checked="" type="checkbox"/> Forest      | <input checked="" type="checkbox"/> Open Space      | <input checked="" type="checkbox"/> Water       |   |
| <input checked="" type="checkbox"/> Industrial  | <input checked="" type="checkbox"/> Park/Recreation |   |   |

**Brief Description of Proposed Action**

The Proposed Action includes the removal of invasive *Miconia calvescens* (miconia) and *Tibouchina herbacea* (cane tibouchina) plant species. Specifically, the Proposed Action would involve the following activities:

1. Conduct surveys by ground and air transect.
2. Access the invasive species area by foot and use hand tools to cut and removal invasive vegetation.
3. Remove all fruits and flowers of mature trees will be removed and incinerated.
4. Plants will be controlled by hand or by applying herbicide to stumps.
5. Control of invasive species with a focus on known seedbank areas utilizing buffering system based on seed biology and dispersal range.
6. Aerially treat any inaccessible plants using the precision point spray method.

**Purpose of and Need for Proposed Action**

The purpose and need of the Proposed Action is to protect native rainforests and mitigate future flood risks in the Pearl Harbor Watershed in Honolulu, County, Hawaii on the island of Oahu by increasing regional eradication efforts of the region’s most threatening invasive species miconia and cane tibouchina.

**Anticipated Construction Start Date and Duration of Proposed Action**

The Proposed Action activities are anticipated to begin in 2026 and finish in 2031.

**Affected Environment in the Proposed Action Area**

*Provide a brief description of the current environmental conditions within the Proposed Action area. Topics discussed may include, but are not limited to, the following: topography, geology, and soils; water resources (surface waters, groundwater, wetlands, floodplains); natural resources (vegetation, wildlife, habitats); cultural resources (historic properties, archeological/Tribal resources); air quality; socioeconomics; transportation; energy and utilities; solid/hazardous wastes.*

Water Resources (surface waters, wetlands, groundwater):

There are riverine, lake, freshwater pond, freshwater forested/shrub wetland, and freshwater emergent wetland features present within the Proposed Action Area (*Attachment B*).

The Proposed Action Area is underlain by the Southern Oahu Basal Aquifer Sole Source Aquifer (*Attachment C*).

The Proposed Action Area is located within the Hawaii coastal zone (*Attachment D*).

Natural Resources (Vegetation, Wildlife, Habitats):

The Proposed Action Area is on the Island of O'ahu within the Pearl Harbor watershed, the island's largest and most important freshwater aquifer. The Proposed Action Area spans approximately 20,000 acres of diverse habitats of rainforests that are being threatened by invasive plant species. Miconia and cane tibouchina dramatically promote erosion and landslides and outcompete native vegetation and compromise watershed health.

The U.S. Fish and Wildlife Service (USFWS) Official Species List (dated October 21, 2025) indicates that 120 federally listed species under USFWS jurisdiction have the potential to occur in the vicinity of the Proposed Action Area, and the Proposed Action Area overlaps with 69 critical habitats (*Attachment E*). Based on a review of site-specific factors (e.g., available habitat) and discussions with USFWS, the EPA determined that 67 listed species and 13 designated critical habitat units have at least moderate (or unknown) probability of occurring at the Proposed Action site.

Topography, Geology, Soils:

The Proposed Action spans approximately 20,000 acres of diverse topography, geology, and soils on the Island of Oahu. The area ranges in elevation from sea level to approximately 3,150 feet. A soil map was generated based on data obtained from the Web Soil Survey website, administered by the U.S. Natural Resources Conservation Services (NRCS). This map indicates that over 40 soil types are present in the Proposed Action Area. Farmland classifications of these soil types include: not prime farmland; prime farmland if irrigated; and all areas are prime farmland. Refer to the NRCS Soil report for additional information (*Attachment F*).

Cultural Resources (Historic Properties, Archeological/Tribal Resources):

There are historic properties located within 0.5 miles of the Proposed Action (*Attachment G*) and Native Hawaiian Organizations (NHO) that have interests in Honolulu County (*Attachment H*). The Project overlaps with State of Hawaii lands, including Waimanalo Hawaiian Home Lands (*Attachment I*).

Air Quality:

The Proposed Action is located in Honolulu County, which is an attainment area for all Clean Air Act criteria pollutants.

### III. Environmental Impact of the Proposed Action

In the tables below, use the following impact categories to document the Proposed Action's impact on the environmental resource:

- **No Impact** (e.g., resource not present)
- **Beneficial Impact Only** (no adverse impact)
- **Adverse Impact, Mitigation Not Required** (e.g., minor and/or temporary impact)
- **Adverse Impact, Mitigation Required** (e.g., to avoid potentially significant impact)

Under each heading, provide a brief description of the impacts on the environmental resource and cite any supporting analyses. Impacts or effects are defined as changes to the human environment from the proposed action or alternatives that are reasonably foreseeable. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

#### III.A. Natural and Cultural Resources

Impact Category	Environmental Resource
Adverse Impact, Mitigation Required	<p><b>Groundwater Resources.</b> Effects on groundwater resources located within the Proposed Action area or adjacent properties. Examples include changes in depth or character of the water table, rate of groundwater recharge, and groundwater quality.</p> <p><u>Summary of Impacts:</u> The Proposed Action Area is underlain by the Southern Oahu Basal sole source aquifer. On November 25, 2025, the EPA Region 9 Sole Source Coordinator, Elise Nord, reviewed the Project to ensure appropriate measures are in place to prevent aquifer contamination. The Proposed Action will adhere to the O'ahu Invasive Species Herbicide Use Standard Operating Procedures (SOP) for herbicide operations prepared by the State of Hawaii (<i>Attachment J</i>). Best Management Practices (BMPs) included in the Standard Operating Procedures (SOP) to avoid adverse impacts to sole source aquifer resources, including safe transport, mixing, and loading to prevent large spills, monitoring weather and avoiding herbicide application in areas when rainfall is expected in the following 24 hours.</p>
No Impact	<p><b>Surface Water Resources.</b> Effects on surface waters located within the Proposed Action area or adjacent properties. Examples include changes in water quality (e.g., due to erosion, new/modified discharges, increased runoff, or contaminant leaks), hydrology, physical characteristics (e.g., depth), and riparian buffers.</p> <p><u>Summary of Impacts:</u> Although there are wetland features generally within the Proposed Action Area, removal and control of invasive species would not occur in those features, nor would these activities involve any discharges of dredge or fill materials into surface waters or wetlands. The Proposed Action will include aerial pesticide application, in which pesticides would have the potential to run off or be carried by wind and degrade nearby wetlands. However, the Proposed Action will adhere to the SOP and BMPs to avoid adverse impacts to any nearby wetland features. Therefore, the Proposed Action would have no foreseeable effect on surface water resources.</p>
No Impact	<p><b>Unique Natural Features.</b> Effects on natural features (e.g., caves, cliffs, vistas, canyons, waterfalls, dunes, tree stands, etc.) within the Proposed Action area or adjacent properties. Examples include alteration, destruction, or restriction of access to the natural feature.</p>

	<p><b>Summary of Impacts:</b> The Proposed Action is located within the Hawaii coastal zone. However, coordination with the Hawaii Coastal Zone Management Program (CZMP) determined that funding through the EPA Community Grant Program is not listed as a Federal Financial Assistance Program requiring a federal consistency review. Therefore, this Proposed Action is considered in compliance with the Hawaii CZMP and no impacts to coastal resources are anticipated. The Proposed Action would have no foreseeable effects on unique natural features.</p>
Adverse Impact, Mitigation Required	<p><b>Vegetation and Wildlife.</b> <i>Effects on plant communities, wildlife, and habitats within the Proposed Action area or adjacent properties.</i></p>
	<p><b>Summary of Impacts:</b> EPA initially submitted a letter to USFWS on January 10, 2025, to initiate informal consultation with a finding of <i>may affect, is not likely to adversely affect</i> determination for 120 federally listed species and 69 critical habitats. Between January 2025 and January 2026, EPA and USFWS coordinated sending and receiving several requests, emails, and met to review the Proposed Action, potential impacts, scope changes, and confirm conservation measures. On February 9, 2026, USFWS provided their concurrence of <i>may affect, is likely to adversely affect</i> 67 listed threatened or endangered species including, one bat, four birds, six insects, 22 snails, and 34 plant species; and 13 federally designated critical habitats (<i>Attachment K</i>). The Proposed Action will adhere to conservation measures to reduce impacts to protected resources. Please see the VI. Required Mitigation Measures section below for specific conservation measures to be implemented.</p>
No Impact	<p><b>Cultural Resources.</b> <i>Effects on historic, cultural, and archeological resources within the Proposed Action area or adjacent properties.</i></p>
	<p><b>Summary of Impacts:</b> The Proposed Action would not involve ground disturbance. Therefore, the proposed activities do not have the potential to affect NHO or cultural resources. Furthermore, the Proposed Action is not located on Federal or “Indian” lands. However, in recognition of the cultural significance of the area and consistent with Hawaii law, state requirements would apply for the inadvertent discovery and treatment of human remains and burial sites by immediately ceasing work and notifying the respective parties in accordance with state law.</p>
<b>III.B. Land Use Planning and Development</b>	
<b>Impact Category</b>	<b>Environmental Resource</b>
No Impact	<p><b>Land Use Change and Consistency.</b> <i>Effects on existing pattern and type of land use, including changes within the Proposed Action area or adjacent properties as well as promotion of future development and population growth (e.g., due to new or expanded infrastructure). Consistency with local or regional comprehensive plans, community policies, and land use goals.</i></p>
	<p><b>Summary of Impacts:</b> The Proposed Action would have no foreseeable effects on land use change and consistency.</p>
No Impact	<p><b>Open/Recreational Space and Cultural Facilities.</b> <i>Effects on the quality of and access to open space, recreational space, and cultural facilities (e.g., theaters, museums, and libraries) within the community.</i></p>
	<p><b>Summary of Impacts:</b> The Proposed Action would have no foreseeable effects on open/recreational space and cultural facilities.</p>
No Impact	<p><b>Topography, Geology, and Soils.</b> <i>Effects on site topography, underlying geology (e.g., bedrock), and soils, as well as the potential for these characteristics to affect the Proposed Action (e.g., unsuitable soil conditions). Examples include changes in grading and fill; site stability, runoff patterns, and erosion potential; bedrock modifications; existing or potential soil contamination; and conversion of soils suitable for agricultural activities.</i></p>

	<u>Summary of Impacts:</u> The Proposed Action Area includes qualifying farmland. However, the Proposed Action would not involve construction or the irreversible conversion of farmland to nonagricultural uses. Therefore, the Proposed Action would have no foreseeable effects on topography, geology, and soils.
No Impact	<b>Public Safety and Nuisances.</b> <i>Potential to cause or contribute to hazards and nuisances (e.g., noise, vibration, hazardous materials) within the Proposed Action area or adjacent properties, as well as the potential for these hazards and nuisances to affect the Proposed Action.</i>
	<u>Summary of Impacts:</u> The Proposed Action would have no foreseeable effects on public safety and nuisances.
No Impact	<b>Environmental Design.</b> <i>Effects on the visual coherence, scale, and character of the surrounding natural or manmade environment within the Proposed Action area or adjacent properties.</i>
	<u>Summary of Impacts:</u> The Proposed Action would have no foreseeable effects on environmental design.
<b>III.C. Community Services and Infrastructure</b>	
<b>Impact Category</b>	<b>Environmental Resource</b>
No Impact	<b>Essential Community Services.</b> <i>Effects on the quality of and access to community services including schools, health care, social services, and emergency services (police, fire, and emergency medical). Examples include changes in demand for services (e.g., student population growth) and changes in accessibility due to road closures and modifications.</i>
	<u>Summary of Impacts:</u> The Proposed Action would have no foreseeable effects on essential community services.
No Impact	<b>Solid and Hazardous Waste Management.</b> <i>Effects on the capacity of and access to solid waste disposal facilities in the community, as well as generation, handling, and disposal of hazardous waste.</i>
	<u>Summary of Impacts:</u> The Proposed Action would have no foreseeable effects on solid and hazardous waste management.
No Impact	<b>Wastewater Infrastructure.</b> <i>Effects on the capacity and effectiveness of the sewer or septic system that serves the Proposed Action area.</i>
	<u>Summary of Impacts:</u> The Proposed Action would have no foreseeable effects on wastewater infrastructure.
No Impact	<b>Storm Water Infrastructure.</b> <i>Effects on the capacity and effectiveness of storm water collection, conveyance, and treatment systems within the Proposed Action area.</i>
	<u>Summary of Impacts:</u> The Proposed Action would have no foreseeable effects on storm water infrastructure.
No Impact	<b>Water Supply.</b> <i>Effects on the capacity and effectiveness of drinking water systems within the Proposed Action area.</i>
	<u>Summary of Impacts:</u> The Proposed Action would have no foreseeable effects on water supply.
No Impact	<b>Energy Use and Infrastructure.</b> <i>Effects on energy use and the capacity and effectiveness of energy infrastructure (e.g., electrical grid, natural gas distribution). Examples include long-term changes in electricity demand and changes in fossil fuel use due to modified commuting patterns.</i>
	<u>Summary of Impacts:</u> The Proposed Action would have no foreseeable effects on energy use and infrastructure.
No Impact	<b>Transportation.</b> <i>Effects on the adequacy of and access to public transportation services within the community.</i>

	<u>Summary of Impacts</u> : The Proposed Action would have no foreseeable effects on transportation.
<b>III.D. Socioeconomics</b>	
<b>Impact Category</b>	<b>Environmental Resource</b>
No Impact	<b>Demographic/Character Changes.</b> <i>Effects on the demographic characteristics of the community, such as population or projected population growth.</i> <u>Summary of Impacts</u> : The Proposed Action would have no foreseeable effects on demographic/character changes.
No Impact	<b>Displacement.</b> <i>Effects on the relocation of individuals, families, existing jobs, community facilities, or business establishments.</i> <u>Summary of Impacts</u> : The Proposed Action would have no foreseeable effects on displacement.
No Impact	<b>Economic Opportunities and Growth.</b> <i>Effects on employment opportunities and economic growth within the community.</i> <u>Summary of Impacts</u> : The Proposed Action would have no foreseeable effects on economic opportunities and growth.
<b>III.E. Air Quality</b>	
<b>Impact Category</b>	<b>Environmental Resource</b>
Adverse Impact, Mitigation Not Required	<b>Air Quality and Odor.</b> <i>Effects on community air quality. Examples include temporary construction-related emissions, installation of new emission sources, changes in transportation patterns, and introduction of sources of odor.</i> <u>Summary of Impacts</u> : The helicopter surveys and aerial herbicide application would generate minor and temporary emissions. However, emissions would be well below <i>de minimis</i> thresholds and activities to remove the invasive plant species would be primarily performed by hand using hand tools. Any impacts to air quality from aerial herbicide application would be minor and temporary. Therefore, the Proposed Action would have no foreseeable long-term effects on air quality and odor.
<b>III.F. Other Resource Areas</b>	
<b>Impact Category</b>	<b>Environmental Resource</b>
No Impact	<b>Other Resource Areas.</b> <i>Effects on resource areas not reflected in the above categories.</i> <u>Summary of Impacts</u> : N/A

#### IV. Alternatives Considered

*Briefly describe alternatives to the Proposed Action considered including other sites, design modifications, or no action. Summarize the beneficial and adverse impacts on the human environment for each and the reason the alternative was not identified by the EPA as the Proposed Action.*

##### Alternative 1: No Action

The No Action Alternative would not address the need to protect rainforests and mitigate future flood risks in the Pearl Harbor Watershed in Honolulu County, Hawaii. The No Action Alternative would result in the continued proliferation of the region’s most threatening invasive species: miconia and cane tibouchina. Therefore, the EPA did not identify the No Action Alternative as the Proposed Action.

## V. Review of Applicable Environmental Laws and Executive Orders

*In the list below, place an "X" next to each environmental law or executive order identified as applicable to the Proposed Action.*

ID	Environmental Law/Executive Order	"X"
1	Endangered Species Act [16 U.S.C. §§ 1531–1599]	X
2	Bald And Golden Eagle Protection Act [16 U.S.C. §§ 668-668C]	
3	Fish and Wildlife Coordination Act [16 U.S.C. § 661 et seq.]	
4	Marine Mammal Protection Act [16 U.S.C. §§ 1361-1407]	
5	National Historic Preservation Act (NHPA) as amended [54 U.S.C. § 300101 et seq.] and Archeological and Historic Preservation Act, as amended [54 U.S.C. §§ 312501-312508]	
6	Archaeological Resources Protection Act [16 U.S.C. §§ 470AA-MM]	
7	Native American Graves Protection and Repatriation Act [25 U.S.C. § 3001 et seq.]	
8	Clean Water Act [Section 404] and Protection of Wetlands [Executive Order No. 11990 (1977), as amended by Executive Order No. 12608 (1997)]	X
9	Rivers and Harbors Act [Section 10]	
10	Flood Plain Management [Executive Order No. 11988 (1977), as amended by Executive Order No. 12148 (1979)]	
11	Safe Drinking Water Act [42 U.S.C. §§ 300F-300J-26]	X
12	Farmland Protection Policy Act [7 U.S.C. §§ 4201-4209]	X
13	Coastal Zone Management Act [16 U.S.C. §§ 1451-1466]	X
14	Coastal Barriers Resources Act [16 U.S.C. §§ 3501-3510]	
15	Wild and Scenic Rivers Act [16 U.S.C. §§ 1271-1287]	
16	Essential Fish Habitat Consultation Process Under the Magnuson-Stevens Fishery Conservation and Management Act [16 U.S.C. §§ 1801-1891]	
17	Migratory Bird Treaty Act [16 U.S.C. §§ 703-712]	
18	Clean Air Act Conformity [42 U.S.C. § 7506(C)]	
19	Wilderness Act [16 U.S.C. § 1131 et seq.]	

## VI. Required Mitigation Measures

*Describe any mitigation measures that are essential to render the impacts of the Proposed Action not significant and/or to avoid non-compliance with applicable environmental laws or executive orders. Use the environmental resource areas listed in Section III to identify the resource area of concern. If no mitigation measures are required, type "N/A".*

Environmental Resource Area	Mitigation
General "overall"	Adhere to herbicide use plan ( <i>Attachment J</i> )
Groundwater and Surface Water Resources	The Proposed Action will adhere to BMPs to avoid adverse impacts to sole source aquifer resources, including safe transport, mixing, and loading to prevent large spills, monitoring weather and avoiding herbicide application in areas when rainfall is expected in the following 24 hours.

<p>Vegetation and Wildlife</p>	<p>The Proposed Action will adhere to the following conservation measures to reduce impacts to protect resources (<i>Attachment K</i>):</p> <p><i>O’ahu ‘Elepaio</i></p> <ul style="list-style-type: none"> <li>• Helicopter use will be avoided during the breeding season (January through July).</li> <li>• If an area is identified as an active territory for the O’ahu ‘elepaio, trees determined to be used for nesting will be avoided during their breeding season.</li> <li>• If vegetation removal is required, wildlife biologists will survey trees for the O’ahu ‘elepaio prior to the beginning of vegetation removal.</li> <li>• The State of Hawaii Division of Forestry and Wildlife (DOFAW) will avoid conducting activities within forest bird habitat that promote the spread of survival of invasive species, increase mosquito populations or stagnant water habitat, or increase wildlife threat to montane forest habitats.</li> </ul> <p><i>Hawaiian Seabirds</i></p> <ul style="list-style-type: none"> <li>• There will be no nighttime work.</li> <li>• Any new base yard lights will utilize full cutoff exterior down-lighting fixtures.</li> <li>• Outdoor lights will be fully shielded such that bulbs will only be visible from below.</li> <li>• Automatic motion sensor switches will be installed and/or controls on all outdoor lights will be turned off to ensure that lights are off when not in active use.</li> </ul> <p><i>‘Ōpe’ape’a</i></p> <ul style="list-style-type: none"> <li>• Any trees or woody vegetation 15 feet (4.6 meters) in height or taller will not be trimmed or cleared during the ‘ōpe’ape’a pupping season (June 1 through September 15).</li> </ul> <p><i>Hawaiian picture-wing flies and Hawaiian damselflies</i></p> <ul style="list-style-type: none"> <li>• DOFAW’s invertebrate biologist (authorized to conduct surveys under the section 6 Cooperative Agreement with the Service) will conduct surveys if Hawaiian picture-wing host plants or habitat for Hawaiian damselflies are present. <ul style="list-style-type: none"> <li>○ All host plants for Hawaiian picture-wing flies will be flagged, and herbicide spraying will not occur in those areas.</li> </ul> </li> </ul> <p><i>Hawaiian Snails</i></p> <ul style="list-style-type: none"> <li>• DOFAW snail biologists will conduct thorough searches of vegetation for Hawaiian snails, flag their locations, and determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected.</li> <li>• DOFAW will select alternate helicopter landing areas if an area is occupied by Hawaiian snails.</li> </ul> <p><i>Hawaiian Plants and Critical Habitat</i></p> <ul style="list-style-type: none"> <li>• Prior to work being conducted in an area, a DOFAW botanist or the Plant Extinction Prevention Program staff (as determined by DOFAW) will determine if Hawaiian plants are present in the area prior to conducting invasive species removal activities. Surveyors will identify and mark all Hawaiian plant locations either with flagging or a Global Positioning System point that will be shared with staff and contractors prior to the commencement of work.</li> </ul>
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- Helicopters will be crewed by staff trained in rare plant identification.
- Surveys will occur on the day of the spray to identify spray areas as well as what the target species looks like to avoid non-target treatment.
- A biologist with experience conducting invasive species removal around Hawaiian plants will be on-site or in a supervisory position when Proposed Action activities are being carried out.
- Vegetation clearing will be done by hand with the use of hand tools or weed machines (i.e., weed whackers, hedge trimmers, chainsaws).
- Herbaceous weed control in the vicinity of native plants will be removed or cut back using hand tools and then by spot treating remaining individuals to minimize herbicide application.
- Recommended windspeeds on the herbicide labels will be followed. Windspeeds will be taken at the application site immediately prior to work beginning to determine if herbicide application can occur.
- Cut-stump method will be the preferred method and soil spray of pre-emergent will only be applied within patches of cane tibouchina.
- Aerial-based herbicide application such as ball sprayer or herbicide-ballistic-technology will not be used in Hawaiian plants are downwind of the area of application.
- To mitigate drift, large droplet size will be maintained, and the spray rig will hover directly over the plant being treated no more than ten feet above the target plant. Aerial spray will not occur if there is a temperature inversion. Aerial-based herbicide applications will not occur on windy days. Flights will only occur when winds are less than ten miles per hour and provide for clear visibility.
- The following measures will be implemented related to weeding:
  - No more than 20 percent of the canopy will be treated or removed at a time above Hawaiian plants.
  - Herbicides used will be as taxon-specific as possible to limit non-target effects (e.g., grass specific herbicide around listed herbs).
  - Staff will only hand pull species with fibrous shallow roots, not weeds with tap roots.
- If locations of rare plants are known or are found while carrying out activities, propagule collection of those species will occur and collection will be secured ex situ (e.g., plants in nursery, viable seeds in seed bank/tissue culture) under the section 6 Cooperative Agreement with the Service.
- Work will be conducted by using established trails and minimizing clearing to the furthest extent possible.
- DOFAW will minimize vegetation clearing when determining helicopter drop zones and landing zones.
- Buffer distances in Table 1 will be adhered to for Proposed Action activities.

Table 1. Buffer distances for Hawaiian plants for Proposed Action activities.

<b>Action</b>		<b>Buffer Distance from Hawaiian Listed Plant (feet)</b>
Walking, hiking, surveys		3
Cutting and removing vegetation by hand or hand tools (e.g., weeding)		3
Mechanical removal of individual plants or woody vegetation (e.g., chainsaw, weed eater)		3
Use of approved herbicides (following label)	Ground-based direct application with precision applicator (no spray; spot treatment)	3
	Ground-based spray application; hand application (no wand applicator; spot treatment)	15
	Ground-based spray application; manual pump with wand, backpack	20
	Aerial spray (precision applicator)	50
	Aerial application – herbicide-ballistic-technology (individual plant treatment)	25

### VII. Agencies and Persons Consulted

List the individuals, Tribes, Federal, State, and local agencies consulted during the development of this EA. Provide the name, title, and agency of the individuals consulted.

U.S. Fish and Wildlife Service, Elyse Sachs, Fish and Wildlife Biologist

Environmental Protection Agency, Elise Nord, Region 9 Sole Source Coordinator

### VIII. List of References

Provide full citations for any reference documents cited in this EA.

Hawaii Statewide GIS Program. 2026. Land Use Land Cover (LULC) Database. Accessed on February 17, 2026.

### IX. List of Attachments

List the supporting documents attached to this EA.

Attachment A: Community Grants Workplan. May 15, 2025

Attachment B: USFWS. 2025. NWI Wetlands Map. September 29, 2025.

Attachment C: NEPAssist. 2025. Sole Source Aquifer. September 29, 2025.

Attachment D: NOAA. Hawaii CZMA Boundaries. September 5, 2025.

Attachment E: USFWS. 2025. IPaC Official Species List. October 21, 2025.

Attachment F: NRCS. 2025. Soils Report. September 29, 2025.

Attachment G: NEPAssist. 2025. NRHP Report. September 29, 2025.

Attachment H: U.S. Department of Interior. 2025. NHO Notification List. October 3, 2025.

Attachment I: Tribal Connections Mapper. September 30, 2025.

Attachment J: Oahu Invasive Species Committee (OISC). 2020. Handling, Mixing, Storage and Use of Herbicide Standard Operating Procedure. May 19, 2020.

Attachment K: USFWS. 2026. Informal Consultation for the Proposed Pearl Harbor Aquifer Recovery Project, Oahu. February 9, 2026.



## **Appendix E: Community Grants Workplan**

**Name of Applicant and Project Title: State of Hawaii, Department of Land and Natural Resources  
Pearl Harbor Aquifer Recovery Project**

### **Project Objective(s) and Need**

The Pearl Harbor watershed on the island of O‘ahu is the island’s largest and most important freshwater aquifer. Groundwater head levels in Pearl Harbor, which supplies over 60% of Oahu’s municipal water, declined by half since 1910. Adding to this problem is the increased uncertainty of water quality due to the Red Hill fuel leak, which has caused the Board of Water Supply to put additional pressure and use on other alternate wells within the Pearl Harbor aquifer.

To secure water supplies, as well as provide many other benefits, the State proposes to protect and native rainforests from top threats. Forests are formally recognized as “green infrastructure” in many places around the world, and absorb hundreds of inches of rain, allowing for the replenishment of aquifers and streams and mitigating the impact of floods. Unfortunately, more than half of the native forests in Hawai‘i have been lost due to the spread of invasive species. Non-native plants have been shown to diminish the water carrying capacity of Hawaii’s watersheds, quickly overtake native vegetation, and create bare ground that increases water runoff and erosion. Statewide studies have shown that forests can infiltrate water 15 times faster than bare soil. This project will protect native rainforests and mitigate future flood risks in the Pearl Harbor watershed by increasing regional eradication efforts of the region’s most threatening invasive species - miconia (*Miconia calvescens*), and tibouchina (*Tibouchina herbacea*).

Miconia dramatically promotes erosion and landslides. First, its large leaves reduce light beneath the canopy and inhibit growth of understory plants, leaving a forest floor of bare earth. Secondly, the large leaves condense rain into large, high-energy throughfall drops that further loosen soil particles on the bare ground below. Drops under a miconia forest can magnify rain’s kinetic energy by 26 times. Finally, the shallow root system fails to stabilize the steep streambeds and cliffs it invades. Miconia is still considered incipient in Oahu with the potential for eradication. However, without eradication miconia will overtake the forests and compromise watershed health. In only 60 years this species invaded 60,000 acres of Tahiti, causing massive landslides. Tibouchina is related to Miconia and shares many damaging characteristics.

Both plants are incipient on O‘ahu and their populations have not progressed to the uncontrollable levels found in other islands. This project will work within and outside the Pearl Harbor aquifer to contain and eliminate populations of these damaging species. Controlling these populations across the island will not only protect the Pearl Harbor aquifer from eventually being invaded by these species, but also benefit the entire island of O‘ahu.

### **Project Description**

Miconia and tibouchina control will focus on known seedbank areas utilizing a buffering system based on seed biology and dispersal range. Surveys will be done by ground and air using transects. All fruits and flowers of mature trees will be removed and incinerated and plants will be controlled by hand or by applying herbicide to stumps.

*Tibouchina Herbacea*: Conduct regular ground sweeps along 13,000 meters of Paukauila stream and continue control efforts at the Poamoho hotspot population. In addition, conduct an extended comprehensive stream survey of both the Paukauila and Poamoho Streams to survey for any populations that have become established below the current control areas. Continued control along streams is critical to preventing this invasive species from spreading and establishing in lower elevations where it can be inadvertently transported by hikers, dirt bikes, farmers, feral animals, and military personnel. Field crews will also conduct helicopter surveys for outlier populations near the Poamoho summit and aerially treat any inaccessible plants using the precision point spray method. Outreach staff will present important species information to the public through presentations, information booths, and social media postings.

*Miconia calvescens*: Conduct survey and treatment for miconia within the 800 meter priority ground buffer established around all known plants. Staff biologists are expert hikers and will scour along transects evenly spaced throughout the forest. For areas too steep to safely ground survey, field crews will utilize helicopter surveys along elevational transects to detect any outlier populations and will return to treat aerially.

A cumulative area of less than 1 acre of invasive vegetation will be removed by hand, hand tools, and weeding. DLNR and contractors will survey approximately 400 acres per year however there are very few plants and they are all immature so cumulatively estimate removal of less than an acre of vegetation.

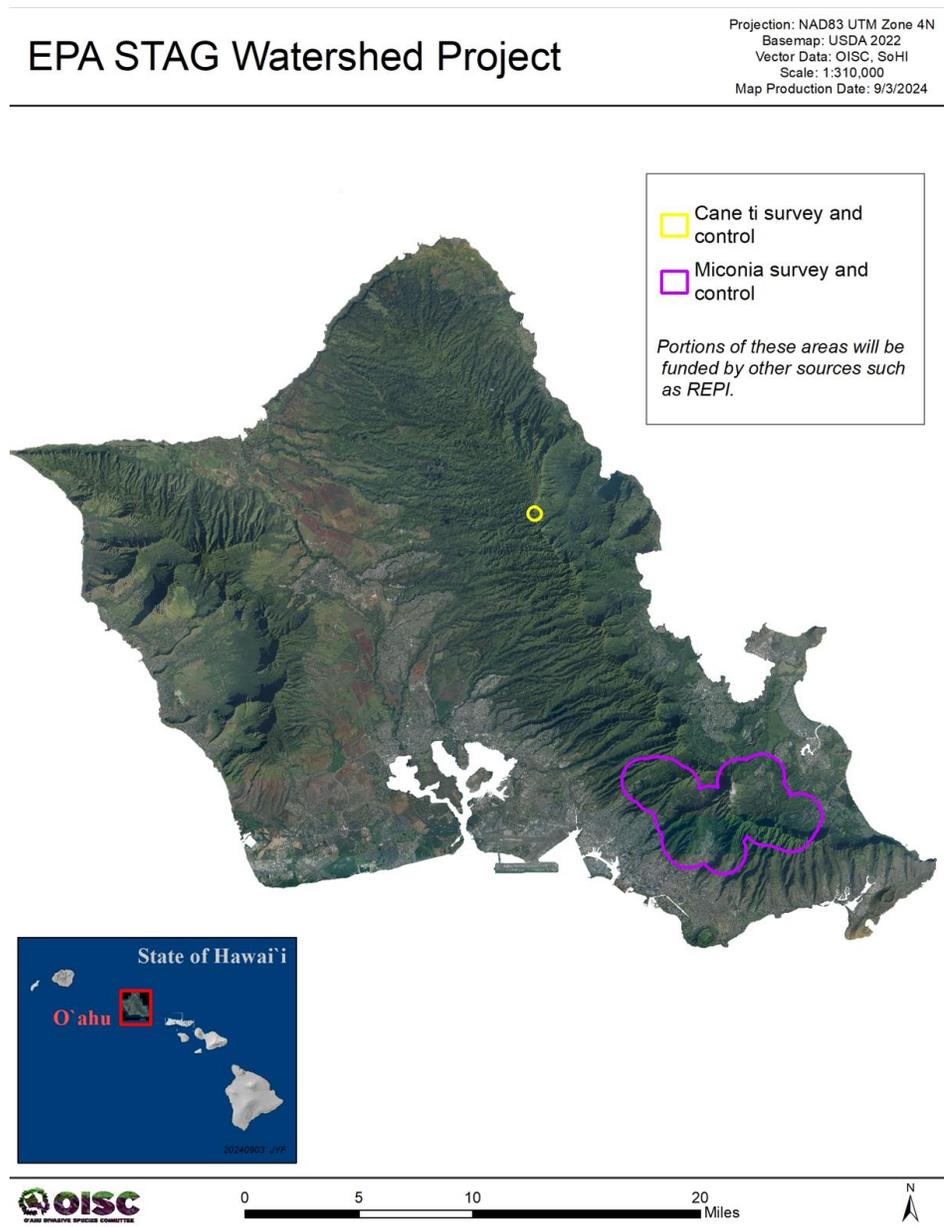
The hotspots for both Tibouchina and Miconia are locations where there have been populations detected. These species of plants are not widely dispersed, and instead only occur on small, isolated populations. DLNR and contractors have conducted extensive surveys across Oahu to find these plant populations, including within the Pearl Harbor Aquifer.

Native plants will not be planted after the invasives are removed. These plants are being removed when they are very small, and most of them will be immature. When they are removed, they do not leave a significant area bare. In these areas, the surrounding forest will recolonize naturally.

The response plan (which is subject to modification) is to create a 1,600 meter buffer is drawn around all historical seed-bearing miconia trees; the inner 800 meters are surveyed by ground except where it is too steep and then it is surveyed by helicopter.

Areas within the inner 800 meter buffer are surveyed a minimum of every three years, areas that are too steep within the inner 800 meter buffer are surveyed every two years by helicopter. The aerial surveys inside the inner 800 meters are conducted at a higher frequency because miconia trees cannot be seen from the air until they break the canopy after which they will quickly mature. For Tibouchina, quarterly surveys are conducted

around locations that have had plants in the past. The staffing requirements fluctuate based on the number of immature and mature plants found.



Locations of invasive species control targets. If additional populations are identified, additional work sites will be added.

Invasive species removal will not occur in wetlands or riparian areas.

## **Milestone Schedule**

November 1, 2025 – October 31, 2028: Conduct invasive plant removal.

October 31, 2025-March 31, 2029: Continued monitoring.

## **Environmental Results/Benefits**

Clean and safe water:

Hawaii's native forests absorb moisture from rainfall and passing clouds that condense on the thick vegetation. Intercepting cloud drip increases water capture by as much as 30% of rainfall, and increases groundwater re-supply by 10-15%. As this area has experienced a catastrophic fuel leak, as well as a gradual loss of freshwater aquifer supplies, the importance of protecting these forests and water supplies increases. Removing invasives also reduces the risk of flooding, landslides, as well as improves water quality.

## **Workplan Requirements for Identifying Contractors**

This project will contract the Research Corporation of the University of Hawai'i to conduct the invasive species control. The applicant and the Research Corporation of Hawaii have an existing Memorandum of Understanding to transfer funds to projects of mutual benefit for each agency.

## **AERIAL SPRAY OPERATING PROCEDURES:**

- Mitigate drift by:
  - o Having a large droplet size and hovering the spray rig directly over the plant anywhere from touching the plant to no more than 10 feet above the target plants.
  - o No aerial spray if there is a temperature inversion, which would increase drift.
  - o Not flying or spraying on windy days which would increase drift. Fly on weather days with winds less than 10 mph and clear visibility.
- Helicopter will be crewed by staff trained in rare plant identification and also aware of rare plant points.
- Conduct reconnaissance the day of the spray to identify spray areas as well as what the target species looks like to avoid non-target treatment.

## **FIELDWORK PROCEDURES:**

- All personnel will be informed regarding the presence of listed plants.

- Herbicide application methods will minimize over-spray. Ground-based herbicide application involves precision drip or targeted foliar spray. Aerial-based herbicide application will use targeted applications such as ball sprayer or herbicide-ballistic- technology.
- Buffer distances in Table 1 will be adhered to for the activities.

Table 1. Buffer distances for listed plants for proposed project activities.

Action	Buffer Distance from Listed Plant (ft)	
Walking, hiking, surveys	1 ft – no buffer*	
Cutting and removing vegetation by hand or hand tools (e.g., weeding)	1 ft – no buffer**	
Mechanical removal of individual plants or woody vegetation (e.g., chainsaw, weed eater)	3 ft	
Use of approved herbicides (following label)	Ground-based direct application with precision applicator (no spray; spot treatment)	3 ft
	Ground-based spray application; hand application (no wand applicator; spot treatment)	15 ft
	Ground-based spray application; manual pump with wand, backpack	20 ft
	Aerial spray (precision applicator)	50 ft
	Aerial application – herbicide-ballistic-technology (individual plant treatment)	25 ft

#### Listed Plants

- T&E species will be left in place to avoid ground disturbance.
- Herbaceous weed control in the vicinity of native plants, will remove or cut back invasive species using hand tools and then spot treat remaining individuals to minimize herbicide application.
- Ground-based herbicide application workers will be trained in species identification.

- A biologist with experience conducting the particular action around listed plants will be on-site and/or in a supervisory position when the activity is being carried out.
- Prior to work being conducted in an area, a State botanist/PEPP staff (as determined by DOFAW) will determine if vegetation and rare plant surveys are necessary in the area prior to conducting the activity.
- To the extent practicable, the following will be implemented related to weeding:
  - o No more than 20% of the canopy will be treated/removed at a time above listed plants
  - o Herbicides used will be as taxon-specific as possible to limit non-target effects (e.g., grass specific herbicide around listed herbs)
  - o Hand pull only fibrous shallow roots, not weeds with tap roots, close to listed plants
- For plants that are considered particularly rare (i.e., PEPP species, or few to no known individuals of listed plant species):
  - o If the plant locations are known or are found while carrying out activities, propagule collection of those species should occur and collection will be secured ex situ (e.g., plants in nursery, viable seeds in seed bank/tissue culture)

## Herbicide Specifications Addendum

### Application methods & Herbicide specifications

- *Miconia calvescens*
  - Cut stump: 20% Garlon 4 Ultra (ai: triclopyr), 79.5% crop oil or methylated seed oil, 0.5% Turf Trax (dye)
  - Herbicide Ballistic Technology (HBT): 16% Garlon 4 Ultra (ai: triclopyr), 84% crop oil or methylated seed oil
  - Foliar: 5% Garlon 3 (ai: triclopyr), 94.5% water, 0.5% Turf Trax (dye)
- *Chaetogastra herbacea* (syn. *Tibouchina herbacea*)
  - Application methods & cocktail formulations
    - Cut stump: 20% Garlon 4 Ultra (ai: triclopyr), 79.5% crop oil or methylated seed oil, 0.5% Turf Trax (dye)
    - Foliar: 0.16% OUST XP (ai: sulfometuron-methyl), 2% RoundUp Pro Max (ai: glyphosate), 97.34% water, 0.5% Turf Trax (dye)
    - Foliar: 0.16% OUST XP (ai: sulfometuron-methyl), 2% RoundUp Pro Max or Ranger Pro (ai: glyphosate), 97.34% water, 0.5% Turf Trax (dye)

- Foliar: 5% Garlon 3 (ai: triclopyr), 94.5% water, 0.5% Turf Trax (dye)

Herbicide application will avoid times where rain is forecasted within 24 hours of application. Additional best management practices are available in the attached document.

### **Migratory Bird Avoidance**

This project is not expected to affect migratory birds, which are not known to use the target invasive plants as habitat. The removal methods of the target invasive species are low-impact and do not occur in known nesting locations.

## **EXHIBIT**

### **OISC Handling, Mixing, Storage and Use of Herbicide**

#### **Standard Operating Procedure**

SOP for Herbicide Operations

PCSU OISC

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## DEFINITION OF HERBICIDE TERMS

Adjuvant – any substance added to an herbicide mixture that modifies herbicide activity, application characteristics, or the physical characteristics of the mixture

Amine – refers to organic chemical compounds derived from ammonia by replacement of one or more hydrogen atoms by organic radicals; amine salt formulations are soluble in water (for the most part)

Backpack sprayer – a spraying apparatus where the tank is situated on a worker’s back and secured with straps around the shoulders and waist; the backpack spraying apparatus will include a pressurizing device (usually a pump handle), a line, a wand, and an adjustable spraying nozzle.

Basal Thinline – a treatment method referring to the application of herbicide around the base of a plant’s stem, completely encompassing the circumference of the stem with a thin ring of herbicide mixture

Contact Herbicide – an herbicide that kills only the plant tissue that comes in direct contact of the chemical mixture

Cut- Stump – a treatment method referring to the application of herbicide on the cut surface to the stump of a tree or woody shrub.

Drench – a treatment method referring to the application of herbicide directly to the soil in an even and uniform fashion

Emulsifiable – any colloidal suspension of a liquid in another liquid

Ester – refers to organic chemical compounds derived by replacing the hydrogen of an acid by an alkyl or other organic group; ester formulations are non-soluble in water but soluble in organic solvents and oils

Foliar application – a treatment method referring to the application of herbicide to a plant's foliage

Frill – a treatment method referring to the application of herbicide to the continuous downward cuts made around the entire base of the stem, deep enough to hit the sapwood.

Girdle – a treatment method referring to the application of herbicide to a notch cut into the stem all the way around the trunk

Granular herbicide – a chemical substance comprised of small pellets, grains, or fragments used to kill unwanted vegetation

Hand sprayer – a small, hand-held spraying apparatus that is configured with a handle, trigger, small tank, and a pressurizing component (usually a hand pump on the top of the lid)

Herbicide – a chemical substance, toxic to plants, used to kill unwanted vegetation; a type of pesticide that specifically targets plants

Herbicide Ballistic Technology (HBT) or Targeted Aerial Application - is a concept for pneumatically administering encapsulated herbicide aliquot projectiles to weed targets with long-range accuracy

Pesticide – a chemical substance used to attract, kill, and mitigate any pest. In this SOP, the term pesticide includes herbicide.

Post-emergent – referring to herbicides aimed at killing the plants after they have already emerged from the ground

Power sprayer – a mechanized spraying apparatus, usually quite large, used to disperse large amounts of herbicide mixtures over large amounts of land; this apparatus is also configured with a tank, line, gun or wand, and a pressurizing component that is usually regulated by a small motor

Pre-emergent – referring to herbicides applied to the soil before the plant emerges from the ground to prevent seed germination or early growth of weeds

Restricted Use Pesticide – a pesticide that requires specialized training and certification to purchase and apply due to its more hazardous properties

Systemic Herbicide – an herbicide that must be translocated through the plant for efficacy

## **PURPOSE**

The purpose of this herbicide operations standard operating procedure (SOP) is to outline safe procedures and methods to follow when conducting all herbicide/pesticide operations in the field, including but not limited to: aerial, ground and roadside operations.

## **SCOPE**

The scope of this herbicide operation SOP encompasses all aspects of safety, procedures, protocols & efficacy for field operations that will entail the deployment of herbicides/pesticides. Please note that herbicide and pesticide may be used interchangeably, and this SOP should apply to both types of chemical operations.

## **RESPONSIBILITIES**

1. **MANAGER:** Review herbicide procedures with **FIELD SUPERVISOR** to ensure understanding and compliance. Conduct safety briefings regularly and ensure staff has all appropriate certifications.
2. **FIELD SUPERVISOR:** Review herbicide procedures with the **FIELD CREW LEADER(S)** and **HERBICIDE SPECIALIST** on a continual and regular basis to ensure understanding and compliance. Conduct safety and logistical briefings with field crew prior to any herbicide operation and ensure that staff has all appropriate certification.
3. **HERBICIDE SPECIALIST:** Posts relevant info on herbicide hutches, maintains a clean herbicide storage shed, communicates to crew regarding herbicide storage, supply needs, keeps track of new herbicide and PPE purchasing needs, develops respirator program and monitors it, works with safety officer on herbicide operations and herbicide safety, and distributes SDS's and labels to vehicles (organized, printed double-sided and labelled clearly)
4. **FIELD CREW LEADER(S):** Execute all herbicide operations in accordance with the Product Label(s) and this SOP in a safe and efficient manner. In the absence of **FIELD SUPERVISOR**, brief entire field crew prior to any herbicide operation in regards to safety, logistics, & other pertinent information.
5. **Support staff:** Execute herbicide operations in accordance with the SOP. Provide field assistance to Field Crew Supervisor and/or Field Crew Leader(S), under the direct supervision of the Field Crew Supervisor, Field Crew Leader(S), and Manager.
6. Failure to comply with this SOP may result in disciplinary action.

## **CERTIFICATIONS/TRAININGS**

1. All staff involved in operations dealing with herbicides/pesticides must have undergone and passed the Pesticide Risk Reduction Education safety training course. It is recommended to complete this training within the first year of employment or, as soon as the course is offered, if it is not offered within the first year of employment.
2. A Restricted-Use Pesticide Applicator License is required to be obtained by supervisors of organizations that use Restricted-Use Pesticides. OISC currently does not use Restricted-Use Pesticides in its operations. However, OISC supervisors and the Pest

Response Specialist should acquire one of these in the event Restricted-Use Pesticides become required for an operation.

**PROCEDURES**

**General Considerations**

1. Safety is always the first priority. Make sure to wear the required PPE, comply with and fully understand all label specific and organizational safety requirements, and make sure to use your discretion during any operation involving the deployment of herbicide.
2. Compliance with RCUH/PCSU (standards, training) and the OISC guidelines (SOPs & policies) is required.

**Basic Handling and Operation Guidelines**

1. Prior to conducting an herbicide operation, all staff shall be briefed by the operations leader (FIELD SUPERVISOR, FIELD CREW LEADER, or HERBICIDE SPECIALIST) as to management goal, target weed species, location of herbicide operation, and safety.
2. Inspect all equipment prior to operations. Never use damaged or out of date equipment or materials.
3. FIELD SUPERVISOR shall coordinate with the HERBICIDE SPECIALIST to develop a maintenance schedule for all herbicide equipment and make sure that the equipment is in working order.
4. Always exercise care when handling and operating herbicide and herbicide deployment equipment. These materials are costly to repair or replace and need to be in excellent working condition in order for our crew to operate safely.

**Personal Protective Equipment (PPE)**

All OISC employees, volunteers, and contributors applying or handling herbicides/pesticides shall wear the PPE required by the pesticide label. Additional PPE may be worn as long as it does not cause additional safety concerns and can be worn with comfort and ease. If a respirator or other breathing mask is required by the label, employees must be certified from a physician that they are healthy enough to wear one. Everyone involved in a pesticide field operation is at risk of exposure to hazardous chemicals, so please exercise extreme caution and stay alert. Make sure to always refer to the label for specific safety and use requirements.

Required PPE: Ground Activities	Required PPE: Aerial Activities	Required Training
Employees shall wear PPE described on the label which may include: <ul style="list-style-type: none"> <li>• Eye protection</li> <li>• Chemical resistant gloves.</li> <li>• Long-sleeve shirt</li> </ul>	<ul style="list-style-type: none"> <li>• Nomex</li> <li>• Flight Suit</li> <li>• Long shirt</li> <li>• Long pants</li> <li>• Closed-toe shoes</li> <li>• <b>Socks</b></li> </ul>	<ul style="list-style-type: none"> <li>• First Aid &amp; CPR</li> <li>• Pesticide Risk Reduction Educational course**</li> </ul>

<ul style="list-style-type: none"> <li>• Long pants</li> <li>• Closed-toe shoes</li> <li>• Socks</li> </ul>		
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\*Use of respirators would require additional training and medical clearance. [PENDING]

\*\*All full-time employees must complete this course within the first year of employment or as soon as the course is offered, if course is not available during first year of employment.

## Herbicide Mixing

USE EXTREME CAUTION WHEN MIXING HERBICIDES! Dermal exposure to a small amount of a concentrated herbicide can be equivalent to the exposure received after a full day of working in a treated field. Before mixing any herbicide, READ THE LABEL. Establish a mixing area. Herbicides should be mixed only in pre-designated areas -preferably either near the storage site or in an area near the treatment site(s) in which damage from small spills or other herbicide contamination would be minimal. Field mixing sites should have relatively few native or other desirable species, not be susceptible to erosion or runoff, and rarely, if ever, be visited by the public. In addition, mixing sites should provide easy access for containment and clean-up of spills. At the mixing site, assemble the appropriate equipment including safety and clean-up gear and measuring and mixing utensils. Spill kits, a shovel, and water must be easily available at field mixing sites in case of a larger spill. Remember to wear all protective gear while handling and mixing herbicides. Avoid metal measuring utensils as some pesticides can react with metal. Clearly label herbicide-measuring equipment to avoid confusion with equipment used for measuring food. Wash all utensils before storage to prevent contamination of future mixes.

- Wear all required PPE
- Choose an area with a clear level surface that is low traffic and away from food, laundry, and non-target plants.
- Refer to mixing instruction on label of specific herbicide to inform you of proper mixing procedures.
- Have a spill kit accessible.
- Have all materials (herbicide, adjuvant, marker, water) and equipment (herbicide mixture bottles, funnels, & graduated cylinders) ready before you make the first pour.
- Have another person(s) assist when needed.
- Pour water from a previously filled container to prevent back siphoning of herbicide into hose or make sure hose nozzle never contacts herbicide mixture.
- Mix herbicides only in containers approved to carry herbicide and not labeled otherwise.
- Take your time to ensure all materials are measured out properly and mixture is evenly proportioned.
- When mixing is finished, secure all containers and deposit contaminated mixing equipment into decontamination area.

- Be sure to label containers well with the mixture formula, the date mixed, and the initials of mixer.
- Put mixed herbicide in proper containers for transport and in proper areas for storage.

### **Ground Transport**

All herbicides/pesticides shall be transported in accordance with the requirements outlined in each specific product label and OSHA guidelines. All herbicides/pesticides and herbicide/pesticide-contaminated mixing materials shall be contained in “Herbicide Use Only” labelled action-packers. Action-packers specifically labelled “Herbicide Use Only” should not be transported in the cab of a vehicle.

### **Staging Areas**

During an OISC herbicide operation that involves backpack or power spraying, the crew shall set up mixing and decontamination stations suitable distances from each other and from the designated treatment area. The MIXING STATION shall be on level ground with sufficient shade and shelter for the herbicides. DO NOT bring potable water, food, or tobacco products into this area whatsoever. All mixing shall take place in the designated location.

The designated DECONTAMINATION STATION shall be no less than 50 feet from the mixing station and no less than 50 feet from the treatment area as well. This will provide adequate spacing to ensure that the additional safety equipment will not become contaminated should an accident occur. The decontamination station should be equipped with extra water for washing, soap, the herbicide only solar shower. Spare clothes may be kept in the truck cab rather than left out in the open.

### **Decontamination of Herbicide Equipment**

Following use, application equipment and empty containers should be triple rinsed with clean water and Simple Green using 10% of the container volume for each rinse. If possible, rinse equipment in the treatment area and apply the wastewater to weeds or store for future use as a dilutant. Left over herbicide mix that will not be used later should be treated as hazardous waste.

If there is not enough time to triple rinse application equipment and gear the day of an ops, place all contaminated gear in the designated TRIPLE RINSE BIN. The triple rinse bin will be located inside the Herbicide Hutch at the baseyard. The Triple rinse Bin will be checked and if necessary triple rinsed weekly.

- Wear proper PPE (rubber gloves, eye pro, long-sleeve shirt, long pants, close-toed boots with socks)
- Prepare two tubs with Simple Green and water solution and one with water for triple rinse.
  - Use two tubs with ammonia and water solution and one with water for triple rinsing Oust XP

- NEVER MIX AMMONIA AND CLOROX BLEACH TOGETHER
- To make the most efficient use of soap mix, it is important to begin triple rinsing from the least contaminated gear to the most contaminated. Triple rinsing should be done in this order:
  - Gloves
  - Ziplocks
  - Dry bags
  - Herbicide containers
- Submerge all gloves in first Simple Green solution tub
- Soak the inside of the gloves and rub gloves together to remove any substances stuck to surface.
- Repeat the last two steps in the second soap mix tub and in the water filled tub.
- Make sure to drain as much moisture out of the gloves as possible.
- Hang gloves on drying rack.
- Fill empty spray bottles halfway with soap solution from the first tub.
- Secure top on spray bottles and agitate.
- Spray the contaminated rinse solution (rinsate) in an undesired patch of weeds covered by the label until empty.
- Repeat last three steps with the soap mix in the second tub and with the water in the third tub.
- Empty bottles of liquid and hang on drying rack.
- Proceed to decontaminate other herbicide equipment with the same triple rinse method.

### **Application Methods**

Herbicides can be applied in a variety of ways. The most appropriate application method is determined by the weed being treated, the herbicide being applied, the skills of the applicator, and the application site. Standard application techniques can sometimes be modified to better suit the needs of natural area management.

Methods of application can be broadly classified as follows:

1. To intact, green leaves (foliar application)
  - a. Spot application (backpack applicator, spray bottle);
  - b. Wick application (wipe-on);
  - c. Boom application;
2. Around the circumference of the trunk on the intact bark (basal bark);
3. To cuts in the trunk/stem (frill; hack and squirt);
4. Injected into the inner bark;
5. To cut stems and stumps (cut stump)

### ***Foliar with Hand Sprayers:***

- Wear proper PPE
- Read ALL herbicide product label(s)
- Assess environmental factors (rain, wind, temperature, etc.)
- Address potential hazards (uneven terrain, roadways, desirable plants, etc.)

- Communicate with other workers in area about your intent to treat.
- Use a counter to keep track of plants treated or assign someone to keep track of controlled plants when there is more than one applicator.
- Minimize contact with treated plants by planning your route.
- Never stand down wind of spray or immediately upwind because of back draft factor.
- Test the nozzle setting by pumping sprayer a few times and applying to target and adjust to get desired spray pattern and coverage.
- Note the amount of herbicide in sprayer and keep track of amount used.
- Agitate herbicide by shaking spray bottle intermittently throughout application.
- Flag area of herbicide treatment if re-entry before approved time is a possibility.
- Any unused herbicide should be clearly labeled with formulation of contents, approximate amount left, mix date, and initials.
- Store unused, clearly labeled herbicide in herbicide locker.

***Foliar/Drench with Backpack Sprayer:***

- Wear proper PPE.
- Read ALL herbicide product label(s).
- Assess environmental factors (rain, wind, temperature, etc.)
- Address potential hazards (uneven terrain, roadways, desirable plants, etc.)
- Communicate with others your intent to treat.
- Minimize contact with treated plants by planning your route.
- Never stand down wind of spray or immediately upwind because of back draft factor.
- Test the nozzle setting by pumping sprayer a few times and applying to target and adjust to get desired spray pattern and coverage.
- Note the amount of herbicide in sprayer and keep track of amount used.
- Agitate herbicide by shaking spray bottle intermittently throughout application.
- Flag area of herbicide treatment if re-entry before approved time is a possibility.
- Any unused herbicide should be clearly labeled with formulation of contents, approximate amount left, mix date, and initials.
- Store unused, clearly labeled herbicide in herbicide locker.

***Foliar/Drench with Motorized Power Sprayer:***

- Wear proper PPE.
- Read ALL herbicide product label(s).
- Assess environmental factors (rain, wind, temperature, etc.)
- Address potential hazards (uneven terrain, roadways, desirable plants, etc.)
- Communicate with others your intent to treat.
- Minimize contact with treated plants by planning your route.
- Never stand down wind of spray or immediately upwind because of back draft factor.
- Note the amount of herbicide in sprayer and keep track of amount used.
- Pull-start motor and set pressure level at “2.5” and adjust accordingly while applying to target to get desired spray pattern and coverage.
- Have spotter(s) checking the hose connections continuously throughout the herbicide application.
- Have a spotter monitor pressure levels and motor condition continuously throughout the herbicide application.
- Flag area of herbicide treatment if re-entry before approved time is a possibility.

- Any unused herbicide should be labeled with formulation of contents, approximate amount left, mix date, and initials.
- Store unused, clearly herbicide in herbicide locker.

### ***Basal bark:***

Basal bark herbicide applications are made using a low-pressure backpack sprayer to thoroughly wet the lower 12–18 inches of the stem using a solid cone or flat fan nozzle. To be effective, it is important to thoroughly wet the entire stem, root collar area, and any exposed roots. Basal bark herbicides use an oil carrier (commercially available basal oil, diesel fuel, no. 1 or no. 2 fuel oil, or kerosene) to penetrate the bark. Trees with old or rough bark may require increased coverage to be effective.

### ***Frill Method:***

Using a handsaw or similar cutting tool, make continuous cuts around the base of the stem. The cuts should angle downward, be less than 2.5 cm (1 in) apart, and extend into the sapwood. Apply the recommended herbicide to the entire cut area to the point of over flow.

### ***Cut-stump:***

This method is often used on woody species that normally re-sprout after being cut. Cut down the tree or shrub, and immediately spray or squirt herbicide on the exposed cambium (living inner bark) of the stump. The herbicide must be applied to the entire inner bark (cambium) within minutes after the trunk is cut.

- Wear proper PPE.
- Read ALL herbicide product label(s).
- Assess environmental factors (rain, wind, temperature, etc.)
- Address potential hazards (uneven terrain, roadways, desirable plants, etc.)
- Communicate with others your intent to treat.
- Cut stump application is usually used with herbicides mixed with oil-based adjuvants, which can resist being washed off by rain to a certain degree.
- Mechanically saw or otherwise expose a cross section of the target low to the ground.
- Clear the exposed area of any saw dust or other debris/organic material.
- Quickly follow up with an even, continuous application of herbicide over the exposed area.
- If treating a large population of plants, it is a good practice to employ this method in pairs or small teams where one person is the applicator and the other(s) use mechanical methods to prepare target for chemical application.
- Be sure to, at the minimum, wet the outer ring of exposed area to administer uptake of herbicide into the phloem of target.
- Keep track of amount of herbicide used and the number of plants treated.
- Flag area of herbicide treatment if re-entry before approved time is a possibility.

- Any unused herbicide shall be clearly labeled with formulation of contents, approximate amount left, mix date, and initials.
- Store unused, clearly labeled herbicide on correct shelf in herbicide locker.

## **SAFETY PROCEDURES**

### **General Safety Considerations**

All crewmembers shall know which pesticides they are using, why they are using them, and all pertinent safety information related to each. An “herbicide cheat sheet” can be found in the herbicide field folders and should be referred to for information. If unsure of the specific mixture, information can be accessed through the OISC database. Fill out the “chemical application report form” which can be accessed by pressing the “database reports” button on the main menu then selecting the “chemical treatments” tab. Next click on the “chemical application and location summary” button and fill out the appropriate information, finally click on the appropriate menu action to initiate the database query.

Weather is a factor. Rain is a significant factor in the risk of the residue from the application being washed off killing non-targets and harming the environment. Wind is another factor. Strong winds increases the risk of spray drift, which is a health and environmental hazard. Also, try to avoid application in high temperatures. Some pesticide formulations are more volatile and have a higher potential risk of vaporizing and causing vapor drift that is a health and environmental hazard. Refer to local weather reports for current and forecasted conditions and do an on-site assessment of weather conditions to inform the decision whether to apply pesticides.

Certain measures can be taken to reduce risk that may be entailed by mechanical, human, and environmental factors. If herbicides need to be applied in an area where there is high potential for rain, an oil emulsifiable ester formulation (lipophilic or oil soluble) may be better to use than an amine salt formulation (hydrophilic or water soluble). Also, avoid the use of persistent, soil mobile herbicides in high rainfall areas to reduce the risk of herbicide run off. Some surfactants (surface active agents) can help herbicide effectiveness by enhancing the uptake of chemical into plant, reducing the rate of application being washed off by rain, minimizing spray drift by reducing the proportion of fine spray particles, as well as allowing suspension of insoluble particles. Herbicide flow rate and spray pattern are factors when considering spray drift. A higher sprayer pressure (higher flow rate) setting causes spray to have a higher proportion of fine droplets which are carried by wind easier and therefore a higher risk of spray drift. Markers such as turf mark may be utilized to mark a treated area for workers to avoid retreating or walking through.

Understand the function of the herbicide active ingredient after exposure to target. For example, if a systemic herbicide is being used the efficacy is dependent on the translocation of active ingredient throughout the target utilizing the phloem structures in the plant. An over dose of

active ingredient may cause these structures to fail prematurely inhibiting the translocation and producing inferior results. The target may exhibit a rapid partial or complete defoliation but will probably soon recover rendering the treatment a failure and consequentially a useless introduction of chemicals into the environment.

### **Spill Response**

Be sure to carry an Herbicide Spill Kit for emergency spills. If a spill occurs, keep unnecessary people away from affected areas until the clean-up process is complete. When small volumes of dilute herbicide are spilled they may be treated by carefully digging up the affected soil and litter, and spreading this material at the legal rate or concentration.

- Whenever mixing herbicides at the base yard or in the field, have an herbicide spill kit.
- Always have label and MSDS of herbicides on hand.
- Wear proper PPE.
- Contain the spill and warn people to avoid contaminated area.
- Treat anyone who has been contaminated.
- Contain the spill by using spill containment “socks” or “snakes” in the spill kit or create a dyke around the area.
- Use the chemical absorbent pads supplied in the spill kit to soak up liquid.
- If no absorbent pads are available, use saw dust, shredded paper, cat litter, or other absorbent material.
- Collect contaminated absorbent material and dyke material and put into a plastic container for disposal.
- If spill has contaminated soil or other similar substrate, collect contaminated material and put into a plastic container for disposal.

### ***Herbicide Spill Kit***

- Emergency phone numbers & map/list of medical facilities
- Labels and SDSs of all herbicides/pesticides on hand
- Personal Protective Equipment: gloves, footwear, apron, goggles, face shield, respirator
- Heavy plastic bags for material storage
- Containment “snakes” (chemsorb tubes or pads to contain & absorb spilled chemicals)
- Absorbent materials (cat litter, vermiculite, paper, etc.)
- Neutralizing agents (bleach and hydrated lime)
- Sweeping compound for dry spills
- Shovel, hand digger, broom, or dustpan
- Heavy duty detergent, chlorine bleach, and water
- Fire extinguisher certified for all types of fires
- Sturdy plastic container that closes tightly and will hold the largest quantity of pesticide on hand
- First aid supplies
- Fresh water (at least 3 gallons; bring extra for wash-up after application)
- Eyewash
- Soap (dish soap or hand soap)
- Towels

- Change of clothes
- Additional items required by labeling

Decontamination/Spill kits are available from many suppliers or can be assembled independently. Rubber buckets or tubs with tight sealing lids are convenient for homemade kits and should include:

1. Three (or more) 1 gallon containers filled with potable water,
2. Eyewash kits or eyewash bottles with buffered isotonic eyewash,
3. Hand or body soap (bring enough for all workers to thoroughly wash their hands when in the field),
4. Paper or other disposable towels,
5. A full tyvek coverall with foot covers,
6. A map and directions to the nearest medical facilities.

### **Splash-back Personnel Contamination Response**

All labels of herbicides/pesticides OISC uses can be found in the herbicide field folders, in herbicide binder in office, or in electronic form on the OISCNAS network drive through the computer. In case of emergency have the EPA Reg No. of the pesticide(s) being used when contacting a doctor. EPA Reg. No. is found in the pesticide label. Make sure that all OISC staff are familiar with safety concerns listed on the label and where to find that information on the label.

### **MAINTENANCE**

In order to ensure that our herbicide application equipment functions correctly and efficiently, the OISC FIELD-CREW MEMBERS shall regularly service ALL components of equipment. This includes Nalgene squirt bottle dispensers, back-pack sprayers, hand sprayers, and power sprayer(s). Regular servicing shall occur no later than (1) day prior to every herbicide operation to make sure components and equipment are in sufficient working order. Application equipment may require additional servicing by FIELD CREW MEMBERS or certified repair professionals depending on the type of equipment and the nature of its working order.

- The FIELD CREW SUPERVISOR, FIELD CREW LEADER(S), and the HERBICIDE SPECIALIST shall be responsible for maintaining all application equipment
- The FIELD CREW SUPERVISOR and FIELD CREW LEADER(S) shall be responsible for delegating maintenance duties to FIELD CREW MEMBERS
- Any FIELD CREW MEMBER may be tasked with maintenance duties at the discretion of the FIELD CREW SUPERVISOR and the FIELD CREW LEADER(S)

- All FIELD CREW MEMBERS shall report any issues or concerns regarding this equipment *directly* to the FIELD CREW LEADER(S) and THE FIELD CREW SUPERVISOR.

In addition to thorough cleanings after each herbicide operation, each piece of equipment requires specific maintenance for specific components. Below is a detailed outline specific to each piece of equipment that OISC uses:

***Nalgene squirt bottle dispensers:***

- Triple rinse the bottle, bottle-top, and red/blue cap
- Reassemble, fill-up, and squirt out diluted Simple Green mixture to ensure all crevices & lines are cleaned and any blockages are removed
- Disassemble and leave each component to dry on drying rack
- Return dried assemblage to correct location in Herbicide shed (keep in a cool, dry & dark place)

***Hand-Sprayers:***

- Triple rinse the bottle, the red-lid, the small black rubber washer around the nozzle, and the black nozzle itself
- Reassemble, fill-up, and squirt out diluted Simple Green mixture to ensure all crevices & lines are cleaned and any blockages are removed
- Disassemble and leave each component to dry on drying rack
- Return dried assemblage to correct location in Herbicide shed (keep in a cool, dry & dark place)

***Back-pack Sprayers:***

- Unscrew and triple rinse the spray-pack lid, the circular cross-hatched tank filter, the large black rubber O-ring, the brass nozzle tip, the small gray rubber washer underneath, the grey nozzle apparatus, the black wand shaft, the white plastic filter inside of the wand handle, and the other grey rubber washer
- Reassemble, fill-up, and squirt out diluted Simple Green mixture to ensure all crevices & lines are cleaned and any blockages are removed
- Disassemble and leave each component to dry on drying rack
- Return dried assemblage to correct location underneath bathrooms (keep in a cool, dry & dark place)

If leakages or other operational issues occur with any piece of application equipment attempt to resolve the issue (in the field or at the base yard) immediately. Sometimes lids may not be screwed on properly or tight enough. Other times the rubber washers or O-rings may be damaged or out of place. Make sure to spray leaking area with silicone spray to create a more secure seal. If issues with application equipment cannot be resolved make sure to flag the equipment and label it accordingly. This will allow OISC to take the piece of equipment out of commission until the equipment can be repaired.

## **STORAGE**

Store herbicides in a well ventilated, cool, dry area where food and drinks are never stored or prepared. The floor should be concrete or lined with plastic or other impermeable material to prevent leaks from reaching the soil. The area should be inaccessible to the public and/or locked except when chemicals are being removed or returned.

All pesticides shall be stored in accordance with the requirements outlined in each specific product label and OSHA guidelines. Usually these labels will call for an area that is protected from the sun and from extreme temperatures and weather elements. OISC pesticides are stored in a locked chemical hutch, inside the blue locker labeled "Herbicides." Each shelf is labeled to indicate the correct location for concentrates, adjuvants, and left-over mixtures. This secure storage facility allows us to comply with all label-specific and OSHA storage requirements.

Although all chemicals do have a shelf life, (expiration date), always refer to the product label to ascertain the length of time an herbicide can still work effectively. Most of the products that we use here at OISC do not specify any specific length of time but the manufacturers usually recommend disposal after 2-3 years. Make sure to contact the distributor, manufacturer, and the State of Hawaii Department of Agriculture if questions about certain products arise.

Herbicide mixtures should be applied as soon as possible, however if they need to be stored, make sure to follow the same OSHA and label guidelines for each product used. As long as these mixtures are stored properly they will only expire, or lose herbicidal capability, if one of or all concentrates used in the mixture have an expiration date.

## **DISPOSAL**

Pesticides and herbicides require special attention in order to be disposed of. All OISC employees shall refer to specific product labels and OSHA requirements in order to properly dispose of pesticides and herbicides. It is both cost effective and more environmentally sound to mix and apply the smallest amount of herbicide in order to complete an operation.

Herbicide and pesticide concentrates cannot be disposed of without taking special precautions as directed by the State of Hawaii Department of Agriculture.

## APPENDIX A: HERBICIDE CHECKLIST

### I. Pre-Herbicide Operations Checklist

At the baseyard – before leaving:

- Make sure to pack all of the following required supplies:
  - Make sure that ALL PPE & equipment is packed in the designated area and accounted for: PPE (pants, shirts, socks, closed toe boots, chem-resistant gloves, eye pro, dust masks, chem-resistant vests nitrile gloves etc.)
  - (3) Gallons of excess potable water
  - (3) Grey Wash Bins
  - Adjuvants
  - Application equipment & tools
  - Change of clothes
  - Clean Rags
  - Concentrates
  - Dye
  - Eye Wash Kit
  - Herbicide Shower
  - Measuring Equipment
  - Simple Green
  - Shovel or hand digger
  - Soap
  - Spill Kit
- Pack spill kits, herbicide shower, disposable gloves and dust masks, eye wash kit, clean rags, and extra Neoprene Chem-Resistant gloves in the “work bin” action packer. This action packer can be transported with non-herbicide cargo as it is not contaminated;
- Pack concentrates, adjuvants, dye, application equipment tools, and measuring equipment into an “Herbicide Only” labelled action packer(s). Do not transport these action packers in the same truck with potable water, food, & all other non-herbicide contaminated cargo;
- Pack application equipment into designated herbicide truck or herbicide action packer depending on the size of the equipment;

On-site:

- Set up decontamination area with herbicide shower, soap, and three (3) gallons of potable water no less than 50 feet from mixing/staging area;
- Set up and transport all necessary mixing materials to a staging area no less than 50 feet from target operations area;
- Field leader designates mixing duties, application duties, and safety observation duties and the personnel for each duty prior to mixing;
- Make sure the application equipment is not leaking and every piece of equipment functions properly;
- Hike in and stage a hydration station near the treatment site if needed;
- Field leader makes sure all PPE is worn, utilized correctly, and fitting properly.

## II. Post-Herbicide Operations Checklist

On-site:

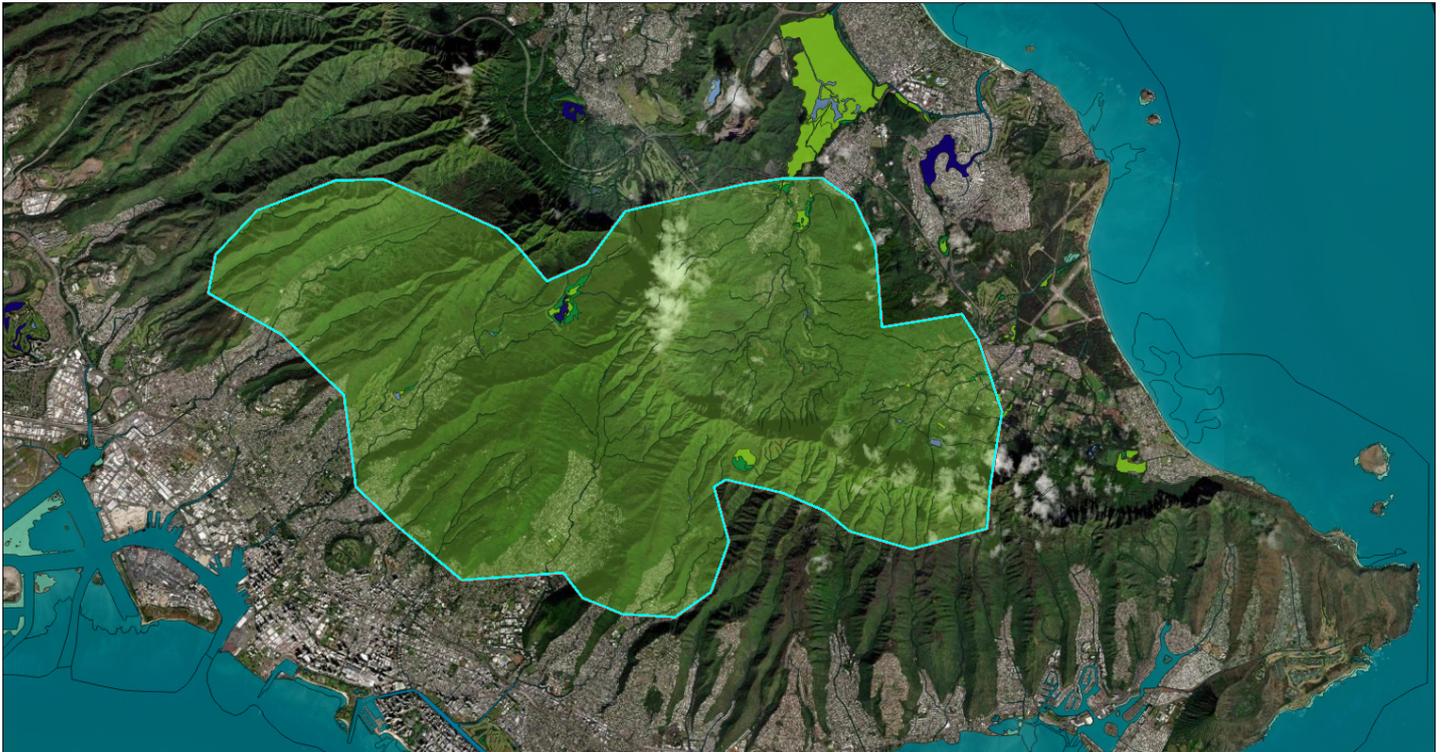
- Rinse all equipment and place into contaminated storage compartment in order to transport back to base yard for decontamination protocols
- All contaminated personnel must thoroughly wash hands
- Discharge any excess water from large tank
- Place all contaminated PPE into contaminated storage compartment for transport back to the base yard
- Secure all herbicide contaminated material into the designated truck and all non-contaminated material back into separate truck:
  - Make sure that ALL PPE & equipment is packed in the designated area and accounted for: PPE (pants, shirts, socks, closed toe boots, chem-resistant gloves, eye pro, dust masks, chem-resistant vests nitrile gloves etc.)
  - (3) Gallons of excess potable water
  - (3) Grey Wash Bins
  - Adjuvants
  - Application equipment & tools
  - Change of clothes
  - Clean Rags
  - Concentrates
  - Dye
  - Eye Wash Kit
  - Herbicide Shower
  - Measuring Equipment
  - Simple Green
  - Shovel or hand digger
  - Soap
  - Spill Kit

At the base yard – end of day:

- Fill up the (3) grey bins with diluted Simple green solution in first bin and water in the next two;
- Triple-rinse all chemical-resistant neoprene gloves first. Triple rinse all measuring and application equipment and make sure to empty rinsate into desired area;
- Place all gloves and application equipment onto drying rack;
- Empty wash bins in desired area as well once all gloves and equipment have been properly decontaminated;
- Store backpack sprayers and grey bins under the bathroom hutch;
- Place hand-sprayers and squirt-bottles back into designated areas inside of the herbicide hutch;
- Unpack and rinse all containers containing concentrates, adjuvants, & dyes;
- Rinse out all herbicide contaminated action packers and leave to dry in the decontamination area;
- Unpack all work-bin, non-contaminated herbicide material and place clean gloves back into Herbicide hutch and all other material back into the Utility hutch;
- Rinse out bed of truck with decontamination hose and then wash entire truck;
- At the end of the day, ensure that all materials are placed into properly designated areas and that the Herbicide and Utility hutches are securely locked.

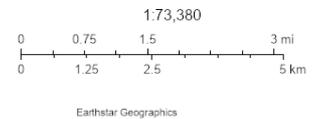
# NEPAssist Report

## Hawaii DLNR: Miconia Control Area



October 23, 2024

- Wetlands
- Freshwater Forested/Shrub Wetland
  - Estuarine and Marine Deepwater
  - Estuarine and Marine Wetland
  - Freshwater Emergent Wetland
  - Freshwater Pond
  - Lake
  - Riverine
  - Project Buffer
  - Hawaii DLNR: Miconia Control Area



Input Coordinates: 21.362689,-157.802078,21.371769,-157.794937,21.373687,-157.786285,21.376501,-157.772827,21.377396,-157.765961,21.377524,-157.758682,21.373559,-157.752777,21.365886,-157.748932,21.358468,-157.748245,21.351689,-157.747696,21.353992,-157.733002,21.349643,-157.729980,21.337108,-157.725586,21.324188,-157.727783,21.316896,-157.728332,21.313345,-157.742374,21.316416,-157.753635,21.319998,-157.758305,21.323068,-157.765995,21.325371,-157.776432,21.324092,-157.778629,21.314625,-157.775883,21.305925,-157.779179,21.301575,-157.785770,21.302086,-157.795383,21.304901,-157.802799,21.309251,-157.806370,21.307972,-157.825046,21.317695,-157.837406,21.324092,-157.844547,21.339954,-157.846744,21.350442,-157.858280,21.357605,-157.871738,21.364255,-157.870365,21.371929,-157.862675,21.377044,-157.848392,21.377300,-157.839603,21.372440,-157.827244,21.368604,-157.818180,21.365790,-157.814884,21.359651,-157.809391,21.362689,-157.802078

Project Area	31.81 sq mi
Within 100 feet of an Ozone 1-hr (1979 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of an Ozone 8-hr (2015 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of a CO Annual (1971 standard) Non-Attainment/Maintenance Area?	no
Within 100 feet of a NO2 Annual (1971 standard) Non-Attainment/Maintenance Area?	no

Within 100 feet of a Federal Land?	no
Within 100 feet of an impaired stream?	yes
Within 100 feet of an impaired waterbody?	no
Within 100 feet of a waterbody?	yes
Within 100 feet of a stream?	yes
Within 100 feet of an NWI wetland?	Available Online
Within 100 feet of a Brownfields site?	no
Within 100 feet of a Superfund site?	no
Within 100 feet of a Toxic Release Inventory (TRI) site?	no
Within 100 feet of a water discharger (NPDES)?	yes
Within 100 feet of a hazardous waste (RCRA) facility?	yes
Within 100 feet of an air emission facility?	yes
Within 100 feet of a school?	yes
Within 100 feet of an airport?	no
Within 100 feet of a hospital?	yes
Within 100 feet of a designated sole source aquifer?	yes
Within 100 feet of a historic property on the National Register of Historic Places?	yes
Within 100 feet of a Chemical Data Reporting (CDR) site?	no
Within 100 feet of a Land Cession Boundary?	no
Within 100 feet of a tribal area (lower 48 states)?	no
Within 100 feet of the service area of a mitigation or conservation bank?	no
Within 100 feet of the service area of an In-Lieu-Fee Program?	no
Within 100 feet of a Public Property Boundary of the Formerly Used Defense Sites?	yes
Within 100 feet of a Munitions Response Site?	yes
Within 100 feet of an Essential Fish Habitat (EFH)?	no
Within 100 feet of a Habitat Area of Particular Concern (HAPC)?	no
Within 100 feet of an EFH Area Protected from Fishing (EFHA)?	no
Within 100 feet of a Bureau of Land Management Area of Critical Environmental Concern?	no
Within 100 feet of an ESA-designated Critical Habitat Area per U.S. Fish & Wildlife Service?	yes
Within 100 feet of an ESA-designated Critical Habitat river, stream or water feature per U.S. Fish & Wildlife Service?	no

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# NEPAssist Report

## Hawaii DLNR: Miconia Control Area

Input Coordinates: 21.362689,-157.802078,21.371769,-157.794937,21.373687,-157.786285,21.376501,-157.772827,21.377396,-157.765961,21.377524,-157.758682,21.373559,-157.752777,21.365886,-157.748932,21.358468,-157.748245,21.351689,-157.747696,21.353992,-157.733002,21.349643,-157.729980,21.337108,-157.725586,21.324188,-157.727783,21.316896,-157.728332,21.313345,-157.742374,21.316416,-157.753635,21.319998,-157.758305,21.323068,-157.765995,21.325371,-157.776432,21.324092,-157.778629,21.314625,-157.775883,21.305925,-157.779179,21.301575,-157.785770,21.302086,-157.795383,21.304901,-157.802799,21.309251,-157.806370,21.307972,-157.825046,21.317695,-157.837406,21.324092,-157.844547,21.339954,-157.846744,21.350442,-157.858280,21.357605,-157.871738,21.364255,-157.870365,21.371929,-157.862675,21.377044,-157.848392,21.377300,-157.839603,21.372440,-157.827244,21.368604,-157.818180,21.365790,-157.814884,21.359651,-157.809391,21.362689,-157.802078

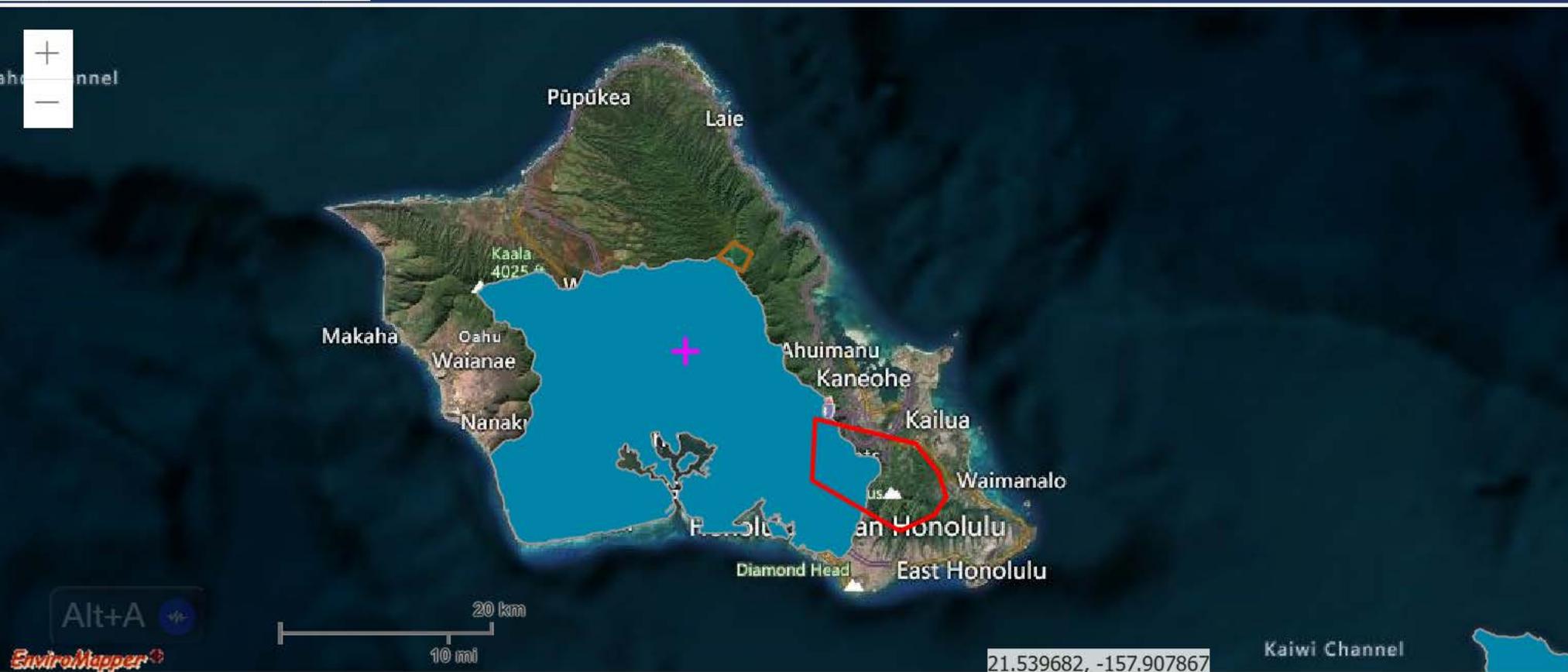
Project Area	31.81 sq mi
Within an Ozone 1-hr (1979 standard) Non-Attainment/Maintenance Area?	no
Within an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within an Ozone 8-hr (2015 standard) Non-Attainment/Maintenance Area?	no
Within a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within a CO Annual (1971 standard) Non-Attainment/Maintenance Area?	no
Within a NO2 Annual (1971 standard) Non-Attainment/Maintenance Area?	no
Within a Federal Land?	no
Within an impaired stream?	yes
Within an impaired waterbody?	no
Within a waterbody?	yes
Within a stream?	yes
Within an NWI wetland?	Available Online
Within a Brownfields site?	no
Within a Superfund site?	no
Within a Toxic Release Inventory (TRI) site?	no
Within a water discharger (NPDES)?	yes
Within a hazardous waste (RCRA) facility?	yes
Within an air emission facility?	yes
Within a school?	yes
Within an airport?	no
Within a hospital?	yes
Within a designated sole source aquifer?	yes
Within a historic property on the National Register of Historic Places?	yes
Within a Chemical Data Reporting (CDR) site?	no
Within a Land Cession Boundary?	no
Within a tribal area (lower 48 states)?	no
Within the service area of a mitigation or conservation bank?	no
Within the service area of an In-Lieu-Fee Program?	no
Within a Public Property Boundary of the Formerly Used Defense Sites?	yes
Within a Munitions Response Site?	yes
Within an Essential Fish Habitat (EFH)?	no
Within a Habitat Area of Particular Concern (HAPC)?	no
Within an EFH Area Protected from Fishing (EFHA)?	no
Within a Bureau of Land Management Area of Critical Environmental Concern?	no
Within an ESA-designated Critical Habitat Area per U.S. Fish & Wildlife Service?	yes

Within an ESA-designated Critical Habitat river, stream or water feature per U.S. Fish & Wildlife Service?	no
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Find address or place

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Select Map Contents

- EPA Facilities
- Water Monitoring Stations
- Boundaries
- Non-attainment Areas
- EJScreen Indexes (2024 National)
- Water
  - Impaired Water Points
  - Impaired Streams
  - Impaired Waterbodies
  - Catchments (ATTAINS)
  - Streams
  - Water Bodies
  - Sole Source Aquifers
  - Watersheds (HUC12)
  - Watersheds (HUC8)
  - Wild and Scenic Rivers
- Transportation
- Places
- Critical Habitat
- NWI Wetlands
- FEMA Flood
- Land Cover



**STATE COASTAL ZONE BOUNDARIES**

February 9, 2012

<b>STATE</b>	<b>DEFINITION OF STATE'S COASTAL ZONE</b> (The seaward boundary of the Great Lake States is the U.S.-Canada International boundary, and for all other States is the 3 nautical mile territorial sea, except for those States marked with an asterisk (*))
<b>ALABAMA</b>	Alabama's coastal zone extends inland to the continuous 10-foot elevation contour in Baldwin and Mobile Counties.
<b>ALASKA</b>	As of July 1, 2011, Alaska no longer has a federally approved coastal management program or defined coastal zone and federal consistency does not apply to Alaska. Contact NOAA's Office of Ocean and Coastal Resource Management for additional information.
<b>AMERICAN SAMOA</b>	American Samoa's coastal zone is the entire Territory.
<b>CALIFORNIA &amp; BCDC</b>	California's coastal zone generally extends 1,000 yards inland from the mean high tide line. In significant coastal estuarine habitat and recreational areas it extends inland to the first major ridgeline or 5 miles from the mean high tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards.  The coastal zone for the San Francisco Bay Conservation and Development Commission (BCDC) includes the open water, marshes and mudflats of greater San Francisco Bay, and areas 100 feet inland from the line of highest tidal action. The boundary also includes: the Suisun marsh and buffer zone; managed wetlands diked off from the Bay; and open waters diked off from the Bay and used in salt production.
<b>CONNECTICUT</b>	Connecticut's coastal zone has two tiers incorporated within the 36 coastal townships. The first tier is bounded by a continuous line delineated by a 1,000 foot linear setback measured from the mean high water mark in coastal waters; or a 1,000 foot linear setback measured from the inland boundary of state regulated tidal wetlands; or the continuous interior contour elevation of the one hundred year frequency coastal flood zone; whichever is farthest inland. The second tier is the area between the inland boundary of the 36 coastal communities and the inland boundary of the first tier.
<b>DELAWARE</b>	Delaware's coastal zone includes the whole state.
<b>FLORIDA *</b>	Florida's coastal zone is the entire State, but has two tiers. Local governments eligible to receive coastal management funds are limited to those Gulf and Atlantic coastal cities and counties which include or are contiguous to state water bodies where marine species of vegetation constitute the dominant plant community. Florida's seaward boundary in the Gulf of Mexico is 3 marine leagues (9 nautical miles) and is 3 nautical miles in the Atlantic.
<b>GEORGIA</b>	Georgia's coastal zone includes the 11 counties that border tidally-influenced waters or have economies that are closely tied to coastal resources.
<b>GUAM</b>	Guam's coastal zone is the entire Territory.
<b>HAWAII</b>	Hawaii's coastal zone is the entire state.

<b>ILLINOIS</b>	Illinois' coastal zone has two components. The Lakeshore Boundary is based on the Lake Michigan watershed and is generally parallel to the Lake Michigan shoreline. The Inland Waterway Boundary includes Inland Waterway Corridors, which are select segments of the Chicago River system (North Branch, South Branch, Main Branch and North Shore Channel) and select segments of the Little Calumet and Grand Calumet Rivers. The Inland Waterway Corridors consist of both the waterway and designated land area to either side of the waterway.
<b>INDIANA</b>	Indiana's coastal zone is based on watershed boundaries within coastal townships and the counties of Lake, Porter and LaPorte. To create an inland boundary that is identifiable in practical landmarks, the coastal zone boundary is described based on the U.S. Geological Survey Quadrangle maps and major roads for each county. The coastal zone boundary is located in the northern portions of Lake, Porter, and LaPorte Counties. At its widest extent, the boundary extends away from the shoreline 17 miles to the Crown Point area and at its narrowest point, less than 2 miles, just north of Hudson Lake in LaPorte County. See NOAA, <i>Indiana Lake Michigan Coastal Program and Final Environmental Impact Statement</i> , Appendix C (April 2002), to determine the precise coastal zone boundary in a particular area of the State.
<b>LOUISIANA</b>	Louisiana's coastal zone varies from 16 to 32 miles inland from the Gulf coast and generally follows the Intracoastal Waterway running from the Texas-Louisiana state line then follows highways through Vermilion, Iberia, and St. Mary parishes, then dipping southward following the natural ridges below Houma, then turning northward to take in Lake Pontchartrain and ending at the Mississippi-Louisiana border.
<b>MAINE</b>	Maine's coastal zone includes the inland line of coastal towns on tidewaters and all islands.
<b>MARYLAND</b>	Maryland's coastal zone extends to the inland boundary of the 16 counties bordering the Atlantic Ocean, the Chesapeake Bay, and the Potomac River (as far as the municipal limits of Washington, D.C), and includes Baltimore City and all local jurisdictions within the counties.
<b>MASSACHUSETTS</b>	Massachusetts' coastal zone extends 100 feet inland of specified major roads, RR tracks, or other visible right of ways which are located within a half mile of coastal waters or salt marshes. The coastal zone includes all islands, transitional and intertidal areas, and coastal wetlands and beaches. In instances where the road boundary excludes significant resource areas, the boundary line may depart from the road to encompass.
<b>MICHIGAN</b>	Michigan's coastal zone, generally, extends a minimum of 1,000 feet from the ordinary high water mark. The boundary extends further inland in some locations to encompass coastal lakes, rivermouths, and bays; floodplains; wetlands; dune areas; urban areas; and public park, recreation, and natural areas.
<b>MINNESOTA</b>	Minnesota's coastal zone is divided into three areas. The first includes the area of the St. Louis River in Carlton County, south of Duluth. The second is the city of Duluth and surrounding areas of urban growth and expansion to the north and west. The third is the region between the Duluth city limits north to the Canadian border, also known as the "North Shore," which includes portions of St. Louis, Lake, and Cook Counties. See NOAA, <i>Minnesota's Lake Superior Coastal Program Final Environmental Impact Statement</i> , Chapter One, (May 1999), to determine the precise coastal zone boundary in a particular area of the State.

<b>MISSISSIPPI</b>	Mississippi's coastal zone includes the 3 counties adjacent to the coast. The coastal zone includes these counties, as well as all adjacent coastal waters. Included in this definition are the barrier islands of the coast.
<b>NEW HAMPSHIRE</b>	New Hampshire's coastal zone is the 17 coastal municipalities.
<b>NEW JERSEY</b>	New Jersey's coastal zone recognizes four distinct regions of the State and treats them separately. From the New York border to the Raritan Bay, the boundary extends landward from mean high water to the first road or property line. From the Raritan Bay south along the Atlantic shoreline and up to the Delaware Memorial Bridge, the boundary extends from half a mile to 24 miles inland (1,376 square miles of land area). From the Delaware Memorial Bridge northward up the Delaware River to Trenton, the boundary extends landward to the first road inclusive of all wetlands. The fourth boundary serves a 31-mile square area in the northeast corner of the state bordering the Hudson river (New Jersey Meadowlands Commission).
<b>NEW YORK</b>	New York's coastal zone varies from region to region while incorporating the following conditions: The inland boundary is approximately 1,000 feet from the shoreline of the mainland. In urbanized and developed coastal locations the landward boundary is approximately 500 feet from the mainland's shoreline, or less than 500 feet where a roadway or railroad line runs parallel to the shoreline at a distance of under 500 feet and defines the boundary. In locations where major state-owned lands and facilities or electric power generating facilities abut the shoreline, the boundary extends inland to include them. In some areas, such as Long Island Sound and the Hudson River Valley, the boundary may extend inland up to 10,000 feet to encompass significant coastal resources, such as areas of exceptional scenic value, agricultural or recreational lands, and major tributaries and headlands.
<b>NORTH CAROLINA</b>	North Carolina's coastal zone includes the 20 counties that in whole or in part are adjacent to, adjoining, intersected by or bounded by the Atlantic Ocean or any coastal sound(s). Within this boundary, there are two tiers. The first tier is comprised of Areas of Environmental Concern (AEC) and is subject to more thorough regulatory controls. AECs include: coastal wetlands, estuarine waters, public trust areas, estuarine shorelines, ocean beaches, frontal dunes, ocean erosion areas, inlet lands, small surface water supply watersheds, public water supply well-fields, and fragile natural resource areas. The second tier includes land uses which have potential to affect coastal waters even though they are not located in AECs.
<b>NORTHERN MARIANA ISLANDS</b>	Northern Mariana Islands' coastal zone is the entire Commonwealth. (Note: a recent federal court decision ruled that the Commonwealth does not own the adjacent territorial sea. A consent decree allows the CNMI to manage the area.)
<b>OHIO</b>	Ohio's coastal zone includes portions of 9 counties bordering Lake Erie and its tributaries and varies depending on biophysical characteristics of various coastal regions— in the western part of the coast the boundary extends inland up to 15 miles along certain low lying wetland and floodplain areas; in most of the eastern part of the State, areas with high bluffs, the boundary extends inland for only about an eighth of a mile, with the exception of the Mentor Marsh area.
<b>OREGON</b>	Oregon's coastal zone extends inland to the crest of the coastal range, except for the following: along the Umpqua River, where it extends upstream to Scottsburg; along the Rogue River, where it extends upstream to Agness; and except in the Columbia River Basin, where it extends upstream to the downstream end of Puget Island.

<b>PENNSYLVANIA</b>	Pennsylvania's coastal zone along Lake Erie varies from 900 feet in urban areas to over 3 miles in more rural areas, and encompasses the floodplains of Lake Erie and tributary streams, bluff hazards recession areas, and coastal wetlands. The coastal zone along the Delaware River Estuary extends inland to 660 feet in urbanized areas, to 3.5 miles in rural areas, and includes floodplains of the Delaware and Schuylkill Rivers and their tributaries to the upper limit of tidal influence, and tidal and freshwater wetlands.
<b>PUERTO RICO *</b>	Puerto Rico's coastal zone, generally, extends 1,000 meters inland; however, it extends further inland in certain areas to include important coastal resources. Puerto Rico's seaward boundary is 3 marine leagues (9 nautical miles).
<b>RHODE ISLAND</b>	Rhode Island's coastal zone includes the whole state. However, the inland extent of the regulatory authority of the State's CZMA agency is 200 feet inland from any coastal feature, to watersheds, and to certain activities that occur anywhere within the State that include: power-generating plants; petroleum storage facilities; chemical or petroleum processing; minerals extraction; sewage treatment and disposal plants; solid waste disposal facilities; and, desalination plants.
<b>SOUTH CAROLINA</b>	South Carolina's coastal zone includes all lands and waters in the counties which contain any one or more of the critical areas (coastal waters, tidelands, beaches, and primary oceanfront sand dunes).
<b>TEXAS *</b>	Texas' coastal zone is generally the area seaward of the Texas coastal facility designation line which roughly follows roads that are parallel to coastal waters and wetlands generally within one mile of tidal rivers. The boundary encompasses all or portions of 18 coastal counties. Texas' seaward boundary is 3 marine leagues (9 nautical miles).
<b>VIRGINIA</b>	Virginia's coastal zone includes the 29 counties, 17 cities, and 42 incorporated towns of <i>Tidewater Virginia</i> , including the Atlantic Coast watershed and portions of the Chesapeake Bay and Albemarle-Pamlico Sound watersheds.
<b>VIRGIN ISLANDS</b>	Virgin Islands' coastal zone includes the entire territory.
<b>WASHINGTON</b>	Washington's coastal zone is the 15 coastal counties that front saltwater.
<b>WISCONSIN</b>	Wisconsin's coastal zone is the 15 counties that front Lake Superior, Lake Michigan, or Green Bay.

**ENCLOSURE 1**

**USFWS Official Species List 2025**

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## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Pacific Islands Fish And Wildlife Office  
300 Ala Moana Boulevard, Box 50088  
Honolulu, HI 96850-5000  
Phone: (808) 792-9400 Fax: (808) 792-9580

In Reply Refer To:

10/21/2025 01:09:15 UTC

Project Code: 2025-0004681

Project Name: Pearl Harbor Aquifer Recovery Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened and endangered species, as well as designated critical habitat that may occur within the boundary of your proposed project and that may be affected by project related actions. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Please contact the Service's Pacific Islands Fish and Wildlife Office (PIFWO) at 808-792-9400 if you have any questions regarding your IPaC species list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may adversely affect threatened and endangered species and/or designated critical habitat.

Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a Biological

Evaluation, similar to a Biological Assessment, be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment or Biological Evaluation are described at 50 CFR 402.12.

Due to the significant number of listed species found on each island within PIFWO's regulatory jurisdiction, and the difficulty in accurately mapping ranges for species that we have limited information about, your species list may include more species than if you obtained the list directly from a Service biologist. We recommend you use the species links in IPaC to view the life history, habitat descriptions, and recommended avoidance and minimization measures to assist with your initial determination of whether the species or its habitat may occur within your project area. If appropriate habitat is present for a listed species, we recommend surveys be conducted to determine whether the species is also present. If no surveys are conducted, we err on the side of the species, by regulation, and assume the habitat is occupied. Updated avoidance and minimization measures for plants and animals, best management practices for work in or near aquatic environments, and invasive species biosecurity protocols can be found on the PIFWO website at: <https://www.fws.gov/office/pacific-islands-fish-and-wildlife/library>.

If a Federal agency determines, based on the Biological Assessment or Biological Evaluation, that a listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <http://www.fws.gov/endangered/esa-library/index>.

Non-federal entities can also use the IPaC generated species list to develop Habitat Conservation Plans (HCP) in accordance with section 10(a)(1)(B) of the Act. We recommend HCP applicants coordinate with the Service early during the HCP development process. For additional information on HCPs, the Habitat Conservation Planning handbook can be found at <https://www.fws.gov/sites/default/files/documents/habitat-conservation-planning-handbook-entire.pdf>.

Please be aware that wind energy projects should follow the Service's wind energy guidelines (<http://www.fws.gov/windenergy>) for minimizing impacts to migratory birds. Listed birds and the Hawaiian hoary bat may also be affected by wind energy development and we recommend development of a Habitat Conservation Plan for those species, as described above. Guidance for minimizing impacts to migratory birds for projects including communications towers can be found at:

- <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers>
- <http://www.towerkill.com>
- <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow>

Fish and Wildlife Coordination Act: Any modification to freshwater or marine waters of the U.S. including impounding, diverting, deepening, controlling, or modification for any other purpose requires a Fish and Wildlife Coordination Act (FWCA) consultation with the U.S Fish and Wildlife Service, State/ Territorial wildlife agency (State of Hawaii Division of Aquatic

Resources, American Samoa's Department of Marine and Wildlife Resources, Guam's Division of Aquatic and Wildlife Resources, or the Northern Mariana Island's Division of Fish and Wildlife) and the National Marine Fisheries Service. The Pacific Islands Fish and Wildlife Office in Honolulu should be notified of a FWCA consultation request with a project description and any relevant biological information in order to expedite the appropriate level of coordination and consultation needs.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation actions that benefit threatened and endangered species into their project planning to further the purposes of the Act in accordance with section 7(a)(1). Please include the Consultation Tracking Number associated with your IPaC species list in any request for consultation or correspondence about your project that you submit to our office. Please feel free to contact us at PIFWO\_admin@fws.gov or 808-792-9400 if you need more current information or assistance regarding the potential impacts to federally listed species and federally designated critical habitat.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Pacific Islands Fish And Wildlife Office**  
300 Ala Moana Boulevard, Box 50088  
Honolulu, HI 96850-5000  
(808) 792-9400

## PROJECT SUMMARY

Project Code: 2025-0004681

Project Name: Pearl Harbor Aquifer Recovery Project

Project Type: Invasive Plant Control

Project Description: This project will protect native rainforests and mitigate future flood risks in the Pearl Harbor watershed by increasing regional eradication efforts of the region's most threatening invasive species - miconia (*Miconia calvenscens*), and tibouchina (*Tibouchina herbacea*). Both plants are incipient on O'ahu and their populations have not progressed to the uncontrollable levels found in other islands. This project will work within and outside the Pearl Harbor aquifer to contain and eliminate populations of these damaging species. Controlling these populations across the island will not only protect the Pearl Harbor aquifer from eventually being invaded by these species, but also benefit the entire island of O'ahu. Miconia and tibouchina control will focus on known seedbank areas utilizing a buffering system based on seed biology and dispersal range. Surveys will be done by ground and air using transects. All fruits and flowers of mature trees will be removed and incinerated and plants will be controlled by hand.

The plants will be controlled wherever found in southern, central, and eastern Oahu. No construction is included. The incipient plants that have been found are almost all immature and the cumulative footprint of the plants that will be removed will represent far fewer than an acre.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@21.3405129,-157.7838437301616,14z>



Counties: Honolulu County, Hawaii

## ENDANGERED SPECIES ACT SPECIES

There is a total of 120 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

**MAMMALS**

NAME	STATUS
<b>Hawaiian Hoary Bat <i>Lasiurus cinereus semotus</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/770">https://ecos.fws.gov/ecp/species/770</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6477.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6477.pdf</a>	Endangered

**BIRDS**

NAME	STATUS
<b>Band-rumped Storm-petrel <i>Hydrobates castro</i></b> Population: USA (HI) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1226">https://ecos.fws.gov/ecp/species/1226</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6939.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6939.pdf</a>	Endangered
<b>Hawaiian Common Gallinule <i>Gallinula galeata sandvicensis</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6612">https://ecos.fws.gov/ecp/species/6612</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6934.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6934.pdf</a>	Endangered
<b>Hawaiian Coot (alae Ke`oke`o) <i>Fulica alai</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7233">https://ecos.fws.gov/ecp/species/7233</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6934.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6934.pdf</a>	Endangered
<b>Hawaiian Duck <i>Anas wyvilliana</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7712">https://ecos.fws.gov/ecp/species/7712</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6934.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6934.pdf</a>	Endangered
<b>Hawaiian Petrel <i>Pterodroma sandwichensis</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6746">https://ecos.fws.gov/ecp/species/6746</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6939.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6939.pdf</a>	Endangered
<b>Hawaiian Stilt <i>Himantopus mexicanus knudseni</i></b> No critical habitat has been designated for this species.	Endangered

NAME	STATUS
Species profile: <a href="https://ecos.fws.gov/ecp/species/2082">https://ecos.fws.gov/ecp/species/2082</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6934.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6934.pdf</a>	
<b>Newell's Shearwater <i>Puffinus newelli</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2048">https://ecos.fws.gov/ecp/species/2048</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6939.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6939.pdf</a>	<b>Threatened</b>
<b>Oahu Elepaio <i>Chasiempis ibidis</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6325">https://ecos.fws.gov/ecp/species/6325</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6938.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6938.pdf</a>	<b>Endangered</b>

## REPTILES

NAME	STATUS
<b>Hawksbill Sea Turtle <i>Eretmochelys imbricata</i></b> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3656">https://ecos.fws.gov/ecp/species/3656</a>	<b>Endangered</b>

## SNAILS

NAME	STATUS
<b>Oahu Tree Snail <i>Achatinella abbreviata</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8594">https://ecos.fws.gov/ecp/species/8594</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	<b>Endangered</b>
<b>Oahu Tree Snail <i>Achatinella bellula</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8714">https://ecos.fws.gov/ecp/species/8714</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	<b>Endangered</b>
<b>Oahu Tree Snail <i>Achatinella cestus</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8685">https://ecos.fws.gov/ecp/species/8685</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	<b>Endangered</b>

NAME	STATUS
<p><b>Oahu Tree Snail <i>Achatinella curta</i></b>            No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8592">https://ecos.fws.gov/ecp/species/8592</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella decipiens</i></b>            No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8884">https://ecos.fws.gov/ecp/species/8884</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella decora</i></b>            No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8795">https://ecos.fws.gov/ecp/species/8795</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella dimorpha</i></b>            No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8754">https://ecos.fws.gov/ecp/species/8754</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella elegans</i></b>            No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8842">https://ecos.fws.gov/ecp/species/8842</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella fulgens</i></b>            No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8883">https://ecos.fws.gov/ecp/species/8883</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella fuscobasis</i></b>            No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8840">https://ecos.fws.gov/ecp/species/8840</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella juncea</i></b>            No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8755">https://ecos.fws.gov/ecp/species/8755</a></p>	Endangered

NAME	STATUS
General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	
<b>Oahu Tree Snail <i>Achatinella lila</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8683">https://ecos.fws.gov/ecp/species/8683</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	Endangered
<b>Oahu Tree Snail <i>Achatinella livida</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8632">https://ecos.fws.gov/ecp/species/8632</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	Endangered
<b>Oahu Tree Snail <i>Achatinella lorata</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8796">https://ecos.fws.gov/ecp/species/8796</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	Endangered
<b>Oahu Tree Snail <i>Achatinella phaeozona</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8595">https://ecos.fws.gov/ecp/species/8595</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	Endangered
<b>Oahu Tree Snail <i>Achatinella rosea</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8887">https://ecos.fws.gov/ecp/species/8887</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	Endangered
<b>Oahu Tree Snail <i>Achatinella sowerbyana</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8839">https://ecos.fws.gov/ecp/species/8839</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	Endangered
<b>Oahu Tree Snail <i>Achatinella swiftii</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8684">https://ecos.fws.gov/ecp/species/8684</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a>	Endangered

NAME	STATUS
<p><b>Oahu Tree Snail <i>Achatinella taeniolata</i></b></p> <p>No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8596">https://ecos.fws.gov/ecp/species/8596</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella viridans</i></b></p> <p>No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8891">https://ecos.fws.gov/ecp/species/8891</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella vittata</i></b></p> <p>No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8638">https://ecos.fws.gov/ecp/species/8638</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<p><b>Oahu Tree Snail <i>Achatinella vulpina</i></b></p> <p>No critical habitat has been designated for this species.            Species profile: <a href="https://ecos.fws.gov/ecp/species/8686">https://ecos.fws.gov/ecp/species/8686</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6933.pdf</a></p>	Endangered
<b>INSECTS</b>	
NAME	STATUS
<p><b>Blackline Hawaiian Damselfly <i>Megalagrion nigrohamatum nigrolineatum</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat.            Species profile: <a href="https://ecos.fws.gov/ecp/species/6650">https://ecos.fws.gov/ecp/species/6650</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6935.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6935.pdf</a></p>	Endangered
<p><b>Crimson Hawaiian Damselfly <i>Megalagrion leptodemas</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat.            Species profile: <a href="https://ecos.fws.gov/ecp/species/5897">https://ecos.fws.gov/ecp/species/5897</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6935.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6935.pdf</a></p>	Endangered
<p><b>Hawaiian Picture-wing Fly <i>Drosophila obatai</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat.            Species profile: <a href="https://ecos.fws.gov/ecp/species/673">https://ecos.fws.gov/ecp/species/673</a>            General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6937.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/6937.pdf</a></p>	Endangered

NAME	STATUS
<b>Hawaiian Picture-wing Fly <i>Drosophila substenoptera</i></b> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2243">https://ecos.fws.gov/ecp/species/2243</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6937.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6937.pdf</a>	Endangered
<b>Oceanic Hawaiian Damselfly <i>Megalagrion oceanicum</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/663">https://ecos.fws.gov/ecp/species/663</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6935.pdf">https://ipac.ecosphere.fws.gov/project/TYM756E13RCFPJJ4OHG5VSV4R4/documents/generated/6935.pdf</a>	Endangered
<b>FLOWERING PLANTS</b>	
NAME	STATUS
<b>`aiakeakua, Popolo <i>Solanum sandwicense</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7342">https://ecos.fws.gov/ecp/species/7342</a>	Endangered
<b>`aiea <i>Nothoestrum latifolium</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1061">https://ecos.fws.gov/ecp/species/1061</a>	Endangered
<b>`akoko <i>Euphorbia celastroides</i> var. <i>kaenana</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3842">https://ecos.fws.gov/ecp/species/3842</a>	Endangered
<b>`akoko <i>Euphorbia deppeana</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6446">https://ecos.fws.gov/ecp/species/6446</a>	Endangered
<b>`akoko <i>Euphorbia kuwaleana</i></b> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6308">https://ecos.fws.gov/ecp/species/6308</a>	Endangered
<b>`akoko <i>Euphorbia rockii</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6024">https://ecos.fws.gov/ecp/species/6024</a>	Endangered
<b>`ena`ena <i>Pseudognaphalium sandwicense</i> var. <i>molokaiense</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5993">https://ecos.fws.gov/ecp/species/5993</a>	Endangered
<b>`ohe`ohe <i>Polyscias gymnocarpa</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4551">https://ecos.fws.gov/ecp/species/4551</a>	Endangered
<b>`ohe <i>Joinvillea ascendens ascendens</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2412">https://ecos.fws.gov/ecp/species/2412</a>	Endangered

NAME	STATUS
<i>A`e Zanthoxylum oahuense</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7998">https://ecos.fws.gov/ecp/species/7998</a>	Endangered
<i>Alani Melicope hiiakae</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6577">https://ecos.fws.gov/ecp/species/6577</a>	Endangered
<i>Alani Melicope lydgatei</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7611">https://ecos.fws.gov/ecp/species/7611</a>	Endangered
<i>Alani Melicope saint-johnii</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6153">https://ecos.fws.gov/ecp/species/6153</a>	Endangered
<i>Aupaka Isodendron laurifolium</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3825">https://ecos.fws.gov/ecp/species/3825</a>	Endangered
<i>Bonamia menziesii</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2503">https://ecos.fws.gov/ecp/species/2503</a>	Endangered
Carter's Panicgrass <i>Panicum fauriei</i> var. <i>carteri</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5578">https://ecos.fws.gov/ecp/species/5578</a>	Endangered
<i>Diamond Head Schiedea Schiedea adamantis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/3608">https://ecos.fws.gov/ecp/species/3608</a>	Endangered
<i>Ha`iwale Cyrtandra crenata</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5570">https://ecos.fws.gov/ecp/species/5570</a>	Endangered
<i>Ha`iwale Cyrtandra dentata</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7580">https://ecos.fws.gov/ecp/species/7580</a>	Endangered
<i>Ha`iwale Cyrtandra kaulantha</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4812">https://ecos.fws.gov/ecp/species/4812</a>	Endangered
<i>Ha`iwale Cyrtandra polyantha</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/985">https://ecos.fws.gov/ecp/species/985</a>	Endangered
<i>Ha`iwale Cyrtandra sessilis</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3591">https://ecos.fws.gov/ecp/species/3591</a>	Endangered
<i>Ha`iwale Cyrtandra subumbellata</i>	Endangered

NAME	STATUS
There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3463">https://ecos.fws.gov/ecp/species/3463</a>	
<i>Ha`iwale Cyrtandra viridiflora</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8154">https://ecos.fws.gov/ecp/species/8154</a>	Endangered
<i>Haha Cyanea acuminata</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6312">https://ecos.fws.gov/ecp/species/6312</a>	Endangered
<i>Haha Cyanea calycina</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2031">https://ecos.fws.gov/ecp/species/2031</a>	Endangered
<i>Haha Cyanea crispa</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1326">https://ecos.fws.gov/ecp/species/1326</a>	Endangered
<i>Haha Cyanea grimesiana ssp. grimesiana</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/851">https://ecos.fws.gov/ecp/species/851</a>	Endangered
<i>Haha Cyanea humboldtiana</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2005">https://ecos.fws.gov/ecp/species/2005</a>	Endangered
<i>Haha Cyanea koolauensis</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7083">https://ecos.fws.gov/ecp/species/7083</a>	Endangered
<i>Haha Cyanea lanceolata</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4543">https://ecos.fws.gov/ecp/species/4543</a>	Endangered
<i>Haha Cyanea longiflora</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7513">https://ecos.fws.gov/ecp/species/7513</a>	Endangered
<i>Haha Cyanea purpurellifolia</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7219">https://ecos.fws.gov/ecp/species/7219</a>	Endangered
<i>Haha Cyanea st.-johnii</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4273">https://ecos.fws.gov/ecp/species/4273</a>	Endangered
<i>Haha Cyanea superba</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4451">https://ecos.fws.gov/ecp/species/4451</a>	Endangered
<i>Haha Cyanea truncata</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat.	Endangered

NAME	STATUS
Species profile: <a href="https://ecos.fws.gov/ecp/species/876">https://ecos.fws.gov/ecp/species/876</a>	
<b>Haiwale <i>Cyrtandra gracilis</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3346">https://ecos.fws.gov/ecp/species/3346</a>	Endangered
<b>Haiwale <i>Cyrtandra waiolani</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4440">https://ecos.fws.gov/ecp/species/4440</a>	Endangered
<b>Hala Pepe <i>Dracaena forbesii</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5965">https://ecos.fws.gov/ecp/species/5965</a>	Endangered
<b>Hesperomannia arborescens</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6004">https://ecos.fws.gov/ecp/species/6004</a>	Endangered
<b>Ihi <i>Portulaca villosa</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4886">https://ecos.fws.gov/ecp/species/4886</a>	Endangered
<b>Kamakahala <i>Labordia cyrtandrae</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1278">https://ecos.fws.gov/ecp/species/1278</a>	Endangered
<b>Kamanomano <i>Cenchrus agrimonioides</i></b> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2928">https://ecos.fws.gov/ecp/species/2928</a>	Endangered
<b>Kamapua`a <i>Kadua fluviatilis</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1581">https://ecos.fws.gov/ecp/species/1581</a>	Endangered
<b>Kaulu <i>Pteralyxia macrocarpa</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2400">https://ecos.fws.gov/ecp/species/2400</a>	Endangered
<b>Kolea <i>Myrsine fosbergii</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7358">https://ecos.fws.gov/ecp/species/7358</a>	Endangered
<b>Kolea <i>Myrsine juddii</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7073">https://ecos.fws.gov/ecp/species/7073</a>	Endangered
<b>Kopiko <i>Psychotria hexandra</i> var. <i>oahuensis</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3374">https://ecos.fws.gov/ecp/species/3374</a>	Endangered
<b>Kuahiwi Laukahi <i>Plantago princeps</i></b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4926">https://ecos.fws.gov/ecp/species/4926</a>	Endangered

NAME	STATUS
<p><b>Lobelia koolauensis</b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2846">https://ecos.fws.gov/ecp/species/2846</a></p>	Endangered
<p><b>Lobelia monostachya</b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4334">https://ecos.fws.gov/ecp/species/4334</a></p>	Endangered
<p><b>Lobelia oahuensis</b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2941">https://ecos.fws.gov/ecp/species/2941</a></p>	Endangered
<p><b>Loulu <i>Pritchardia bakeri</i></b></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9615">https://ecos.fws.gov/ecp/species/9615</a></p>	Endangered
<p><b>Lysimachia filifolia</b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6454">https://ecos.fws.gov/ecp/species/6454</a></p>	Endangered
<p><b>Mahoe <i>Alectryon macrococcus</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2446">https://ecos.fws.gov/ecp/species/2446</a></p>	Endangered
<p><b>Melicope cornuta var. cornuta</b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8345">https://ecos.fws.gov/ecp/species/8345</a></p>	Endangered
<p><b>Nanu <i>Gardenia mannii</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/753">https://ecos.fws.gov/ecp/species/753</a></p>	Endangered
<p><b>Nioi <i>Eugenia koolauensis</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/742">https://ecos.fws.gov/ecp/species/742</a></p>	Endangered
<p><b>Oha <i>Delissea subcordata</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7217">https://ecos.fws.gov/ecp/species/7217</a></p>	Endangered
<p><b>Ohai <i>Sesbania tomentosa</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8453">https://ecos.fws.gov/ecp/species/8453</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/7050.pdf">https://ipac.ecosphere.fws.gov/project/TYM756EI3RCFPJJ4OHG5VSV4R4/documents/generated/7050.pdf</a></p>	Endangered
<p><b>Pamakani <i>Viola chamissoniana ssp. chamissoniana</i></b></p> <p>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7425">https://ecos.fws.gov/ecp/species/7425</a></p>	Endangered
<p><b>Phyllostegia hirsuta</b></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat.</p>	Endangered

NAME	STATUS
Species profile: <a href="https://ecos.fws.gov/ecp/species/5698">https://ecos.fws.gov/ecp/species/5698</a>	
<b>Phyllostegia mollis</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7230">https://ecos.fws.gov/ecp/species/7230</a>	Endangered
<b>Phyllostegia parviflora</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/255">https://ecos.fws.gov/ecp/species/255</a>	Endangered
<b>Platanthera holochila</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6864">https://ecos.fws.gov/ecp/species/6864</a>	Endangered
<b>Polyscias lydgatei</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2751">https://ecos.fws.gov/ecp/species/2751</a>	Endangered
<b>Sanicula purpurea</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4708">https://ecos.fws.gov/ecp/species/4708</a>	Endangered
<b>Schiedea kaalae</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6690">https://ecos.fws.gov/ecp/species/6690</a>	Endangered
<b>Spermolepis hawaiiensis</b> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1670">https://ecos.fws.gov/ecp/species/1670</a>	Endangered
<b>Stenogyne kaalae ssp. sherffii</b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5341">https://ecos.fws.gov/ecp/species/5341</a>	Endangered
<b>Trematolobelia singularis</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2537">https://ecos.fws.gov/ecp/species/2537</a>	Endangered
<b>Uhiuhi <i>Mezoneuron kawaiense</i></b> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7129">https://ecos.fws.gov/ecp/species/7129</a>	Endangered
<b>Vigna o-wahuensis</b> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8445">https://ecos.fws.gov/ecp/species/8445</a>	Endangered
<b>Viola oahuensis</b> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/198">https://ecos.fws.gov/ecp/species/198</a>	Endangered

## FERNS AND ALLIES

NAME	STATUS
Asplenium (=Diellia) dielfalcatum (=falcata) There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8198">https://ecos.fws.gov/ecp/species/8198</a>	Endangered
Asplenium dielirectum There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7361">https://ecos.fws.gov/ecp/species/7361</a>	Endangered
Hohiu <i>Dryopteris glabra</i> var. <i>pusilla</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8583">https://ecos.fws.gov/ecp/species/8583</a>	Endangered
Kupukupu Makali`i <i>Menisciopsis boydiae</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4692">https://ecos.fws.gov/ecp/species/4692</a>	Endangered
Microlepidia strigosa var. mauiensis No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4737">https://ecos.fws.gov/ecp/species/4737</a>	Endangered
Palai La`au <i>Adenophorus periens</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1916">https://ecos.fws.gov/ecp/species/1916</a>	Endangered
Pauoa <i>Ctenitis squamigera</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/289">https://ecos.fws.gov/ecp/species/289</a>	Endangered
Pteris lidgatei There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6707">https://ecos.fws.gov/ecp/species/6707</a>	Endangered
Wawae`iole <i>Phlegmariurus nutans</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7757">https://ecos.fws.gov/ecp/species/7757</a>	Endangered

## CRITICAL HABITATS

There are 69 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
`aiakeakua, Popolo <i>Solanum sandwicense</i> <a href="https://ecos.fws.gov/ecp/species/7342#crithab">https://ecos.fws.gov/ecp/species/7342#crithab</a>	Final
`akoko <i>Euphorbia celastroides</i> var. <i>kaenana</i> <a href="https://ecos.fws.gov/ecp/species/3842#crithab">https://ecos.fws.gov/ecp/species/3842#crithab</a>	Final
`akoko <i>Euphorbia deppeana</i> <a href="https://ecos.fws.gov/ecp/species/6446#crithab">https://ecos.fws.gov/ecp/species/6446#crithab</a>	Final
`akoko <i>Euphorbia rockii</i>	Final

NAME	STATUS
<a href="https://ecos.fws.gov/ecp/species/6024#crithab">https://ecos.fws.gov/ecp/species/6024#crithab</a>	
ʻōheʻōhe <i>Polyscias gymnocarpa</i> <a href="https://ecos.fws.gov/ecp/species/4551#crithab">https://ecos.fws.gov/ecp/species/4551#crithab</a>	Final
Aʻe <i>Zanthoxylum oahuense</i> <a href="https://ecos.fws.gov/ecp/species/7998#crithab">https://ecos.fws.gov/ecp/species/7998#crithab</a>	Final
Alani <i>Melicope hiiakae</i> <a href="https://ecos.fws.gov/ecp/species/6577#crithab">https://ecos.fws.gov/ecp/species/6577#crithab</a>	Final
Alani <i>Melicope lydgatei</i> <a href="https://ecos.fws.gov/ecp/species/7611#crithab">https://ecos.fws.gov/ecp/species/7611#crithab</a>	Final
Alani <i>Melicope saint-johnii</i> <a href="https://ecos.fws.gov/ecp/species/6153#crithab">https://ecos.fws.gov/ecp/species/6153#crithab</a>	Final
Asplenium (=Diellia) dielfalcatum (=falcata) <a href="https://ecos.fws.gov/ecp/species/8198#crithab">https://ecos.fws.gov/ecp/species/8198#crithab</a>	Final
Asplenium dielirectum <a href="https://ecos.fws.gov/ecp/species/7361#crithab">https://ecos.fws.gov/ecp/species/7361#crithab</a>	Final
Aupaka <i>Isodendron laurifolium</i> <a href="https://ecos.fws.gov/ecp/species/3825#crithab">https://ecos.fws.gov/ecp/species/3825#crithab</a>	Final
Aupaka <i>Isodendron longifolium</i> For information on why this critical habitat appears for your project, even though Aupaka is not on the list of potentially affected species at this location, contact the local field office. <a href="https://ecos.fws.gov/ecp/species/3826#crithab">https://ecos.fws.gov/ecp/species/3826#crithab</a>	Final
Blackline Hawaiian Damselfly <i>Megalagrion nigrohamatum nigrolineatum</i> <a href="https://ecos.fws.gov/ecp/species/6650#crithab">https://ecos.fws.gov/ecp/species/6650#crithab</a>	Final
Bonamia menziesii <a href="https://ecos.fws.gov/ecp/species/2503#crithab">https://ecos.fws.gov/ecp/species/2503#crithab</a>	Final
Crimson Hawaiian Damselfly <i>Megalagrion leptodemas</i> <a href="https://ecos.fws.gov/ecp/species/5897#crithab">https://ecos.fws.gov/ecp/species/5897#crithab</a>	Final
Haʻiwale <i>Cyrtandra dentata</i> <a href="https://ecos.fws.gov/ecp/species/7580#crithab">https://ecos.fws.gov/ecp/species/7580#crithab</a>	Final
Haʻiwale <i>Cyrtandra kaulantha</i> <a href="https://ecos.fws.gov/ecp/species/4812#crithab">https://ecos.fws.gov/ecp/species/4812#crithab</a>	Final
Haʻiwale <i>Cyrtandra polyantha</i> <a href="https://ecos.fws.gov/ecp/species/985#crithab">https://ecos.fws.gov/ecp/species/985#crithab</a>	Final
Haʻiwale <i>Cyrtandra sessilis</i> <a href="https://ecos.fws.gov/ecp/species/3591#crithab">https://ecos.fws.gov/ecp/species/3591#crithab</a>	Final
Haʻiwale <i>Cyrtandra subumbellata</i> <a href="https://ecos.fws.gov/ecp/species/3463#crithab">https://ecos.fws.gov/ecp/species/3463#crithab</a>	Final

NAME	STATUS
Ha`iwale <i>Cyrtandra viridiflora</i> <a href="https://ecos.fws.gov/ecp/species/8154#crithab">https://ecos.fws.gov/ecp/species/8154#crithab</a>	Final
Haha <i>Cyanea acuminata</i> <a href="https://ecos.fws.gov/ecp/species/6312#crithab">https://ecos.fws.gov/ecp/species/6312#crithab</a>	Final
Haha <i>Cyanea calycina</i> <a href="https://ecos.fws.gov/ecp/species/2031#crithab">https://ecos.fws.gov/ecp/species/2031#crithab</a>	Final
Haha <i>Cyanea crispa</i> <a href="https://ecos.fws.gov/ecp/species/1326#crithab">https://ecos.fws.gov/ecp/species/1326#crithab</a>	Final
Haha <i>Cyanea grimesiana ssp. grimesiana</i> <a href="https://ecos.fws.gov/ecp/species/851#crithab">https://ecos.fws.gov/ecp/species/851#crithab</a>	Final
Haha <i>Cyanea humboldtiana</i> <a href="https://ecos.fws.gov/ecp/species/2005#crithab">https://ecos.fws.gov/ecp/species/2005#crithab</a>	Final
Haha <i>Cyanea koolauensis</i> <a href="https://ecos.fws.gov/ecp/species/7083#crithab">https://ecos.fws.gov/ecp/species/7083#crithab</a>	Final
Haha <i>Cyanea lanceolata</i> <a href="https://ecos.fws.gov/ecp/species/4543#crithab">https://ecos.fws.gov/ecp/species/4543#crithab</a>	Final
Haha <i>Cyanea longiflora</i> <a href="https://ecos.fws.gov/ecp/species/7513#crithab">https://ecos.fws.gov/ecp/species/7513#crithab</a>	Final
Haha <i>Cyanea purpurellifolia</i> <a href="https://ecos.fws.gov/ecp/species/7219#crithab">https://ecos.fws.gov/ecp/species/7219#crithab</a>	Final
Haha <i>Cyanea st.-johnii</i> <a href="https://ecos.fws.gov/ecp/species/4273#crithab">https://ecos.fws.gov/ecp/species/4273#crithab</a>	Final
Haha <i>Cyanea truncata</i> <a href="https://ecos.fws.gov/ecp/species/876#crithab">https://ecos.fws.gov/ecp/species/876#crithab</a>	Final
Haiwale <i>Cyrtandra gracilis</i> <a href="https://ecos.fws.gov/ecp/species/3346#crithab">https://ecos.fws.gov/ecp/species/3346#crithab</a>	Final
Haiwale <i>Cyrtandra waiolani</i> <a href="https://ecos.fws.gov/ecp/species/4440#crithab">https://ecos.fws.gov/ecp/species/4440#crithab</a>	Final
Hala Pepe <i>Dracaena forbesii</i> <a href="https://ecos.fws.gov/ecp/species/5965#crithab">https://ecos.fws.gov/ecp/species/5965#crithab</a>	Final
Hawaiian Picture-wing Fly <i>Drosophila obatai</i> <a href="https://ecos.fws.gov/ecp/species/673#crithab">https://ecos.fws.gov/ecp/species/673#crithab</a>	Final
Hesperomannia arborescens <a href="https://ecos.fws.gov/ecp/species/6004#crithab">https://ecos.fws.gov/ecp/species/6004#crithab</a>	Final
Kamakahala <i>Labordia cyrtandrae</i> <a href="https://ecos.fws.gov/ecp/species/1278#crithab">https://ecos.fws.gov/ecp/species/1278#crithab</a>	Final

NAME	STATUS
Kaulu <i>Pteralyxia macrocarpa</i> <a href="https://ecos.fws.gov/ecp/species/2400#crithab">https://ecos.fws.gov/ecp/species/2400#crithab</a>	Final
Kio`ele <i>Kadua coriacea</i> For information on why this critical habitat appears for your project, even though Kio`ele is not on the list of potentially affected species at this location, contact the local field office. <a href="https://ecos.fws.gov/ecp/species/5504#crithab">https://ecos.fws.gov/ecp/species/5504#crithab</a>	Final
Kolea <i>Myrsine juddii</i> <a href="https://ecos.fws.gov/ecp/species/7073#crithab">https://ecos.fws.gov/ecp/species/7073#crithab</a>	Final
Kopiko <i>Psychotria hexandra</i> var. <i>oahuensis</i> <a href="https://ecos.fws.gov/ecp/species/3374#crithab">https://ecos.fws.gov/ecp/species/3374#crithab</a>	Final
Kuahiwi Laukahi <i>Plantago princeps</i> <a href="https://ecos.fws.gov/ecp/species/4926#crithab">https://ecos.fws.gov/ecp/species/4926#crithab</a>	Final
Lobelia <i>koolauensis</i> <a href="https://ecos.fws.gov/ecp/species/2846#crithab">https://ecos.fws.gov/ecp/species/2846#crithab</a>	Final
Lobelia <i>monostachya</i> <a href="https://ecos.fws.gov/ecp/species/4334#crithab">https://ecos.fws.gov/ecp/species/4334#crithab</a>	Final
Lobelia <i>oahuensis</i> <a href="https://ecos.fws.gov/ecp/species/2941#crithab">https://ecos.fws.gov/ecp/species/2941#crithab</a>	Final
Lysimachia <i>filifolia</i> <a href="https://ecos.fws.gov/ecp/species/6454#crithab">https://ecos.fws.gov/ecp/species/6454#crithab</a>	Final
Mahoe <i>Alectryon macrococcus</i> <a href="https://ecos.fws.gov/ecp/species/2446#crithab">https://ecos.fws.gov/ecp/species/2446#crithab</a>	Final
Melicope <i>cornuta</i> var. <i>cornuta</i> <a href="https://ecos.fws.gov/ecp/species/8345#crithab">https://ecos.fws.gov/ecp/species/8345#crithab</a>	Final
Nanu <i>Gardenia mannii</i> <a href="https://ecos.fws.gov/ecp/species/753#crithab">https://ecos.fws.gov/ecp/species/753#crithab</a>	Final
Nioi <i>Eugenia koolauensis</i> <a href="https://ecos.fws.gov/ecp/species/742#crithab">https://ecos.fws.gov/ecp/species/742#crithab</a>	Final
Oahu Elepaio <i>Chasiempis ibidis</i> <a href="https://ecos.fws.gov/ecp/species/6325#crithab">https://ecos.fws.gov/ecp/species/6325#crithab</a>	Final
Oceanic Hawaiian Damselfly <i>Megalagrion oceanicum</i> <a href="https://ecos.fws.gov/ecp/species/663#crithab">https://ecos.fws.gov/ecp/species/663#crithab</a>	Final
Oha <i>Delissea subcordata</i> <a href="https://ecos.fws.gov/ecp/species/7217#crithab">https://ecos.fws.gov/ecp/species/7217#crithab</a>	Final
Palai La`au <i>Adenophorus periens</i> <a href="https://ecos.fws.gov/ecp/species/1916#crithab">https://ecos.fws.gov/ecp/species/1916#crithab</a>	Final
Pauoa <i>Ctenitis squamigera</i>	Final

NAME	STATUS
<a href="https://ecos.fws.gov/ecp/species/289#crithab">https://ecos.fws.gov/ecp/species/289#crithab</a>	
Phyllostegia hirsuta <a href="https://ecos.fws.gov/ecp/species/5698#crithab">https://ecos.fws.gov/ecp/species/5698#crithab</a>	Final
Phyllostegia mollis <a href="https://ecos.fws.gov/ecp/species/7230#crithab">https://ecos.fws.gov/ecp/species/7230#crithab</a>	Final
Phyllostegia parviflora <a href="https://ecos.fws.gov/ecp/species/255#crithab">https://ecos.fws.gov/ecp/species/255#crithab</a>	Final
Platanthera holochila <a href="https://ecos.fws.gov/ecp/species/6864#crithab">https://ecos.fws.gov/ecp/species/6864#crithab</a>	Final
Polyscias lydgatei <a href="https://ecos.fws.gov/ecp/species/2751#crithab">https://ecos.fws.gov/ecp/species/2751#crithab</a>	Final
Pteris lidgatei <a href="https://ecos.fws.gov/ecp/species/6707#crithab">https://ecos.fws.gov/ecp/species/6707#crithab</a>	Final
Sanicula purpurea <a href="https://ecos.fws.gov/ecp/species/4708#crithab">https://ecos.fws.gov/ecp/species/4708#crithab</a>	Final
Schiedea kaalae <a href="https://ecos.fws.gov/ecp/species/6690#crithab">https://ecos.fws.gov/ecp/species/6690#crithab</a>	Final
Schiedea nuttallii For information on why this critical habitat appears for your project, even though Schiedea nuttallii is not on the list of potentially affected species at this location, contact the local field office. <a href="https://ecos.fws.gov/ecp/species/7801#crithab">https://ecos.fws.gov/ecp/species/7801#crithab</a>	Final
Trematolobelia singularis <a href="https://ecos.fws.gov/ecp/species/2537#crithab">https://ecos.fws.gov/ecp/species/2537#crithab</a>	Final
Viola oahuensis <a href="https://ecos.fws.gov/ecp/species/198#crithab">https://ecos.fws.gov/ecp/species/198#crithab</a>	Final
Wawae`iole <i>Phlegmariurus nutans</i> <a href="https://ecos.fws.gov/ecp/species/7757#crithab">https://ecos.fws.gov/ecp/species/7757#crithab</a>	Final

## USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

## BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act <sup>2</sup> and the Migratory Bird Treaty Act (MBTA) <sup>1</sup>. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

---

1. The [Bald and Golden Eagle Protection Act](#) of 1940.
2. The [Migratory Birds Treaty Act](#) of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA). Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

## MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) <sup>1</sup> prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

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1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
'apapane <i>Himatione sanguinea</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/9659">https://ecos.fws.gov/ecp/species/9659</a>	Breeds Dec 1 to Jul 31
Black Noddy <i>Anous minutus melanogenys</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/10559">https://ecos.fws.gov/ecp/species/10559</a>	Breeds Apr 1 to Nov 30
Black-footed Albatross <i>Phoebastria nigripes</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/8033">https://ecos.fws.gov/ecp/species/8033</a>	Breeds Apr 1 to Aug 31
Bristle-thighed Curlew <i>Numenius tahitiensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/3913">https://ecos.fws.gov/ecp/species/3913</a>	Breeds elsewhere
Buller's Shearwater <i>Ardenna bulleri</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/11939">https://ecos.fws.gov/ecp/species/11939</a>	Breeds elsewhere
Bulwer's Petrel <i>Bulweria bulwerii</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/10579">https://ecos.fws.gov/ecp/species/10579</a>	Breeds May 1 to Sep 30
Christmas Shearwater <i>Puffinus nativitatis</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/9636">https://ecos.fws.gov/ecp/species/9636</a>	Breeds Apr 1 to Oct 31
Laysan Albatross <i>Phoebastria immutabilis</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/11959">https://ecos.fws.gov/ecp/species/11959</a>	Breeds Nov 15 to Jun 15
Mottled Petrel <i>Pterodroma inexpectata</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/11947">https://ecos.fws.gov/ecp/species/11947</a>	Breeds elsewhere

NAME	BREEDING SEASON
O'ahu 'amakihi <i>Chlorodrepanis flava</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/9592">https://ecos.fws.gov/ecp/species/9592</a>	Breeds Apr 1 to Jul 1
Red-tailed Tropicbird <i>Phaethon rubricauda melanorhynchos</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/10563">https://ecos.fws.gov/ecp/species/10563</a>	Breeds Dec 15 to Oct 15
Wandering Tattler <i>Tringa incana</i> This is a Bird of Conservation Concern (BCC) throughout its range in Hawaii and the Pacific Islands. <a href="https://ecos.fws.gov/ecp/species/11941">https://ecos.fws.gov/ecp/species/11941</a>	Breeds elsewhere

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

### Breeding Season (■)

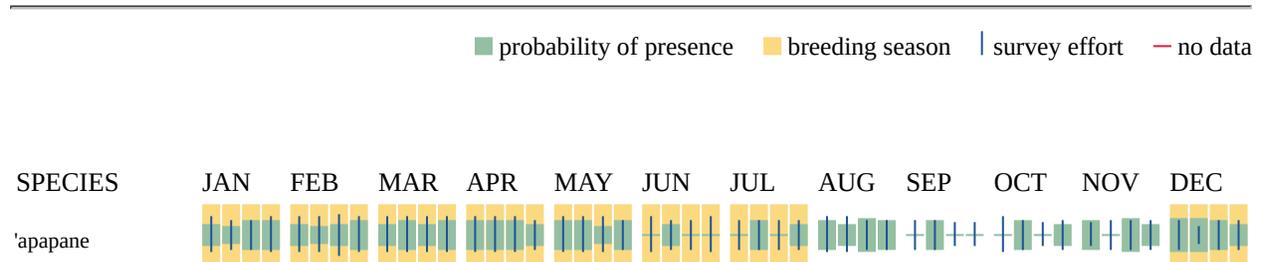
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

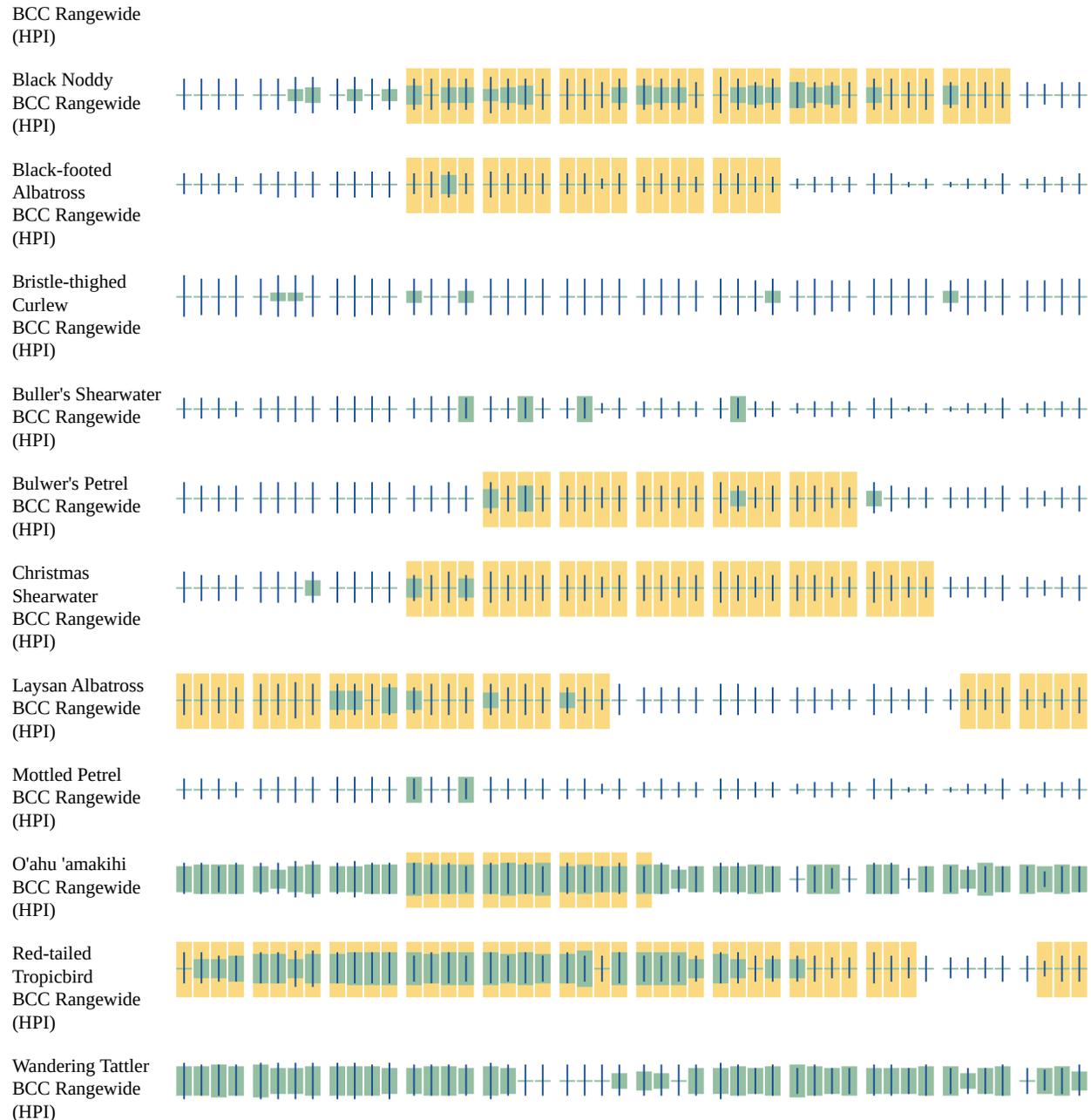
### Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

### No Data (—)

A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

# WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

## RIVERINE

- R4SBCx
- R2UBHx
- R2UBH
- R4SBC
- R5UBFx
- R3UBH
- R3UBHx
- R5UBH

## FRESHWATER EMERGENT WETLAND

- PEM1Ch
- PEM1C
- PEM1Fh
- PEM1Cx
- PEM1/FO3Ch
- PEM1F

## FRESHWATER FORESTED/SHRUB WETLAND

- PSSCh
- PFO3C
- PSS3C
- PSS1C
- PSSCx
- PFO3A
- PSSF
- PFO3Ah
- PSS3Ch
- PFO3Ch

LAKE

- L1UBHh
- L2UBFh

FRESHWATER POND

- PUBH
- PUBHh
- PABHx
- PUBHx

## **IPAC USER CONTACT INFORMATION**

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Phone: 8086907637



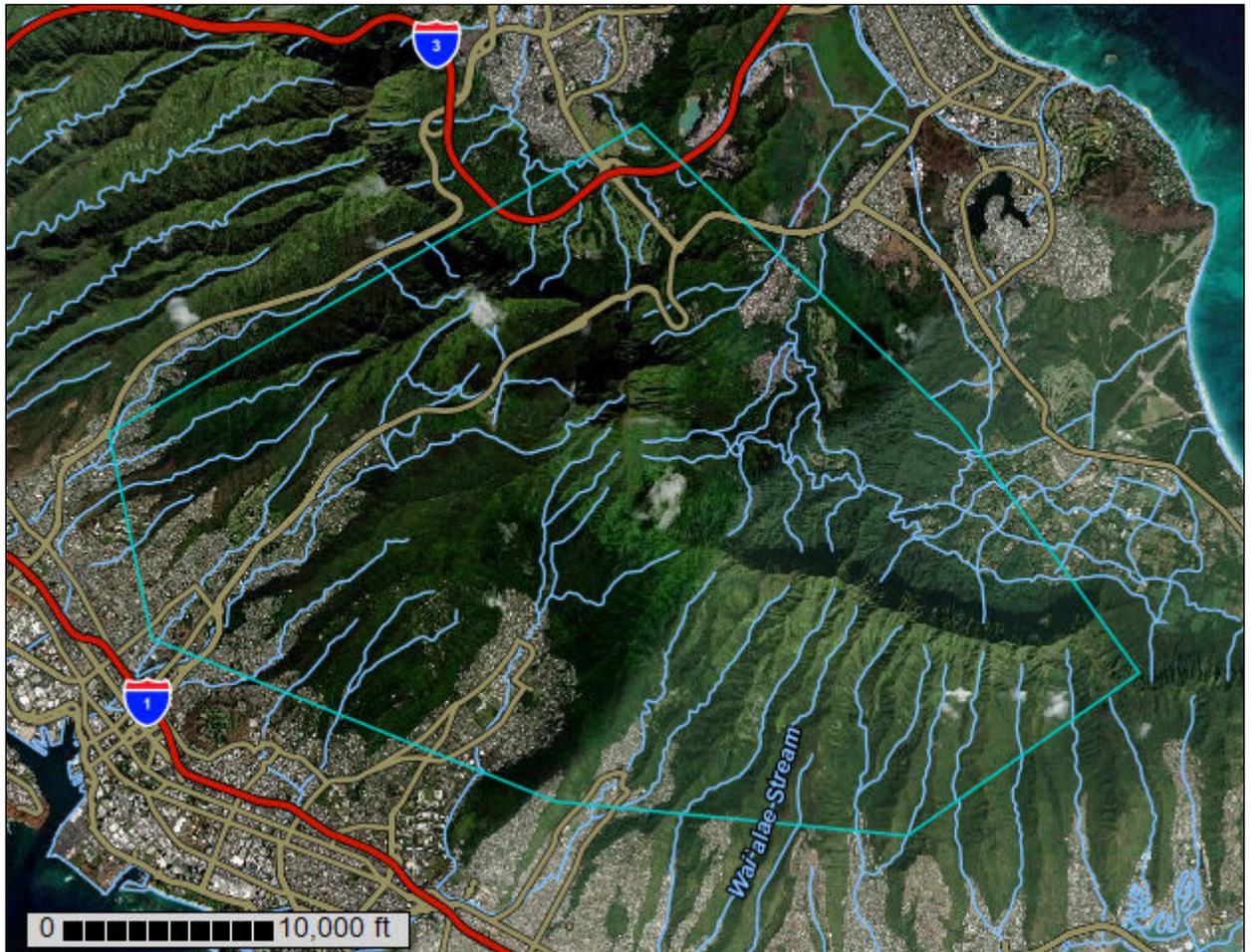
United States  
Department of  
Agriculture

NRCS

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Island of Oahu, Hawaii



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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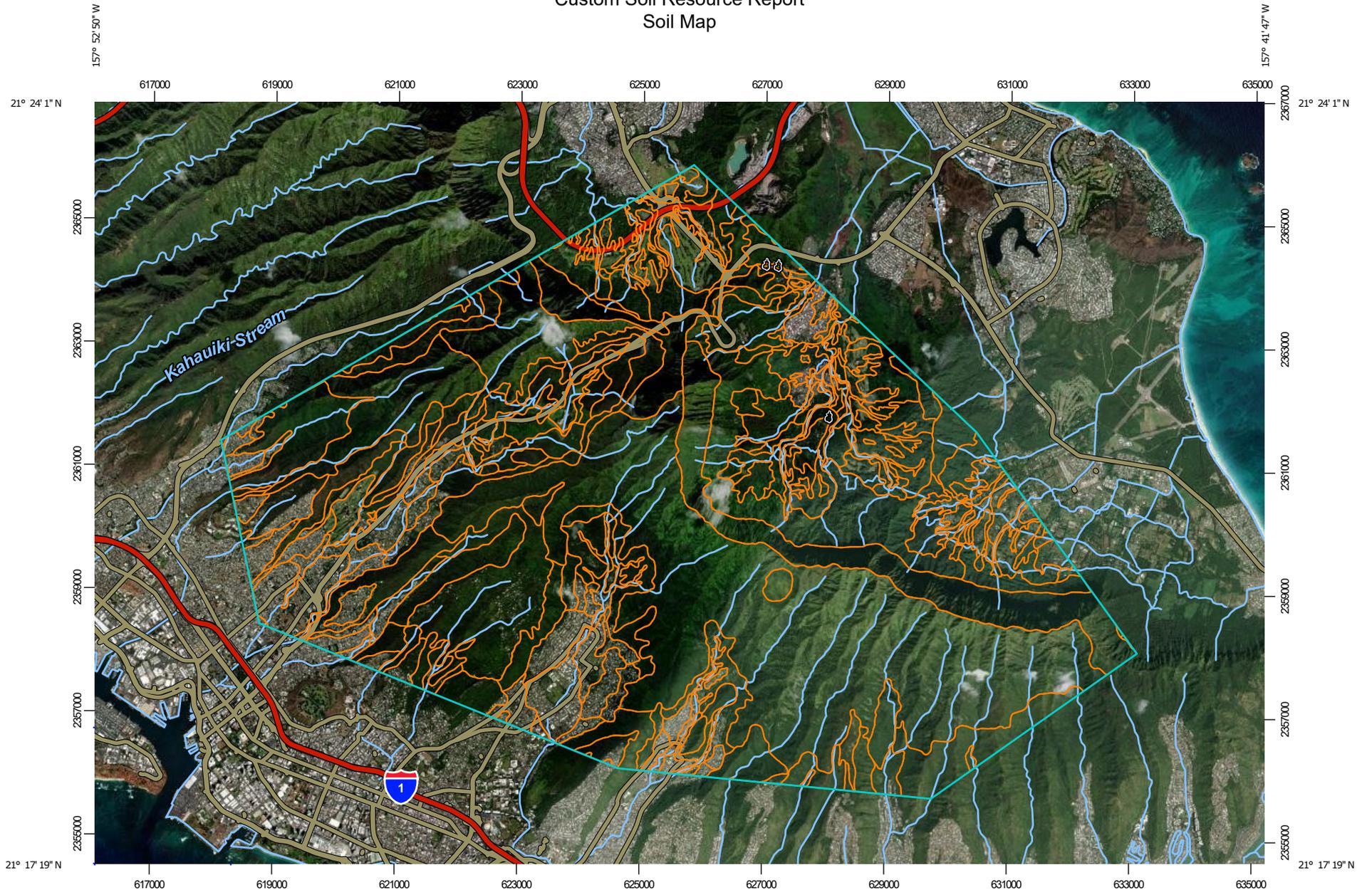
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

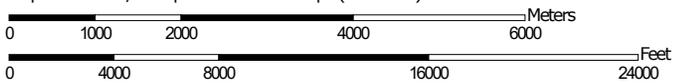
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Map Scale: 1:87,400 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 4N WGS84

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

**Special Point Features**

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Oahu, Hawaii  
 Survey Area Data: Version 19, Sep 11, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 29, 2017—Feb 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AeE	Alaaloa silty clay, older substrate, 15 to 35 percent slopes, MLRA 167	170.8	0.7%
ALF	Alaaloa silty clay, 40 to 70 percent slopes	573.9	2.5%
EwC	Ewa stony silty clay, 6 to 12 percent slopes	298.9	1.3%
HLMG	Helemano silty clay, 30 to 90 percent slopes	412.8	1.8%
HnA	Hanalei silty clay, 0 to 2 percent slopes, MLRA 167	389.2	1.7%
HnB	Hanalei silty clay, 2 to 6 percent slopes	47.5	0.2%
HoB	Hanalei stony silty clay, 2 to 6 percent slopes	250.1	1.1%
KaB	Kaena clay, 2 to 6 percent slopes	4.8	0.0%
KaC	Kaena clay, 6 to 12 percent slopes	123.7	0.5%
KaeD	Kaena stony clay, 12 to 20 percent slopes	173.5	0.8%
KanE	Kaena very stony clay, 10 to 35 percent slopes	251.8	1.1%
KgB	Kaneohe silty clay, 3 to 8 percent slopes	219.3	1.0%
KgC	Kaneohe silty clay, 8 to 15 percent slopes	33.1	0.1%
KHMC	Kaneohe silty clay loam, 5 to 15 percent slopes	91.6	0.4%
KHME	Kaneohe silty clay loam, 15 to 30 percent slopes	110.1	0.5%
KHMF	Kaneohe silty clay loam, 30 to 65 percent slopes	317.0	1.4%
KHOF	Kaneohe silty clay, 30 to 65 percent slopes	320.2	1.4%
KlaB	Kawaihapai stony clay loam, 2 to 6 percent slopes, MLRA 158	213.2	0.9%
KIB	Kawaihapai clay loam, 2 to 6 percent slopes	53.2	0.2%
KIbC	Kawaihapai very stony clay loam, 0 to 15 percent slopes, MLRA 158	37.2	0.2%

## Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
LaC3	Lahaina silty clay, 7 to 15 percent slopes, severely eroded, MLRA 158	18.6	0.1%
LoB	Lolekaa silty clay, 3 to 8 percent slopes	615.0	2.7%
LoC	Lolekaa silty clay, 8 to 15 percent slopes	543.1	2.4%
LoD	Lolekaa silty clay, 15 to 25 percent slopes	759.6	3.3%
LoE	Lolekaa silty clay, 25 to 40 percent slopes	707.5	3.1%
LoF	Lolekaa silty clay, 40 to 70 percent slopes	1,417.9	6.2%
LPE	Lualualei extremely cobbly clay, 3 to 35 percent slopes, MLRA 166	120.8	0.5%
LuA	Lualualei clay, 0 to 2 percent slopes, MLRA 163	25.1	0.1%
MIA	Makiki stony clay loam, 0 to 3 percent slopes	14.2	0.1%
MpC	Manana silty clay, 8 to 15 percent slopes	110.8	0.5%
MpD	Manana silty clay, 15 to 25 percent slopes	65.7	0.3%
MpE	Manana silty clay, 25 to 40 percent slopes	233.4	1.0%
PID	Pamoa silty clay, 5 to 20 percent slopes, MLRA 158	3.6	0.0%
PkB	Pohakupu silty clay loam, 0 to 3 percent slopes, MLRA 167	90.9	0.4%
PkC	Pohakupu silty clay loam, 8 to 15 percent slopes	147.8	0.6%
rAAE	Alakai mucky peat, 0 to 30 percent slopes, MLRA 164	48.3	0.2%
rCI	Cinder land	348.1	1.5%
rRK	Rock land	2,996.7	13.0%
rRO	Rock outcrop	1,354.4	5.9%
rRT	Rough mountainous land	5,936.1	25.8%
rSY	Stony steep land	35.4	0.2%
TAE	Tantalus silt loam, 15 to 40 percent slopes	378.4	1.6%
TAF	Tantalus silt loam, 40 to 70 percent slopes	827.0	3.6%
TCC	Tantalus silty clay loam, 8 to 15 percent slopes	79.9	0.3%
TCE	Tantalus silty clay loam, 15 to 40 percent slopes	53.6	0.2%
W	Water > 40 acres	66.0	0.3%

## Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WnB	Waialua clay, 2 to 6 percent slopes	0.9	0.0%
WpaE	Waikane stony silty clay, 15 to 30 percent slopes	187.7	0.8%
WpB	Waikane silty clay, 3 to 8 percent slopes	95.9	0.4%
WpC	Waikane silty clay, 8 to 15 percent slopes	53.6	0.2%
WpE	Waikane silty clay, 25 to 40 percent slopes	344.4	1.5%
WpF	Waikane silty clay, 40 to 70 percent slopes	1,101.4	4.8%
WpF2	Waikane silty clay, 40 to 70 percent slopes, eroded	160.5	0.7%
<b>Totals for Area of Interest</b>		<b>23,035.7</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

## Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Island of Oahu, Hawaii

### **AeE—Alaeloa silty clay, older substrate, 15 to 35 percent slopes, MLRA 167**

#### **Map Unit Setting**

*National map unit symbol:* 2v0q1

*Elevation:* 100 to 1,500 feet

*Mean annual precipitation:* 35 to 60 inches

*Mean annual air temperature:* 70 to 75 degrees F

*Frost-free period:* 365 days

*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Alaeloa, older substrate, and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Alaeloa, Older Substrate**

##### **Setting**

*Landform:* Mountains

*Landform position (two-dimensional):* Backslope, toeslope

*Landform position (three-dimensional):* Lower third of mountainflank, interfluve

*Down-slope shape:* Concave, linear

*Across-slope shape:* Concave, linear

*Parent material:* Residuum weathered from basalt

##### **Typical profile**

*Ap - 0 to 10 inches:* silty clay

*Bt1 - 10 to 18 inches:* silty clay

*Bt2 - 18 to 29 inches:* silty clay

*Bt3 - 29 to 48 inches:* silty clay

*Bt4 - 48 to 58 inches:* silty clay

*C - 58 to 70 inches:* stony silty clay

##### **Properties and qualities**

*Slope:* 15 to 35 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 7.7 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

## **ALF—Alaeloa silty clay, 40 to 70 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqcz  
*Elevation:* 100 to 1,500 feet  
*Mean annual precipitation:* 35 to 60 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Alaeloa and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Alaeloa**

#### **Setting**

*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Basic igneous rock

#### **Typical profile**

*Ap - 0 to 10 inches:* silty clay  
*Bt1 - 10 to 18 inches:* silty clay  
*Bt2 - 18 to 29 inches:* silty clay  
*Bt3 - 29 to 48 inches:* silty clay  
*Bt4 - 48 to 58 inches:* silty clay  
*C - 58 to 70 inches:* stony silty clay

#### **Properties and qualities**

*Slope:* 40 to 70 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.7 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

## **EwC—Ewa stony silty clay, 6 to 12 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqd9  
*Elevation:* 0 to 150 feet  
*Mean annual precipitation:* 15 to 30 inches  
*Mean annual air temperature:* 73 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

*Ewa and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Ewa**

#### **Setting**

*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear

#### **Typical profile**

*H1 - 0 to 18 inches:* stony silty clay  
*H2 - 18 to 60 inches:* silty clay loam

#### **Properties and qualities**

*Slope:* 6 to 12 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.60 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

## **HLMG—Helemano silty clay, 30 to 90 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqdg  
*Elevation:* 500 to 1,200 feet  
*Mean annual precipitation:* 30 to 60 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Helemano and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Helemano**

#### **Setting**

*Landform:* Gulches  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Basic igneous material

#### **Typical profile**

*H1 - 0 to 10 inches:* silty clay  
*H2 - 10 to 41 inches:* paragravelly silty clay  
*H3 - 41 to 60 inches:* very paragravelly silty clay

#### **Properties and qualities**

*Slope:* 30 to 90 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.60 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 5.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

## **HnA—Hanalei silty clay, 0 to 2 percent slopes, MLRA 167**

### **Map Unit Setting**

*National map unit symbol:* 2w02x  
*Elevation:* 0 to 430 feet  
*Mean annual precipitation:* 40 to 101 inches  
*Mean annual air temperature:* 72 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Hanalei and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Hanalei**

#### **Setting**

*Landform:* Flood plains on valley floors  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear, concave  
*Parent material:* Alluvium derived from basalt

#### **Typical profile**

*Apg - 0 to 6 inches:* silty clay  
*Ag1 - 6 to 10 inches:* silty clay  
*Ag2 - 10 to 13 inches:* silty clay  
*Bg1 - 13 to 18 inches:* silty clay loam  
*Bg2 - 18 to 26 inches:* silty clay loam  
*Cg - 26 to 36 inches:* silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 1.98 in/hr)  
*Depth to water table:* About 24 to 60 inches  
*Frequency of flooding:* Frequent  
*Frequency of ponding:* Occasional  
*Sodium adsorption ratio, maximum:* 5.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.5 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 2w  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* B  
*Ecological site:* R167XY002HI - Flooded Alluvium

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*Hydric soil rating:* No

### Minor Components

#### Hanalei, ponded

*Percent of map unit:* 15 percent  
*Landform:* Flood plains on valley floors  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear, concave  
*Ecological site:* F164XY500HI - Volcanic Ash Forest  
*Hydric soil rating:* Yes

### HnB—Hanalei silty clay, 2 to 6 percent slopes

#### Map Unit Setting

*National map unit symbol:* hqdl  
*Elevation:* 0 to 100 feet  
*Mean annual precipitation:* 31 to 89 inches  
*Mean annual air temperature:* 72 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Hanalei and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Hanalei

##### Setting

*Landform:* Alluvial flats  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Alluvium derived from basalt

##### Typical profile

*Apg - 0 to 6 inches:* silty clay  
*Ag1 - 6 to 10 inches:* silty clay  
*Ag2 - 10 to 13 inches:* silty clay  
*Bg1 - 13 to 18 inches:* silty clay loam  
*Bg2 - 18 to 26 inches:* silty clay loam  
*Cg - 26 to 36 inches:* silty clay loam

##### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained

## Custom Soil Resource Report

*Runoff class:* Negligible

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 1.98 in/hr)

*Depth to water table:* About 24 to 60 inches

*Frequency of flooding:* Frequent

*Frequency of ponding:* Rare

*Sodium adsorption ratio, maximum:* 5.0

*Available water supply, 0 to 60 inches:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* B

*Ecological site:* R167XY002HI - Flooded Alluvium

*Hydric soil rating:* No

### Minor Components

#### Hanalei, ponded

*Percent of map unit:* 15 percent

*Landform:* Alluvial flats

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* F164XY500HI - Volcanic Ash Forest

*Hydric soil rating:* Yes

## HoB—Hanalei stony silty clay, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol:* hqdm

*Elevation:* 0 to 100 feet

*Mean annual precipitation:* 57 to 144 inches

*Mean annual air temperature:* 72 to 75 degrees F

*Frost-free period:* 365 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Hanalei and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Hanalei

#### Setting

*Landform:* Alluvial flats

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Concave  
*Parent material:* Alluvium derived from basalt

### Typical profile

*Apg - 0 to 13 inches:* stony silty clay  
*Bg1 - 13 to 18 inches:* silty clay loam  
*Bg2 - 18 to 26 inches:* silty clay loam  
*Cg - 26 to 36 inches:* silty clay loam

### Properties and qualities

*Slope:* 2 to 6 percent  
*Surface area covered with cobbles, stones or boulders:* 0.0 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 1.98 in/hr)  
*Depth to water table:* About 24 to 60 inches  
*Frequency of flooding:* Frequent  
*Frequency of ponding:* Rare  
*Sodium adsorption ratio, maximum:* 5.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3s  
*Land capability classification (nonirrigated):* 3s  
*Hydrologic Soil Group:* B  
*Ecological site:* R167XY002HI - Flooded Alluvium  
*Hydric soil rating:* No

### Minor Components

#### Hanalei, ponded

*Percent of map unit:* 15 percent  
*Landform:* Alluvial flats  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Ecological site:* F164XY500HI - Volcanic Ash Forest  
*Hydric soil rating:* Yes

## KaB—Kaena clay, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol:* hqf0  
*Elevation:* 50 to 150 feet  
*Mean annual precipitation:* 30 to 45 inches  
*Mean annual air temperature:* 73 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Kaena and similar soils: 100 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Kaena**

**Setting**

*Landform: Fans*

*Landform position (two-dimensional): Toeslope*

*Landform position (three-dimensional): Dip*

*Down-slope shape: Linear*

*Across-slope shape: Concave*

*Parent material: Formed in alluvium and colluvium*

**Typical profile**

*H1 - 0 to 10 inches: clay*

*H2 - 10 to 37 inches: stony clay*

*H3 - 37 to 54 inches: stony clay*

**Properties and qualities**

*Slope: 2 to 6 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Poorly drained*

*Runoff class: Medium*

*Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)*

*Depth to water table: About 24 to 60 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)*

**Interpretive groups**

*Land capability classification (irrigated): 3w*

*Land capability classification (nonirrigated): 4w*

*Hydrologic Soil Group: C*

*Ecological site: R163XY001HI - Shrink-Swell Clay*

*Hydric soil rating: No*

**KaC—Kaena clay, 6 to 12 percent slopes**

**Map Unit Setting**

*National map unit symbol: hqf1*

*Elevation: 50 to 150 feet*

*Mean annual precipitation: 30 to 45 inches*

*Mean annual air temperature: 73 to 75 degrees F*

*Frost-free period: 365 days*

*Farmland classification: Not prime farmland*

**Map Unit Composition**

*Kaena and similar soils: 100 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Kaena

### Setting

*Landform:* Fans  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Formed in alluvium and colluvium

### Typical profile

*H1 - 0 to 10 inches:* clay  
*H2 - 10 to 37 inches:* stony clay  
*H3 - 37 to 54 inches:* stony clay

### Properties and qualities

*Slope:* 6 to 12 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)  
*Depth to water table:* About 24 to 60 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3w  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* C  
*Ecological site:* R163XY001HI - Shrink-Swell Clay  
*Hydric soil rating:* No

## KaeD—Kaena stony clay, 12 to 20 percent slopes

### Map Unit Setting

*National map unit symbol:* hqf4  
*Elevation:* 30 to 130 feet  
*Mean annual precipitation:* 39 to 74 inches  
*Mean annual air temperature:* 72 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Kaena and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Kaena

### Setting

*Landform:* Fans

## Custom Soil Resource Report

*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Formed in alluvium and colluvium

### Typical profile

*Ap - 0 to 10 inches:* stony clay  
*ACg - 10 to 37 inches:* stony clay  
*C - 37 to 54 inches:* stony clay

### Properties and qualities

*Slope:* 12 to 20 percent  
*Surface area covered with cobbles, stones or boulders:* 0.0 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)  
*Depth to water table:* About 24 to 60 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 5 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 50.0  
*Available water supply, 0 to 60 inches:* Moderate (about 6.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* R163XY001HI - Shrink-Swell Clay  
*Hydric soil rating:* No

## KanE—Kaena very stony clay, 10 to 35 percent slopes

### Map Unit Setting

*National map unit symbol:* hqf5  
*Elevation:* 30 to 160 feet  
*Mean annual precipitation:* 37 to 94 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Kaena and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Kaena

### Setting

*Landform:* Fans  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Formed in alluvium and colluvium

### Typical profile

*Ap - 0 to 10 inches:* very stony clay  
*ACg - 10 to 37 inches:* stony clay  
*C - 37 to 54 inches:* stony clay

### Properties and qualities

*Slope:* 10 to 35 percent  
*Surface area covered with cobbles, stones or boulders:* 1.3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)  
*Depth to water table:* About 24 to 60 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 5 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 50.0  
*Available water supply, 0 to 60 inches:* Low (about 5.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* C  
*Ecological site:* R163XY001HI - Shrink-Swell Clay  
*Hydric soil rating:* No

## KgB—Kaneohe silty clay, 3 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* hqf8  
*Elevation:* 30 to 130 feet  
*Mean annual precipitation:* 56 to 78 inches  
*Mean annual air temperature:* 72 to 81 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Kaneohe and similar soils:* 100 percent

## Custom Soil Resource Report

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Kaneohe

#### Setting

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Volcanic ash and/or cinders and/or alluvium

#### Typical profile

*Ap - 0 to 14 inches:* silty clay  
*Bt - 14 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* B  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

### KgC—Kaneohe silty clay, 8 to 15 percent slopes

#### Map Unit Setting

*National map unit symbol:* hqf9  
*Elevation:* 20 to 100 feet  
*Mean annual precipitation:* 49 to 62 inches  
*Mean annual air temperature:* 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Kaneohe and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Kaneohe

#### Setting

*Landform:* Alluvial fans

## Custom Soil Resource Report

*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Volcanic ash and/or cinders and/or alluvium

### Typical profile

*Ap - 0 to 14 inches:* silty clay  
*Bt - 14 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## **KHMC—Kaneohe silty clay loam, 5 to 15 percent slopes**

### Map Unit Setting

*National map unit symbol:* hqds  
*Elevation:* 30 to 160 feet  
*Mean annual precipitation:* 63 to 85 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Kaneohe and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Kaneohe

#### Setting

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Volcanic ash and/or cinders and/or alluvium

## Custom Soil Resource Report

### Typical profile

*Ap - 0 to 14 inches:* silty clay loam  
*Bt - 14 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 5 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## KHME—Kaneohe silty clay loam, 15 to 30 percent slopes

### Map Unit Setting

*National map unit symbol:* hqdt  
*Elevation:* 70 to 200 feet  
*Mean annual precipitation:* 48 to 92 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Kaneohe and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Kaneohe

#### Setting

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Volcanic ash and/or cinders and/or alluvium

#### Typical profile

*Ap - 0 to 14 inches:* silty clay loam  
*Bt - 14 to 60 inches:* silty clay

**Properties and qualities**

*Slope:* 15 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

**KHMF—Kaneohe silty clay loam, 30 to 65 percent slopes**

**Map Unit Setting**

*National map unit symbol:* hqdv  
*Elevation:* 100 to 230 feet  
*Mean annual precipitation:* 59 to 95 inches  
*Mean annual air temperature:* 70 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Kaneohe and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Kaneohe**

**Setting**

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Alluvium derived from volcanic rock and/or colluvium derived from volcanic and metamorphic rock

**Typical profile**

*Ap - 0 to 10 inches:* silty clay loam  
*Bt - 10 to 60 inches:* silty clay

**Properties and qualities**

*Slope:* 30 to 65 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained

## Custom Soil Resource Report

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 2.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 7.2 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Ecological site:* R167XY001HI - Oxidic Dissected Lowland

*Hydric soil rating:* No

## **KHOF—Kaneohe silty clay, 30 to 65 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqdw

*Elevation:* 70 to 200 feet

*Mean annual precipitation:* 60 to 87 inches

*Mean annual air temperature:* 72 to 73 degrees F

*Frost-free period:* 365 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Kaneohe and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Kaneohe**

#### **Setting**

*Landform:* Alluvial fans

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Parent material:* Volcanic ash and/or cinders and/or alluvium

#### **Typical profile**

*Ap - 0 to 10 inches:* silty clay

*Bt - 10 to 60 inches:* silty clay

#### **Properties and qualities**

*Slope:* 30 to 65 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 2.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

## Custom Soil Resource Report

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 7.2 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* 7e

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Ecological site:* R167XY001HI - Oxidic Dissected Lowland

*Hydric soil rating:* No

## **KlaB—Kawaihapai stony clay loam, 2 to 6 percent slopes, MLRA 158**

### **Map Unit Setting**

*National map unit symbol:* 2w033

*Elevation:* 0 to 600 feet

*Mean annual precipitation:* 30 to 50 inches

*Mean annual air temperature:* 72 to 73 degrees F

*Frost-free period:* 365 days

*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

*Kawaihapai and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Kawaihapai**

#### **Setting**

*Landform:* Drainageways on mountain slopes, drainageways on alluvial fans

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Convex, concave

*Across-slope shape:* Concave

*Parent material:* Alluvium derived from basalt

#### **Typical profile**

*A1 - 0 to 12 inches:* stony clay loam

*A2 - 12 to 22 inches:* stony clay loam

*2C1 - 22 to 32 inches:* sandy loam

*2C2 - 32 to 54 inches:* sandy loam

#### **Properties and qualities**

*Slope:* 2 to 6 percent

*Surface area covered with cobbles, stones or boulders:* 9.0 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.60 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 6.4 inches)

**Interpretive groups**

*Land capability classification (irrigated): 2e*  
*Land capability classification (nonirrigated): 2e*  
*Hydrologic Soil Group: A*  
*Hydric soil rating: No*

**KIB—Kawaihapai clay loam, 2 to 6 percent slopes**

**Map Unit Setting**

*National map unit symbol: hqfc*  
*Elevation: 0 to 300 feet*  
*Mean annual precipitation: 30 to 50 inches*  
*Mean annual air temperature: 72 to 73 degrees F*  
*Frost-free period: 365 days*  
*Farmland classification: Prime farmland if irrigated*

**Map Unit Composition**

*Kawaihapai and similar soils: 100 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Kawaihapai**

**Setting**

*Landform: Alluvial fans*  
*Landform position (two-dimensional): Toeslope*  
*Landform position (three-dimensional): Rise*  
*Down-slope shape: Concave*  
*Across-slope shape: Concave*  
*Parent material: Basic igneous rock*

**Typical profile**

*H1 - 0 to 22 inches: clay loam*  
*H2 - 22 to 32 inches: sandy loam*  
*H3 - 32 to 54 inches: sandy loam*

**Properties and qualities**

*Slope: 2 to 6 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Drainage class: Well drained*  
*Runoff class: Very low*  
*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high*  
*(0.60 to 6.00 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: Occasional*  
*Frequency of ponding: None*  
*Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)*

**Interpretive groups**

*Land capability classification (irrigated): 2e*  
*Land capability classification (nonirrigated): 2e*  
*Hydrologic Soil Group: A*  
*Ecological site: R158XY401HI - Isohyperthermic Ustic Naturalized Grassland*

*Hydric soil rating:* No

**KIbC—Kawaihapai very stony clay loam, 0 to 15 percent slopes, MLRA 158**

**Map Unit Setting**

*National map unit symbol:* 2w034  
*Elevation:* 0 to 600 feet  
*Mean annual precipitation:* 30 to 50 inches  
*Mean annual air temperature:* 72 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Kawaihapai and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Kawaihapai**

**Setting**

*Landform:* Drainageways on mountain slopes, drainageways on alluvial fans  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Alluvium derived from basalt

**Typical profile**

*A1 - 0 to 12 inches:* very stony clay loam  
*A2 - 12 to 22 inches:* very stony clay loam  
*2C1 - 22 to 32 inches:* sandy loam  
*2C2 - 32 to 54 inches:* sandy loam

**Properties and qualities**

*Slope:* 0 to 15 percent  
*Surface area covered with cobbles, stones or boulders:* 12.0 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 6s  
*Land capability classification (nonirrigated):* 6s  
*Hydrologic Soil Group:* A  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

**LaC3—Lahaina silty clay, 7 to 15 percent slopes, severely eroded, MLRA 158**

**Map Unit Setting**

*National map unit symbol:* 2w03d  
*Elevation:* 10 to 1,500 feet  
*Mean annual precipitation:* 20 to 35 inches  
*Mean annual air temperature:* 72 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Lahaina and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Lahaina**

**Setting**

*Landform:* Hillslopes  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Residuum weathered from basalt

**Typical profile**

*A1 - 0 to 5 inches:* silty clay  
*A2 - 5 to 15 inches:* silty clay  
*Bo1 - 15 to 21 inches:* silty clay  
*Bo2 - 21 to 31 inches:* silty clay  
*Bo3 - 31 to 46 inches:* silty clay loam  
*BC - 46 to 60 inches:* silty clay loam

**Properties and qualities**

*Slope:* 7 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Moderate (about 6.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland

*Hydric soil rating:* No

## **LoB—Lolekaa silty clay, 3 to 8 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqgb  
*Elevation:* 0 to 160 feet  
*Mean annual precipitation:* 53 to 100 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

*Lolekaa and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Lolekaa**

#### **Setting**

*Landform:* Terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Alluvium derived from basalt

#### **Typical profile**

*Ap - 0 to 10 inches:* silty clay  
*Bt1 - 10 to 42 inches:* silty clay  
*Bt2 - 42 to 65 inches:* paragravelly loam

#### **Properties and qualities**

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## Minor Components

### Hanalei

*Percent of map unit:* 3 percent  
*Landform:* Flood plains on valley floors  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear, concave  
*Ecological site:* R167XY002HI - Flooded Alluvium  
*Hydric soil rating:* No

### Kaneohe

*Percent of map unit:* 2 percent  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## LoC—Lolekaa silty clay, 8 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* hqgc  
*Elevation:* 0 to 500 feet  
*Mean annual precipitation:* 70 to 90 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Lolekaa and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Lolekaa

#### Setting

*Landform:* Terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Alluvium from basic igneous rock

#### Typical profile

*H1 - 0 to 10 inches:* silty clay  
*H2 - 10 to 42 inches:* silty clay  
*H3 - 42 to 65 inches:* paragravelly loam

**Properties and qualities**

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.8 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

**LoD—Lolekaa silty clay, 15 to 25 percent slopes**

**Map Unit Setting**

*National map unit symbol:* hqgd  
*Elevation:* 70 to 330 feet  
*Mean annual precipitation:* 63 to 116 inches  
*Mean annual air temperature:* 70 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Lolekaa and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Lolekaa**

**Setting**

*Landform:* Terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Alluvium derived from basalt

**Typical profile**

*Ap - 0 to 10 inches:* silty clay  
*Bt1 - 10 to 42 inches:* silty clay  
*Bt2 - 42 to 65 inches:* paragravelly loam

**Properties and qualities**

*Slope:* 15 to 25 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained

## Custom Soil Resource Report

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 6.8 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* R167XY001HI - Oxidic Dissected Lowland

*Hydric soil rating:* No

## **LoE—Lolekaa silty clay, 25 to 40 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqgf

*Elevation:* 0 to 500 feet

*Mean annual precipitation:* 70 to 90 inches

*Mean annual air temperature:* 72 to 73 degrees F

*Frost-free period:* 365 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Lolekaa and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Lolekaa**

#### **Setting**

*Landform:* Terraces

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Parent material:* Alluvium from basic igneous rock

#### **Typical profile**

*H1 - 0 to 10 inches:* silty clay

*H2 - 10 to 42 inches:* silty clay

*H3 - 42 to 65 inches:* paragravelly loam

#### **Properties and qualities**

*Slope:* 25 to 40 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

## Custom Soil Resource Report

*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## LoF—Lolekaa silty clay, 40 to 70 percent slopes

### Map Unit Setting

*National map unit symbol:* hqgg  
*Elevation:* 70 to 330 feet  
*Mean annual precipitation:* 73 to 121 inches  
*Mean annual air temperature:* 70 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Lolekaa and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Lolekaa

#### Setting

*Landform:* Terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Alluvium derived from basalt

#### Typical profile

*A - 0 to 10 inches:* silty clay  
*Bt1 - 10 to 42 inches:* silty clay  
*Bt2 - 42 to 65 inches:* paragravelly loam

#### Properties and qualities

*Slope:* 40 to 70 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.8 inches)

**Interpretive groups**

*Land capability classification (irrigated): 7e*  
*Land capability classification (nonirrigated): 7e*  
*Hydrologic Soil Group: C*  
*Ecological site: R167XY001HI - Oxidic Dissected Lowland*  
*Hydric soil rating: No*

**LPE—Lualualei extremely cobbly clay, 3 to 35 percent slopes, MLRA 166**

**Map Unit Setting**

*National map unit symbol: 2w03h*  
*Elevation: 10 to 120 feet*  
*Mean annual precipitation: 30 to 65 inches*  
*Mean annual air temperature: 72 to 79 degrees F*  
*Frost-free period: 365 days*  
*Farmland classification: Not prime farmland*

**Map Unit Composition**

*Lualualei, extremely cobbly, and similar soils: 100 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Lualualei, Extremely Cobbly**

**Setting**

*Landform: Alluvial fans*  
*Landform position (two-dimensional): Toeslope*  
*Landform position (three-dimensional): Talf*  
*Down-slope shape: Linear*  
*Across-slope shape: Concave*  
*Parent material: Alluvium*

**Typical profile**

*A1 - 0 to 1 inches: extremely cobbly clay*  
*A2 - 1 to 10 inches: extremely cobbly clay*  
*ABss - 10 to 22 inches: extremely cobbly clay*  
*Bss - 22 to 30 inches: extremely cobbly clay*  
*Bssy1 - 30 to 49 inches: extremely cobbly clay*  
*Bssy2 - 49 to 60 inches: extremely cobbly clay*

**Properties and qualities**

*Slope: 3 to 35 percent*  
*Surface area covered with cobbles, stones or boulders: 35.0 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Drainage class: Well drained*  
*Runoff class: High*  
*Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Available water supply, 0 to 60 inches: Low (about 5.4 inches)*

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

**LuA—Lualualei clay, 0 to 2 percent slopes, MLRA 163**

**Map Unit Setting**

*National map unit symbol:* 2w03f  
*Elevation:* 0 to 30 feet  
*Mean annual precipitation:* 19 to 37 inches  
*Mean annual air temperature:* 73 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Prime farmland if irrigated

**Map Unit Composition**

*Lualualei and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Lualualei**

**Setting**

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Volcanic ash and colluvium alluvium derived from basalt

**Typical profile**

*A1 - 0 to 1 inches:* clay  
*A2 - 1 to 10 inches:* clay  
*ABss - 10 to 22 inches:* clay  
*Bss - 22 to 30 inches:* clay  
*Bssy1 - 30 to 49 inches:* clay  
*Bssy2 - 49 to 60 inches:* clay

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Surface area covered with cobbles, stones or boulders:* 2.0 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Gypsum, maximum content:* 15 percent

## Custom Soil Resource Report

*Maximum salinity:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 5.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3s  
*Land capability classification (nonirrigated):* 3s  
*Hydrologic Soil Group:* C  
*Ecological site:* R163XY001HI - Shrink-Swell Clay  
*Hydric soil rating:* No

### Minor Components

#### Ewa

*Percent of map unit:* 5 percent  
*Landform:* Stream terraces, alluvial fans, mountain slopes  
*Landform position (two-dimensional):* Backslope, footslope  
*Landform position (three-dimensional):* Mountainbase, lower third of mountainflank, tread  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Concave, convex  
*Ecological site:* R158XY002HI - Isohyperthermic Torric Naturalized Grassland  
*Hydric soil rating:* No

## MIA—Makiki stony clay loam, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* hqgx  
*Elevation:* 20 to 200 feet  
*Mean annual precipitation:* 30 to 60 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

*Makiki, stony, and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Makiki, Stony

#### Setting

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread, rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Alluvium

#### Typical profile

*H1 - 0 to 20 inches:* stony clay loam  
*H2 - 20 to 30 inches:* clay loam  
*H3 - 30 to 60 inches:* paragravelly clay loam

**Properties and qualities**

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.60 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3s  
*Hydrologic Soil Group:* B  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

**MpC—Manana silty clay, 8 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* hqh3  
*Elevation:* 500 to 1,200 feet  
*Mean annual precipitation:* 40 to 60 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Prime farmland if irrigated

**Map Unit Composition**

*Manana and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Manana**

**Setting**

*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Basic igneous rock

**Typical profile**

*H1 - 0 to 15 inches:* silty clay  
*H2 - 15 to 60 inches:* silty clay

**Properties and qualities**

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## MpD—Manana silty clay, 15 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* hqh4  
*Elevation:* 500 to 1,200 feet  
*Mean annual precipitation:* 40 to 60 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Manana and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Manana

#### Setting

*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Interfluvium  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Basic igneous rock

#### Typical profile

*H1 - 0 to 15 inches:* silty clay  
*H2 - 15 to 60 inches:* silty clay

#### Properties and qualities

*Slope:* 15 to 25 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.4 inches)

**Interpretive groups**

*Land capability classification (irrigated): 4e*  
*Land capability classification (nonirrigated): 4e*  
*Hydrologic Soil Group: C*  
*Ecological site: R158XY401HI - Isohyperthermic Ustic Naturalized Grassland*  
*Hydric soil rating: No*

**MpE—Manana silty clay, 25 to 40 percent slopes**

**Map Unit Setting**

*National map unit symbol: hqh6*  
*Elevation: 500 to 1,200 feet*  
*Mean annual precipitation: 40 to 60 inches*  
*Mean annual air temperature: 72 to 73 degrees F*  
*Frost-free period: 365 days*  
*Farmland classification: Not prime farmland*

**Map Unit Composition**

*Manana and similar soils: 100 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Manana**

**Setting**

*Landform position (two-dimensional): Shoulder*  
*Landform position (three-dimensional): Interfluve*  
*Down-slope shape: Linear*  
*Across-slope shape: Concave*  
*Parent material: Basic igneous rock*

**Typical profile**

*H1 - 0 to 15 inches: silty clay*  
*H2 - 15 to 60 inches: silty clay*

**Properties and qualities**

*Slope: 25 to 40 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Drainage class: Well drained*  
*Runoff class: High*  
*Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)*

**Interpretive groups**

*Land capability classification (irrigated): None specified*  
*Land capability classification (nonirrigated): 6e*  
*Hydrologic Soil Group: C*  
*Ecological site: R158XY401HI - Isohyperthermic Ustic Naturalized Grassland*  
*Hydric soil rating: No*

## **PID—Pamoia silty clay, 5 to 20 percent slopes, MLRA 158**

### **Map Unit Setting**

*National map unit symbol:* 2w04n

*Elevation:* 100 to 1,500 feet

*Mean annual precipitation:* 15 to 30 inches

*Mean annual air temperature:* 72 to 73 degrees F

*Frost-free period:* 365 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Pamoia and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Pamoia**

#### **Setting**

*Landform:* Hillslopes

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Side slope

*Microfeatures of landform position:* Rills, gullies

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Parent material:* Alluvium derived from igneous rock

#### **Typical profile**

*A - 0 to 7 inches:* silty clay

*AB - 7 to 15 inches:* clay

*Bw1 - 15 to 31 inches:* silty clay

*Bw2 - 31 to 39 inches:* clay

*Bw3 - 39 to 62 inches:* clay

#### **Properties and qualities**

*Slope:* 5 to 20 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Sodium adsorption ratio, maximum:* 5.0

*Available water supply, 0 to 60 inches:* Low (about 3.3 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* R158XY002HI - Isohyperthermic Torric Naturalized Grassland

*Hydric soil rating:* No

## **PKB—Pohakupu silty clay loam, 0 to 3 percent slopes, MLRA 167**

### **Map Unit Setting**

*National map unit symbol:* 2w04q  
*Elevation:* 30 to 170 feet  
*Mean annual precipitation:* 44 to 59 inches  
*Mean annual air temperature:* 64 to 66 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

*Pohakupu and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Pohakupu**

#### **Setting**

*Landform:* Alluvial fans on islands  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Alluvium

#### **Typical profile**

*Ap - 0 to 13 inches:* silty clay loam  
*Bw1 - 13 to 21 inches:* silty clay loam  
*Bw2 - 21 to 38 inches:* silty clay loam  
*Bw3 - 38 to 50 inches:* silty clay loam  
*Bw4 - 50 to 76 inches:* silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

**Minor Components**

**Waialua**

*Percent of map unit:* 5 percent  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Side slope, rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

**Alaeloa**

*Percent of map unit:* 5 percent  
*Landform:* Mountains  
*Landform position (two-dimensional):* Backslope, toeslope  
*Landform position (three-dimensional):* Lower third of mountainflank, interfluvium  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave, linear  
*Hydric soil rating:* No

**PkC—Pohakupu silty clay loam, 8 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* hqhx  
*Elevation:* 50 to 250 feet  
*Mean annual precipitation:* 40 to 60 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Prime farmland if irrigated

**Map Unit Composition**

*Pohakupu and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Pohakupu**

**Setting**

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Alluvium

**Typical profile**

*H1 - 0 to 13 inches:* silty clay loam  
*H2 - 13 to 76 inches:* silty clay loam

**Properties and qualities**

*Slope:* 8 to 15 percent

## Custom Soil Resource Report

*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

## rAAE—Alakai mucky peat, 0 to 30 percent slopes, MLRA 164

### Map Unit Setting

*National map unit symbol:* 2w02t  
*Elevation:* 3,000 to 5,000 feet  
*Mean annual precipitation:* 100 to 449 inches  
*Mean annual air temperature:* 54 to 57 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Alakai and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Alakai

#### Setting

*Landform:* Depressions on ridges  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Mountaintop, interfluve, dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Organic material over residuum weathered from basalt

#### Typical profile

*Oe - 0 to 8 inches:* mucky peat  
*Oa1 - 8 to 12 inches:* muck  
*Oa2 - 12 to 22 inches:* muck  
*Oa3 - 22 to 32 inches:* muck  
*2Cg1 - 32 to 38 inches:* clay  
*2Cg2 - 38 to 51 inches:* clay

#### Properties and qualities

*Slope:* 0 to 30 percent  
*Depth to restrictive feature:* More than 80 inches

## Custom Soil Resource Report

*Drainage class:* Very poorly drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* About 8 to 18 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7w  
*Hydrologic Soil Group:* C/D  
*Ecological site:* F164XY003HI - Very Poorly Drained Terric Forest  
*Hydric soil rating:* Yes

## rCl—Cinder land

### Map Unit Setting

*National map unit symbol:* hqjw  
*Elevation:* 200 to 2,000 feet  
*Mean annual precipitation:* 60 to 100 inches  
*Mean annual air temperature:* 63 to 72 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Cinder land:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Cinder Land

#### Setting

*Landform:* Cinder cones  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Mountainflank  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex

#### Typical profile

*H1 - 0 to 60 inches:* paragravel

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 8s  
*Hydric soil rating:* No

## **rRK—Rock land**

### **Map Unit Setting**

*National map unit symbol:* hqjx  
*Elevation:* 0 to 6,000 feet  
*Mean annual precipitation:* 12 to 325 inches  
*Mean annual air temperature:* 57 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Rock land and similar soils:* 55 percent  
*Rock outcrop:* 45 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## **Description of Rock Land**

### **Setting**

*Landform:* Pahoehoe lava flows  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Mountainflank, side slope, riser, rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Basalt

### **Typical profile**

*H1 - 0 to 4 inches:* silty clay  
*H2 - 4 to 8 inches:* silty clay  
*H3 - 8 to 20 inches:* bedrock

### **Properties and qualities**

*Slope:* 5 to 70 percent  
*Depth to restrictive feature:* 4 to 10 inches to lithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately low  
(0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very low (about 1.1 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* D  
*Hydric soil rating:* No

## **Description of Rock Outcrop**

### **Typical profile**

*H1 - 0 to 60 inches:* bedrock

**Properties and qualities**

*Slope: 10 to 70 percent*

*Depth to restrictive feature: 0 inches to lithic bedrock*

*Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low  
(0.00 to 0.06 in/hr)*

*Available water supply, 0 to 60 inches: Very low (about 0.0 inches)*

**Interpretive groups**

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 8s*

*Hydric soil rating: No*

**rRO—Rock outcrop**

**Map Unit Setting**

*National map unit symbol: hqjy*

*Elevation: 0 to 10,000 feet*

*Mean annual precipitation: 10 to 175 inches*

*Mean annual air temperature: 45 to 75 degrees F*

*Frost-free period: 365 days*

*Farmland classification: Not prime farmland*

**Map Unit Composition**

*Rock outcrop: 100 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Rock Outcrop**

**Typical profile**

*H1 - 0 to 60 inches: bedrock*

**Properties and qualities**

*Slope: 5 to 99 percent*

*Depth to restrictive feature: 0 inches to lithic bedrock*

*Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low  
(0.00 to 0.06 in/hr)*

*Available water supply, 0 to 60 inches: Very low (about 0.0 inches)*

**Interpretive groups**

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 8s*

*Hydric soil rating: No*

## **rRT—Rough mountainous land**

### **Map Unit Setting**

*National map unit symbol:* hqjz  
*Elevation:* 0 to 6,000 feet  
*Mean annual precipitation:* 120 to 250 inches  
*Mean annual air temperature:* 57 to 72 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Rough mountainous land and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## **Description of Rough Mountainous Land**

### **Setting**

*Landform:* Gulches  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Mountainflank, side slope, rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Alluvium and colluvium

### **Typical profile**

*H1 - 0 to 5 inches:* silty clay loam  
*H2 - 5 to 25 inches:* very cobbly clay loam  
*H3 - 25 to 29 inches:* bedrock

### **Properties and qualities**

*Slope:* 50 to 99 percent  
*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately low  
(0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 3.2 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 8e  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

## **rSY—Stony steep land**

### **Map Unit Setting**

*National map unit symbol:* hqk1  
*Elevation:* 100 to 1,500 feet  
*Mean annual precipitation:* 20 to 45 inches  
*Mean annual air temperature:* 72 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Stony steep land and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Stony Steep Land**

#### **Setting**

*Landform:* Valleys  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Mass movement deposits

#### **Typical profile**

*H1 - 0 to 10 inches:* extremely stony silty clay  
*H2 - 10 to 60 inches:* extremely stony silty clay

#### **Properties and qualities**

*Slope:* 40 to 70 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 5.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

## **TAE—Tantalus silt loam, 15 to 40 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqj1  
*Elevation:* 70 to 460 feet  
*Mean annual precipitation:* 74 to 151 inches  
*Mean annual air temperature:* 68 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Tantalus and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Tantalus**

#### **Setting**

*Landform:* Mountain slopes  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Volcanic ash derived from volcanic rock and/or cinders derived from volcanic rock

#### **Typical profile**

*A - 0 to 18 inches:* highly organic silt loam  
*Bw - 18 to 29 inches:* gravelly very fine sandy loam  
*2C - 29 to 60 inches:* gravel

#### **Properties and qualities**

*Slope:* 15 to 40 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (2.00 to 20.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 4.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* A  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## **TAF—Tantalus silt loam, 40 to 70 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqj2  
*Elevation:* 260 to 520 feet  
*Mean annual precipitation:* 78 to 137 inches  
*Mean annual air temperature:* 66 to 70 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Tantalus and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Tantalus**

#### **Setting**

*Landform:* Mountain slopes  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Volcanic ash derived from volcanic rock and/or cinders derived from volcanic rock

#### **Typical profile**

*A - 0 to 18 inches:* highly organic silt loam  
*Bw - 18 to 29 inches:* gravelly very fine sandy loam  
*2C - 29 to 60 inches:* gravel

#### **Properties and qualities**

*Slope:* 40 to 70 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (2.00 to 20.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 4.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 7e  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## **TCC—Tantalus silty clay loam, 8 to 15 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqj3  
*Elevation:* 100 to 2,200 feet  
*Mean annual precipitation:* 50 to 150 inches  
*Mean annual air temperature:* 68 to 72 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Tantalus and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Tantalus**

#### **Setting**

*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope, rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Volcanic ash

#### **Typical profile**

*H1 - 0 to 18 inches:* silty clay loam  
*H2 - 18 to 29 inches:* gravelly very fine sandy loam  
*H3 - 29 to 60 inches:* gravel

#### **Properties and qualities**

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (2.00 to 20.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* A  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

## **TCE—Tantalus silty clay loam, 15 to 40 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqj4  
*Elevation:* 100 to 2,200 feet  
*Mean annual precipitation:* 50 to 150 inches  
*Mean annual air temperature:* 68 to 72 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Tantalus and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Tantalus**

#### **Setting**

*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope, rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Volcanic ash

#### **Typical profile**

*H1 - 0 to 18 inches:* silty clay loam  
*H2 - 18 to 29 inches:* gravelly very fine sandy loam  
*H3 - 29 to 60 inches:* gravel

#### **Properties and qualities**

*Slope:* 15 to 40 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (2.00 to 20.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

## **W—Water > 40 acres**

### **Map Unit Setting**

*National map unit symbol:* hqj6  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Water > 40 acres:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## **WnB—Waialua clay, 2 to 6 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqjj  
*Elevation:* 10 to 100 feet  
*Mean annual precipitation:* 25 to 50 inches  
*Mean annual air temperature:* 72 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

*Waialua and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Waialua**

#### **Setting**

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Side slope, rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Alluvium

#### **Typical profile**

*H1 - 0 to 12 inches:* clay  
*H2 - 12 to 60 inches:* silty clay

#### **Properties and qualities**

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None

## Custom Soil Resource Report

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 8.4 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 3c

*Hydrologic Soil Group:* C

*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland

*Hydric soil rating:* No

## **WpaE—Waikane stony silty clay, 15 to 30 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqjq

*Elevation:* 0 to 200 feet

*Mean annual precipitation:* 55 to 66 inches

*Mean annual air temperature:* 72 to 73 degrees F

*Frost-free period:* 365 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Waikane, stony, and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Waikane, Stony**

#### **Setting**

*Landform:* Alluvial fans

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Parent material:* Alluvium derived from igneous rock and/or colluvium derived from igneous rock

#### **Typical profile**

*Ap - 0 to 8 inches:* stony silty clay

*Bt - 8 to 60 inches:* silty clay

#### **Properties and qualities**

*Slope:* 15 to 30 percent

*Surface area covered with cobbles, stones or boulders:* 0.0 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

**Interpretive groups**

*Land capability classification (irrigated): 6e*  
*Land capability classification (nonirrigated): 6e*  
*Hydrologic Soil Group: C*  
*Ecological site: R167XY001HI - Oxidic Dissected Lowland*  
*Hydric soil rating: No*

**WpB—Waikane silty clay, 3 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol: hqjk*  
*Elevation: 0 to 70 feet*  
*Mean annual precipitation: 59 to 87 inches*  
*Mean annual air temperature: 72 to 73 degrees F*  
*Frost-free period: 365 days*  
*Farmland classification: Prime farmland if irrigated*

**Map Unit Composition**

*Waikane and similar soils: 100 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Waikane**

**Setting**

*Landform: Alluvial fans*  
*Landform position (two-dimensional): Backslope*  
*Landform position (three-dimensional): Side slope*  
*Down-slope shape: Concave*  
*Across-slope shape: Concave*  
*Parent material: Alluvium derived from igneous rock and/or colluvium derived from igneous and metamorphic rock*

**Typical profile**

*Ap - 0 to 8 inches: silty clay*  
*Bt - 8 to 60 inches: silty clay*

**Properties and qualities**

*Slope: 3 to 8 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Drainage class: Well drained*  
*Runoff class: Low*  
*Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)*

**Interpretive groups**

*Land capability classification (irrigated): 2e*  
*Land capability classification (nonirrigated): 2e*  
*Hydrologic Soil Group: C*

## Custom Soil Resource Report

*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

### **WpC—Waikane silty clay, 8 to 15 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* hqjl  
*Elevation:* 0 to 100 feet  
*Mean annual precipitation:* 61 to 111 inches  
*Mean annual air temperature:* 72 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Prime farmland if irrigated

#### **Map Unit Composition**

*Waikane and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Waikane**

##### **Setting**

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Alluvium derived from igneous rock and/or colluvium derived from igneous rock

##### **Typical profile**

*Ap - 0 to 8 inches:* silty clay  
*Bt - 8 to 60 inches:* silty clay

##### **Properties and qualities**

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## **WpE—Waikane silty clay, 25 to 40 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqjm  
*Elevation:* 30 to 160 feet  
*Mean annual precipitation:* 68 to 154 inches  
*Mean annual air temperature:* 70 to 73 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Waikane and similar soils:* 94 percent  
*Minor components:* 6 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Waikane**

#### **Setting**

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Alluvium derived from basalt and/or colluvium derived from basalt

#### **Typical profile**

*Ap - 0 to 8 inches:* silty clay  
*Bt - 8 to 60 inches:* silty clay

#### **Properties and qualities**

*Slope:* 25 to 40 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

### **Minor Components**

#### **Alaeloa**

*Percent of map unit:* 2 percent

## Custom Soil Resource Report

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R158XY401HI - Isohyperthermic Ustic Naturalized Grassland  
*Hydric soil rating:* No

### **Kaneohe**

*Percent of map unit:* 2 percent  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

### **Lolekaa**

*Percent of map unit:* 2 percent  
*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

## **WpF—Waikane silty clay, 40 to 70 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqjn  
*Elevation:* 50 to 1,000 feet  
*Mean annual precipitation:* 70 to 100 inches  
*Mean annual air temperature:* 72 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Waikane and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Waikane**

#### **Setting**

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope, rise  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave

## Custom Soil Resource Report

*Parent material:* Alluvium

### Typical profile

*H1 - 0 to 8 inches:* silty clay

*H2 - 8 to 60 inches:* silty clay

### Properties and qualities

*Slope:* 40 to 70 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* C

*Ecological site:* R167XY001HI - Oxidic Dissected Lowland

*Hydric soil rating:* No

## WpF2—Waikane silty clay, 40 to 70 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* hqjp

*Elevation:* 30 to 390 feet

*Mean annual precipitation:* 19 to 94 inches

*Mean annual air temperature:* 70 to 73 degrees F

*Frost-free period:* 365 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Waikane and similar soils:* 98 percent

*Minor components:* 2 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Waikane

#### Setting

*Landform:* Alluvial fans

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Parent material:* Alluvium derived from igneous rock and/or colluvium derived from igneous rock

#### Typical profile

*Ap - 0 to 4 inches:* silty clay

## Custom Soil Resource Report

*Bt - 4 to 60 inches: silty clay*

### **Properties and qualities**

*Slope: 40 to 70 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Well drained*

*Runoff class: High*

*Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)*

### **Interpretive groups**

*Land capability classification (irrigated): 7e*

*Land capability classification (nonirrigated): 7e*

*Hydrologic Soil Group: C*

*Ecological site: R167XY001HI - Oxidic Dissected Lowland*

*Hydric soil rating: No*

### **Minor Components**

#### **Rock outcrop**

*Percent of map unit: 2 percent*

*Landform: Hillslopes*

*Landform position (two-dimensional): Summit*

*Landform position (three-dimensional): Interfluve*

*Down-slope shape: Linear*

*Across-slope shape: Convex*

*Hydric soil rating: Unranked*

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

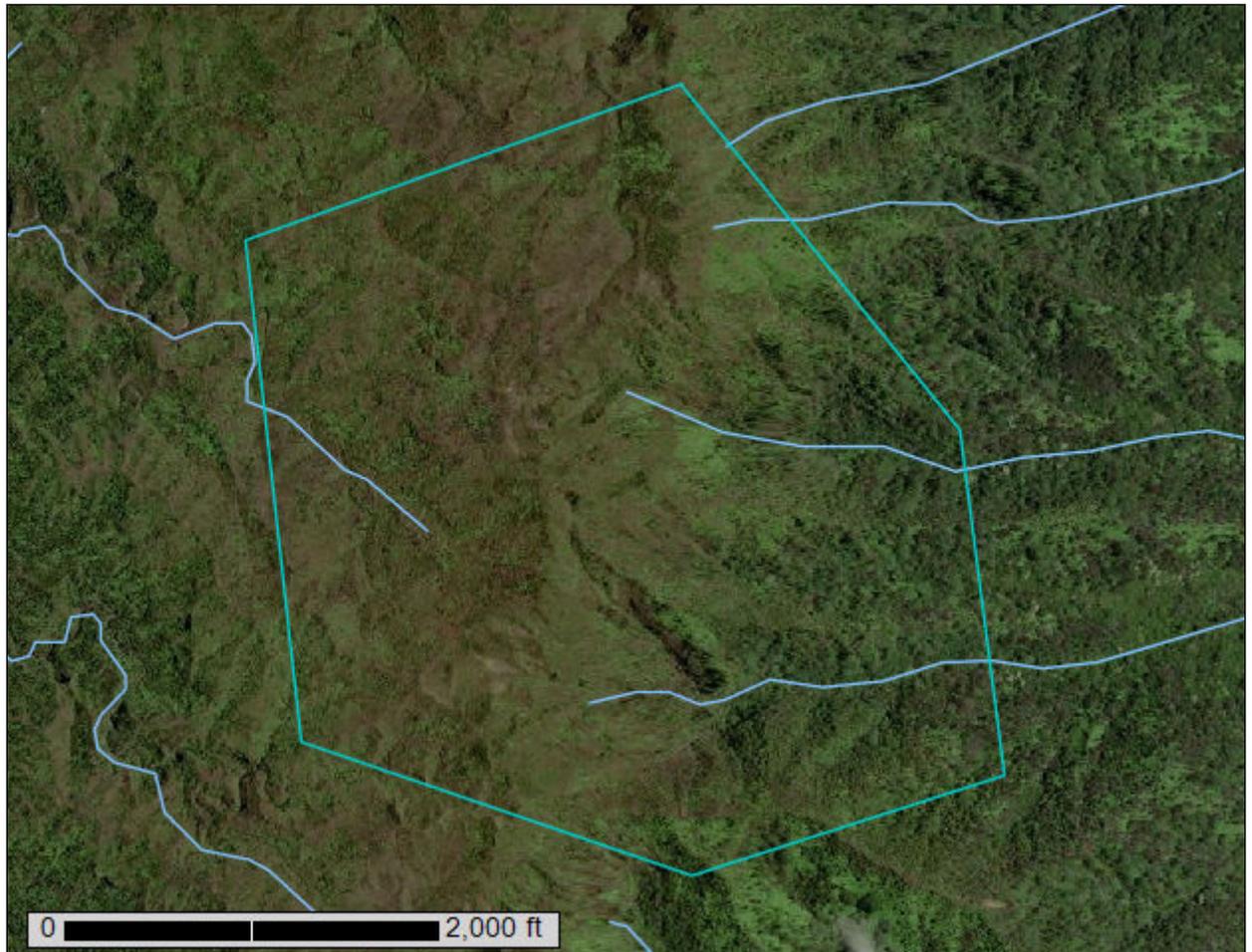
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A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Island of Oahu, Hawaii



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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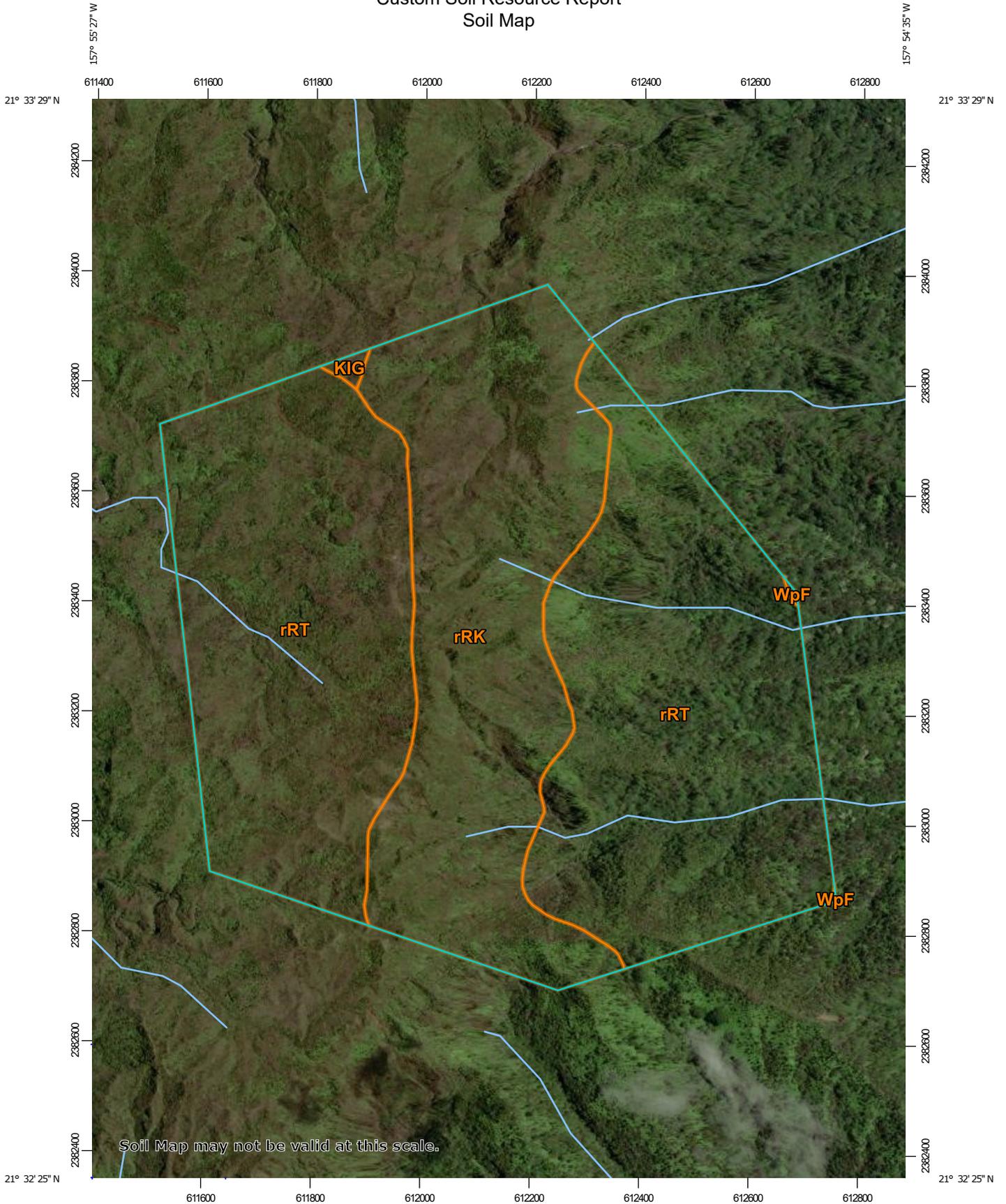
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:9,590 if printed on A portrait (8.5" x 11") sheet.

0 100 200 400 600 Meters  
0 450 900 1800 2700 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 4N WGS84

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

**Special Point Features**

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Oahu, Hawaii  
 Survey Area Data: Version 19, Sep 11, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 29, 2017—Oct 11, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KIG	Kapaa silty clay, 40 to 100 percent slopes	0.7	0.3%
rRK	Rock land	94.1	33.3%
rRT	Rough mountainous land	188.1	66.4%
WpF	Waikane silty clay, 40 to 70 percent slopes	0.1	0.0%
<b>Totals for Area of Interest</b>		<b>283.0</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

## Custom Soil Resource Report

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Island of Oahu, Hawaii

### KIG—Kapaa silty clay, 40 to 100 percent slopes

#### Map Unit Setting

*National map unit symbol:* hqdx  
*Elevation:* 200 to 660 feet  
*Mean annual precipitation:* 75 to 187 inches  
*Mean annual air temperature:* 64 to 72 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Kapaa and similar soils:* 75 percent  
*Rubble land:* 25 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Kapaa

##### Setting

*Landform:* Mountain slopes  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Residuum weathered from basalt

##### Typical profile

*A - 0 to 2 inches:* highly organic silty clay  
*Bw - 2 to 60 inches:* paragravelly silty clay

##### Properties and qualities

*Slope:* 40 to 100 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 8.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 7e  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Ecological site:* R167XY001HI - Oxidic Dissected Lowland  
*Hydric soil rating:* No

#### Description of Rubble Land

##### Setting

*Landform:* Mountain slopes  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope

## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Concave

### Interpretive groups

*Land capability classification (irrigated):* 8  
*Land capability classification (nonirrigated):* 8

## rRK—Rock land

### Map Unit Setting

*National map unit symbol:* hqjx  
*Elevation:* 0 to 6,000 feet  
*Mean annual precipitation:* 12 to 325 inches  
*Mean annual air temperature:* 57 to 75 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Rock land and similar soils:* 55 percent  
*Rock outcrop:* 45 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Rock Land

#### Setting

*Landform:* Pahoehoe lava flows  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Mountainflank, side slope, riser, rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Basalt

#### Typical profile

*H1 - 0 to 4 inches:* silty clay  
*H2 - 4 to 8 inches:* silty clay  
*H3 - 8 to 20 inches:* bedrock

#### Properties and qualities

*Slope:* 5 to 70 percent  
*Depth to restrictive feature:* 4 to 10 inches to lithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately low  
(0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very low (about 1.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

## Custom Soil Resource Report

*Land capability classification (nonirrigated): 7s*  
*Hydrologic Soil Group: D*  
*Hydric soil rating: No*

### Description of Rock Outcrop

#### Typical profile

*H1 - 0 to 60 inches: bedrock*

#### Properties and qualities

*Slope: 10 to 70 percent*

*Depth to restrictive feature: 0 inches to lithic bedrock*

*Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low*  
*(0.00 to 0.06 in/hr)*

*Available water supply, 0 to 60 inches: Very low (about 0.0 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 8s*

*Hydric soil rating: No*

## rRT—Rough mountainous land

### Map Unit Setting

*National map unit symbol: hqjz*

*Elevation: 0 to 6,000 feet*

*Mean annual precipitation: 120 to 250 inches*

*Mean annual air temperature: 57 to 72 degrees F*

*Frost-free period: 365 days*

*Farmland classification: Not prime farmland*

### Map Unit Composition

*Rough mountainous land and similar soils: 100 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Rough Mountainous Land

#### Setting

*Landform: Gulches*

*Landform position (two-dimensional): Backslope*

*Landform position (three-dimensional): Mountainflank, side slope, rise*

*Down-slope shape: Linear*

*Across-slope shape: Convex*

*Parent material: Alluvium and colluvium*

#### Typical profile

*H1 - 0 to 5 inches: silty clay loam*

*H2 - 5 to 25 inches: very cobbly clay loam*

*H3 - 25 to 29 inches: bedrock*

#### Properties and qualities

*Slope: 50 to 99 percent*

## Custom Soil Resource Report

*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately low  
(0.00 to 0.06 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 3.2 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 8e  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

## **WpF—Waikane silty clay, 40 to 70 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hqjn  
*Elevation:* 50 to 1,000 feet  
*Mean annual precipitation:* 70 to 100 inches  
*Mean annual air temperature:* 72 degrees F  
*Frost-free period:* 365 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Waikane and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Waikane**

#### **Setting**

*Landform:* Alluvial fans  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope, rise  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Alluvium

#### **Typical profile**

*H1 - 0 to 8 inches:* silty clay  
*H2 - 8 to 60 inches:* silty clay

#### **Properties and qualities**

*Slope:* 40 to 70 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches

## Custom Soil Resource Report

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* C

*Ecological site:* R167XY001HI - Oxidic Dissected Lowland

*Hydric soil rating:* No

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## Hawaii DLNR: Miconia Control Area

### Map



### Geographic coordinates:

POLYGON

(21.362689,-157.802078,21.371769,-157.794937,21.373687,-157.786285,21.376501,-157.772827,21.377396,-157.765961,21.377524,-157.758682,21.373559,-157.752777,21.365886,-157.748932,21.358468,-157.748245,21.351689,-157.747696,21.353992,-157.733002,21.349643,-157.729980,21.337108,-157.725586,21.324188,-157.727783,21.316896,-157.728332,21.313345,-157.742374,21.316416,-157.753635,21.319998,-157.758305,21.323068,-157.765995,21.325371,-157.776432,21.324092,-157.778629,21.314625,-157.775883,21.305925,-157.779179,21.301575,-157.785770,21.302086,-157.795383,21.304901,-157.802799,21.309251,-157.806370,21.307972,-157.825046,21.317695,-157.837406,21.324092,-157.844547,21.339954,-157.846744,21.350442,-157.858280,21.357605,-157.871738,21.364255,-157.870365,21.371929,-157.862675,21.377044,-157.848392,21.377300,-157.839603,21.372440,-157.827244,21.368604,-157.818180,21.365790,-157.814884,21.359651,-157.809391,21.362689,-157.802078)

with buffer 0.5 miles

Note: The information in the following reports is based on publicly available databases and web services. The National Report uses nationally available datasets and the State Reports use datasets available through the EPA Regions. Click on the hyperlinked question to view the data source and associated metadata.

### National Report

Project Area

31.81 sq mi

Within 0.5 miles of an Ozone 1-hr (1979 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of an Ozone 8-hr (2015 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no

Within 0.5 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a CO Annual (1971 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a NO2 Annual (1971 standard) Non-Attainment/Maintenance Area?	no
Within 0.5 miles of a Federal Land?	yes
Within 0.5 miles of an impaired stream?	yes
Within 0.5 miles of an impaired waterbody?	no
Within 0.5 miles of a waterbody?	yes
Within 0.5 miles of a stream?	yes
Within 0.5 miles of an NWI wetland?	<a href="#">click here</a> <b>May take several minutes</b>
Within 0.5 miles of a Brownfields site?	no
Within 0.5 miles of a Superfund site?	no
Within 0.5 miles of a Toxic Release Inventory (TRI) site?	no
Within 0.5 miles of a water discharger (NPDES)?	yes
Within 0.5 miles of a hazardous waste (RCRA) facility?	yes
Within 0.5 miles of an air emission facility?	yes
Within 0.5 miles of a school?	yes
Within 0.5 miles of an airport?	no
Within 0.5 miles of a hospital?	yes
Within 0.5 miles of a designated sole source aquifer?	yes
Within 0.5 miles of a historic property on the National Register of Historic Places?	yes
Within 0.5 miles of a Chemical Data Reporting (CDR) site?	no
Within 0.5 miles of a Land Cession Boundary?	no
Within 0.5 miles of a tribal area (lower 48 states)?	no
Within 0.5 miles of the service area of a mitigation or conservation bank?	no
Within 0.5 miles of the service area of an In-Lieu-Fee Program?	no
Within 0.5 miles of a Public Property Boundary of the Formerly Used Defense Sites?	yes
Within 0.5 miles of a Munitions Response Site?	yes
Within 0.5 miles of an Essential Fish Habitat (EFH)?	no
Within 0.5 miles of a Habitat Area of Particular Concern (HAPC)?	no
Within 0.5 miles of an EFH Area Protected from Fishing (EFHA)?	no
Within 0.5 miles of a Bureau of Land Management Area of Critical Environmental Concern?	no
Within 0.5 miles of an ESA-designated Critical Habitat Area per U.S. Fish & Wildlife Service?	yes
Within 0.5 miles of an ESA-designated Critical Habitat river, stream or water feature per U.S. Fish & Wildlife Service?	no

**Hawaii Report**   
**Demographic Reports**   
**USFWS IPaC Report** 



U.S. DEPARTMENT OF THE INTERIOR  
Native Hawaiian Organization  
Notification List

Maintained by the  
Office of Native Hawaiian Relations

**Native Hawaiian Organization (NHO) Notification List**

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**‘Aha Kāne**

**Established:**

Foundation for the Advancement of Native Hawaiian Males

May 2009

**Summary:** Focus, Native Hawaiian community - nurturing and perpetuating of traditional male roles and responsibilities that contribute to the physical, mental, spiritual and social well-being of Hawaiian males, their families and communities.

**Originally Registered:**  
3/1/2013

<b>Island:</b> O‘ahu	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
----------------------	------------------	----------------------

**Contact:** G. Umi Kai

President

P.O. Box 31303

Honolulu, HI 96820-1303

(808) 840-5510

**E-mail:**

umikai@ahakane.org

**Website:**

www.ahakane.org

---

**Aha Kukaniloko Koa Mana mea ola kanaka maui**

**Established:**

Those families connected to Kukaniloko Koa Mana the living human being imbued with the spirit of ‘I‘o.

Mar 2005

**Summary:** Perpetuation of our traditional Hawaiian comprehension of our family's inheritance "to guard the kapu of Kukaniloko because we love them for all time . . . ." as this relates to the 36,000 acres of Lihue, Wahiawa, Halemano . . . kalana Kukaniloko.

**Originally Registered:**  
2/4/2014

<b>Island:</b> O‘ahu	<b>Moku:</b> Kalana Kukaniloko	<b>Ahupua‘a:</b> Lihue, Wahiawa, Halemano
----------------------	--------------------------------	---

**Contact:** Thomas Joseph Lenchanko

931 Uakanikoo Street

Wahiawa, HI 96786

(808) 349-9949

**E-mail:**

tlenchanko1@hawaii.rr.com

**Website:**

None listed

**Additional Contacts:**

Glen Makakaulii Kila

**E-mail:**

Alika Poe Silva

**E-mail:**

**‘Aha Mālama, Corp.**

**Established:**

The Caring Council, Corp.

Apr 2018

**Summary:** We are interested in archaeology and anthropology . . . Preserving historical places and identified ancient burials in our moku and collecting oral history from our kupuna.

**Originally Registered:**  
5/26/2021

<b>Island:</b> Statewide, Pacific Islands	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
---	------------------	----------------------

**Contact:** ‘Ānela Jackson  
 President  
 91-200 Leimao Place  
 Kapolei, HI 96707  
 (808) 694-9232

**E-mail:**  
 ahamalama.anela@gmail.com  
**Website:**  
 www.aha-malama.org

**Aha Moku O Kahikinui**

**Established:**

2007

**Summary:** Preserving all natural resources, including: land, water, rivers, coastline, ocean, burials, and air.

**Originally Registered:**  
5/16/2012

<b>Island:</b> Maui	<b>Moku:</b> Kahikinui	<b>Ahupua‘a:</b> Kahikinui
---------------------	------------------------	----------------------------

**Contact:** Donna D. Sterling  
 Aha Moku Representative  
 P.O. Box 700  
 Makawao, HI 96768  
 (808) 446-4171

**E-mail:**  
 dhelekunihi@yahoo.com  
**Website:**  
 None listed

**Aha Moku o Maui Inc.**

**Established:**

2011

**Summary:** Every moku on Maui has a representative, thus representing each of the 12 moku of Maui.

**Originally  
Registered:**  
10/16/2012

<b>Island:</b> Maui	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
---------------------	------------------	----------------------

**Contact:** Ke‘eaumoku Kapu  
Chief Executive Officer  
P.O. Box 11524  
Lahaina, HI 96761  
  
(808) 250-1479

**E-mail:**  
kapukapuakea@gmail.com  
**Website:**  
<http://www.ahamoku.org/index.php/maui-na-hono-ao-piilani/>

**‘Aha Pūnana Leo**

**Established:**

Language Nest

1983

**Summary:** ‘Aha Pūnana Leo was created as a grassroots effort with the sole purpose of reviving ‘ōlelo Hawai‘i. Now, ‘Aha Pūnana Leo serves as a local, national and international model for language revitalization. Over the past several decades, ‘Aha Pūnana Leo established and built numerous programs throughout the islands, helped to lift a 90-year ban on teaching Hawaiian in public and private schools, advocated for other indigenous people and raised awareness about the consequences of the loss of indigenous languages.

**Originally Registered:**  
11/19/2021

‘Aha Pūnana Leo has always strived to ensure that the Hawaiian Language lives. Rooted in our mission to drive and inspire change to ensure a living Hawaiian language in Hawai‘i and beyond, our organization is dedicated to the people we serve. We span across 12 different locations throughout the Hawaiian islands and have three unique programs. Our organization was the world’s first accredited early education program conducted through an endangered and indigenous language, under the guidelines set by the World Indigenous Nations Higher Education Consortium. The Pūnana Leo initiates, provides and nurtures a range of Hawaiian Language environments. We work to ensure the legacy of our ‘ōlelo Hawai‘i, which is the core of what makes Hawai‘i special to us all.

<b>Island:</b> Hawai‘i	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Ka‘iulani Laehā  
 Chief Operating Officer  
 96 Pu‘uhonu Place  
 Hilo, HI 96720  
 (808) 935-4304

**E-mail:**  
[contact@ahapunaleo.org](mailto:contact@ahapunaleo.org)  
**Website:**  
[www.ahapunaleo.org](http://www.ahapunaleo.org)

**Aha Wahine**

**Established:**

Gathering of Women

2011

**Summary:** To promote and perpetuate traditional practices and beliefs for the advancement and benefit of Hawaiian women for total well being in health, mental and spirit.

**Originally Registered:**  
5/30/2012

<b>Island:</b> O‘ahu and Hawai‘i	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> All
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**Contact:** Linda Kaleo Paik

**E-mail:**

kaleopaik@yahoo.com

98-070 Lokowai Street

**Website:**

Aiea, HI 96701

None listed

(808) 354-7765

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**‘Ahahui Siwila Hawai‘i O Kapōlei**

**Established:**

Kapolei Hawaiian Civic Club

1993

**Summary:** We are committed to the protection and preservation of historical places, endangered native flora and fauna. The protection and repatriation of our kupuna iwi. The preservation of Hawaiian Cultural, Language, oli, na mele, and the health and well being of native Hawaiians.

**Originally Registered:**  
7/29/2008

<b>Island:</b> O‘ahu	<b>Moku:</b> Ewa	<b>Ahupua‘a:</b> Honouliuli
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**Contact:** Rona Rodenhurst

**E-mail:**

President

kapoleihcc@gmail.com

P.O. Box 700007

**Website:**

Kapolei, HI 96709

www.kapoleihcc.com

(808) 681-5076

**Ahonui Homestead Association**

**Established:**

Feb 2019

**Summary:** The Association seeks to further serve, protect and preserve the interests of Native Hawaiian beneficiaries of the Hawaiian Home Lands Trust, cultural practices; cultivate and restore our fishpond, lo‘i, and historical sites; and address the beneficiary communities' needs in health, education, housing, social services, kupuna and keiki care, business, employment, and culture.

**Originally Registered:**  
 9/13/2019

<b>Island:</b> Moloka‘i	<b>Moku:</b> Ualapu‘e	<b>Ahupua‘a:</b> Ualapu‘e
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**Contact:** Cora Schnackenberg  
 President  
 P.O. Box 417  
 Hoolehua, HI 96729  
 (808) 646-0051

**E-mail:**  
 cora.schnackenberg@yahoo.com  
**Website:**  
 None listed

**Ahupua‘a o Moloka‘i**

**Established:**

1990

**Summary:** Molokai; Preservation of our Natural Resources; Priority Water

**Originally Registered:**  
 10/8/2010

<b>Island:</b> Moloka‘i	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Kammy Purdy  
 President  
 P.O. Box 159  
 Hoolehua, HI 96729  
 (808) 658-0444

**E-mail:**  
 kammypurdy@ahupuaaomolokai.org  
**Website:**  
 www.ahupuaaomolokai.org

**Ahupua‘a O Nānākuli Homestead**

**Established:**

December 2013

**Summary:** Our organization’s primary area of interest is the strength of a Lessee's opinion regarding any issue that affects Nānākuli Homestead. Including being notified at the beginning of the process of any projects or actions that will or may affect the residents of Nānākuli Homestead.

**Originally Registered:**  
3/24/2022

<b>Island:</b> O‘ahu	<b>Moku:</b> Wai‘anae	<b>Ahupua‘a:</b> Nānākuli
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**Contact:** Josiah Ho‘ohuli

President

89-137 Nānākuli Avenue

Wai‘anae, HI 96792

(808) 864-8449

**E-mail:**

AhupuaaONanakuliHomestead@gmail.com

**Website:**

None listed

**Additional Contacts:**

Jewelynn Kirkland

Secretary

**E-mail:**

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**‘Ai Noa Foundation**

**Established:**

April 2021

**Summary:** We are a Sandwichian Native Hawaiian Organization that was created to provide a voice for Sandwichian Native Hawaiians that are pro-religious liberty, pro-democracy, pro-equality before the law, and pro-American.

**Originally Registered:**  
2/10/2023

<b>Island:</b> None listed	<b>Moku:</b> None listed	<b>Ahupua‘a:</b> None listed
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**Contact:** Samuel Wilder King II

Executive Director

735 Bishop Street, #304

Honolulu, HI 96813

No phone listed

**E-mail:**

ainoafoundation@gmail.com

**Website:**

None listed

**‘Āina Momona**

**Established:**

2017

**Summary:** NHO Note: All notices should be sent to all three emails and in hard copy to both physical addresses.

**Originally Registered:**

5/10/2021

Mission: ‘Āina Momona (Hawaiian for the fertile or rich land) is a community organization dedicated to achieving environmental health and sustainability through restoring social justice and Hawaiian sovereignty.

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Walter Ritte  
Executive Director

**E-mail:**  
walter@ritte.org  
ainamomona1893@gmail.com  
(Send to both emails)

P.O. Box 1687  
Kaunakakai, HI 96748  
(808) 213-1107

**Website:**  
www.kaainamomona.org

**Additional Contacts:**

Trisha Kehaulani Watson  
Vice President

**E-mail:**  
community@honuaconsulting.com

**Ala Kahakai Trail Association**

**Established:**

2008

**Summary:** Our vision is that the Ala Kahakai National Historic Trail and its network of trails are perpetuated as a well-managed, appropriately-used, and widely appreciated, community-centered resource that connects us to our ancestors while serving as a bridge to create understanding and respect for Hawai'i's trail heritage. Our mission is to support and guide a community-managed trail that honors those who came before and perpetuates for those to follow, with protocols and respect for Hawai'i's past.

**Originally Registered:**  
3/2/2020

<b>Island:</b> Hawai'i	<b>Moku:</b> Kohala, Kona, Ka'u	<b>Ahupua'a:</b> Various
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**Contact:** Linda Kaleo Paik  
Secretary  
P.O. Box 2338  
Kamuela, HI 96743  
(808) 354-7765

**E-mail:**  
kaleopaik@yahoo.com  
**Website:**  
www.alakahakaitrail.org

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**Alaka'i Foundation Inc.**

**Established:**

September 2020

**Summary:** To promote and provide educational opportunities benefiting Hawai'i's people, including Native Hawaiian descendants and to support education endeavors which facilitate higher learning, scholastic achievement, professional excellence, and scientific and technological research which advance Native Hawaiians and other Hawaiian descendants.

**Originally Registered:**  
1/20/2022

<b>Island:</b> O'ahu	<b>Moku:</b> All	<b>Ahupua'a:</b> All
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**Contact:** Amanda Crabtree-Loo  
Chair  
47 Poipu Drive  
Honolulu, HI 96825  
(808) 381-0444

**E-mail:**  
amandac@alakaifoundationinc.com  
**Website:**  
www.alakaifoundationinc.com

**Alepa Hou Foundation**

**Established:**

June 15, 2023

**Summary:** OUR MISSION: Is to empower Native Hawaiians (local people) by comprehensive training and support services that prepare them for meaningful employment opportunities with a living wage. As a not for profit organization dedicated to serving our community, we aim to bridge the gap between skills and employment, and promote economic self sufficiency for all.

**Originally Registered:**  
6/23/2023

<b>Island:</b> Statewide	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Nicole A.I. Dudoit  
 Director  
 P.O. Box 880650  
 Pukalani, HI 96788  
 (808) 357-3544

**E-mail:**  
nicole@alepahou.org  
**Website:**  
None listed

**Aloha ‘Āina o Hawai‘i, Inc.**

**Established:**

Love for the Land of Hawai‘i

2017

**Summary:** “The purpose of Aloha ‘Āina o Hawai‘i, Inc. is to promote awareness and both educate and consult the public, academic and social establishments about the history, culture, values, arts, crafts, and language of Hawai‘i, on a local, regional, national and international level through demonstrations, lectures, exhibits, workshops, and classes. Thus, a primary purpose is to support the Native Hawaiian community.” (This quote is from our By-Laws.)

**Originally Registered:**  
3/6/2025

<b>Island:</b> All islands	<b>Moku:</b> All moku	<b>Ahupua‘a:</b> All ahupua‘a
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**Contact:** Beverly Nāmakakēhau Chrisman  
 President/Treasurer  
 P.O. Box 2664  
 Cottonwood, Arizona 86326  
 (928) 639-4683

**E-mail:**  
alohahawaii96822@gmail.com  
**Website:**  
www.hawaiian-culture.com

**Aloha First**

**Established:**

Jun 1996

**Summary:** The mission of Aloha First can be summed up in one word, EDUCATION. Our primary goal is to stimulate and provide educational programs and projects which address the economic, social, cultural issues & needs consistent with this mission in order to cross-bridge differences within the various societies of the Hawaiian islands.

**Originally Registered:**  
5/23/2011

<b>Island:</b> O‘ahu	<b>Moku:</b> Moku o Ko‘olaupoko	<b>Ahupua‘a:</b> Ahupua‘a Waimānalo
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**Contact:** Dennis Kanahale  
 CEO  
 P.O. Box 701  
 Waimanalo, HI 96795-0701  
 (808) 551-5056

**E-mail:**  
puuhonua13@gmail.com  
**Website:**  
www.alohafirst.com

**‘Ao‘ao O Nā Loko I‘a O Maui**

**Established:**

Association of the Fishponds of Maui

1998

**Summary:** ‘Ao‘ao O Nā Loko I‘a O Maui, a non-profit 501(c)(3) organization in Maui, Hawai‘i, whose interests include: 1) educating our communities about the cultural and historical importance of Native Hawaiian fishponds, specifically Kō‘ie‘ie Fishpond in South Maui, the Hawaiian culture and the environment, and 2) restoring Kō‘ie‘ie Fishpond so that future generations can enjoy its historical, cultural, archaeological, educational and recreational purposes.

**Originally Registered:**  
6/23/2023

<b>Island:</b> Maui	<b>Moku:</b> Kula	<b>Ahupua‘a:</b> Ka‘ono‘ulu
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**Contact:** Joylynn Paman  
 Executive Director  
 P.O. Box 1371  
 Kihei, HI 96753  
 (808) 359-1172

**E-mail:**  
koieiefishpond@gmail.com  
**Website:**  
www.mauifishpondassociation.org

**‘Apoākea Native Hawaiian Innovation Institute**

**Established:**

Infinite Reach DBA; ANHII; ‘Apoākea="Infinite Reach"

2019

**Summary:** ‘Apoākea provides strategic & tactical solutions to the issues causing & contributing to the negative consequences of disproportionality & disparity as they are suffered by Native Hawaiians and other socially disadvantaged & underserved communities. Primary areas of focus include, but are not limited to: climate resilient Native Hawaiian-driven food systems & economies and Native Hawaiian approaches to intellectual/developmental disabilities & other disabilities. Our peripheral projects also serve Native Hawaiians.

**Originally Registered:**  
11/21/2023

<b>Island:</b> Ka Pae‘āina (Statewide)	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Brandi-Lynn Makalani Kupau Hyden  
 Executive Director  
 PO Box 893900  
 Mililani, HI 96789  
 (808) 542-3998

**E-mail:** makalani@apoakea.org

**Website:** www.apoakea.org

**Association of Hawaiian Civic Clubs**

**Established:**

AHCC

1959

**Summary:** To promote Native Hawaiian culture, language and traditions. To actively assert and defend the cultural, traditional knowledge, and intellectual property rights of the Native Hawaiian people, of Kupuna and cultural practitioners. To protect, respect, and promote the inherent rights of Native Hawaiian people that derive from our political, economic, and social structures and from our culture, spiritual traditions, histories, and philosophies, especially our rights/kuleana to our lands, territories, and resources.

**Originally Registered:**  
5/15/2012

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Dre Kalili  
 President  
 P.O. Box 1135  
 Honolulu, HI 96807

**E-mail:** ahcc.nuhou@gmail.com

**Website:** www.aohcc.org

**Association of Hawaiians for Homestead Lands**

**Established:**

AHHL

2008

**Summary:** AHHL is a national waitlist association founded in 2008, a member of the SCHHA, Sovereign Council of Hawaiian Homes Associations. AHHL is dedicated to Ending the Hawaiian Home Land Waitlist by pursuing reforms that support native Hawaiian interests of the Hawaiian Homes Commission Act of 1920. Delivering services to the HHCA Beneficiaries that have applied for a land award under the HHCA to homestead and build mercantile businesses. AHHL is registered with the United States Department of Interior as a self-governing HBA homestead beneficiary association serving the interests of currently on the waitlist in accordance with regulations in 43 CFR parts 47 & 48.

**Originally Registered:**  
10/16/2012

<b>Island:</b> Statewide	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Kainoa MacDonald  
 Secretary  
 1481 South King Street, Unit 448  
 Honolulu, HI 96814  
 (808) 419-8646

**E-mail:**  
[info@hawaiianhomesteads.org](mailto:info@hawaiianhomesteads.org)  
**Website:**  
 Under Construction

**Additional Contacts:**

Kahanu Noa  
 AHHL Director

**E-mail:**

**Au Puni O Hawai‘i**

**Established:**

1992

**Summary:** As GUARDIANS of "The Hawaiian Homes Commission Act of 1920," our organization seeks to educate and raise our opios and makuas in the ways of cultural intelligence and historical "Hawaiian home lands" protocol. As beneficiaries, we would like to share our mana‘o on preservation, restoration, INTERPRETATION, and shared dialogues with respect to our cultural land-based assets. Our mission is to perpetuate compact advocacy for our communities at large, and coordinate projects like providing aid and relief to the general public in regards to provisions, securities for all family units, and most of all the well-being of our na kupuna. We will work relentlessly for the betterment of the native Hawaiians as defined in the HHCA with our local County and State agencies, and the Federal Government with our primary goal to live "SPIRITUALLY FREE and ALOHA."

**Originally Registered:**  
2/9/2012

<b>Island:</b> All Islands including the Northwestern Islands and the mainland	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Samson L. Brown  
 President  
 21 Pohai Street  
 Hilo, HI 96720  
 (808) 315-2141

**E-mail:**  
apohi21@gmail.com  
**Website:**  
Pending

**Brian Kaniela Nae‘ole Naauao**

**Established:**

**Summary:**

**Originally Registered:**  
5/9/2012

<b>Island:</b> Maui / O‘ahu / Hawaii	<b>Moku:</b> He Moku / Kona / Waiohinu	<b>Ahupua‘a:</b> Kahikinui / Ili no Waikiki / Kau
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**Contact:** Brian Kaniela Nae‘ole Naauao  
 477 South Kamehameha Avenue  
 Kahului, HI 96732  
 (808) 264-1231

**E-mail:**  
naeoleohana5@yahoo.com  
**Website:**  
None listed

**Captain Kimo's Hawaiian Adventures**

**Established:**

January 2023

**Summary:** Located in Hilo on the Island of Hawai'i, Captain Kimo's Hawaiian Adventures is a Tourist based Hawaiian Educational Non-Profit Organization. Our National Taxonomy of Exempt Entites Code is A23. We share with the tourists our Responsibility (Kuleana), Respect for the People, Environment, Hawaiian Culture, through Hawaiian Language and Ethnic Awareness during our tours.

**Originally  
Registered:**  
3/28/2023

<b>Island:</b> Big Island of Hawai'i	<b>Moku:</b> Hilo	<b>Ahupua'a:</b> Waikeuka
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**Contact:** Kimo Field

Owner

PO Box 10441

Hilo, HI 96721

(808) 464-8182

**E-mail:**

capt-kimo@hotmail.com

**Website:**

None listed

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**Charles Pelenui Mahi Ohana**

**Established:**

**Summary:** The Honokoa Cave "Forbes Cave" records show that a Alii Mahi is buried there; artifacts taken by Bishop Museum, I want it put back and to seal the cave.

**Originally  
Registered:**  
10/8/2010

<b>Island:</b> Hawai'i	<b>Moku:</b> Honokoa Cave	<b>Ahupua'a:</b> Kawaihae, Honokoa Gulch
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**Contact:** Maydean K. Bowman

Representative

P.O. Box 44692

Kawaihae, HI 96743

(808) 882-1486

**E-mail:**

None listed

**Website:**

None listed

**Council for Native Hawaiian Advancement**

**Established:**

CNHA

2001

**Summary:** Our mission is to enhance the cultural, economic, political, and community development of Native Hawaiians and support the capacity of community-based organizations that contribute to the well-being of the Hawaiian Islands and its people. We achieve our mission through policy advocacy, community convening, leadership development, training and technical assistance, and linking resources and solutions to community challenges.

**Originally Registered:**  
2/6/2008

<b>Island:</b> Statewide, plus mainland	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Joseph Kūhiō Lewis  
 Chief Executive Officer  
 91-1270 Kinoiki Street, Building 1  
 Kapolei, HI 96707  
 (808) 596-8155

**E-mail:**  
[info@hawaiiancouncil.org](mailto:info@hawaiiancouncil.org)

**Website:**  
[www.hawaiiancouncil.org](http://www.hawaiiancouncil.org)

**E Ola Kākou Hawai‘i**

**Established:**

Vitality of all Hawai‘i; Living Health

2021

**Summary:** Ho‘olauna - to introduce, re-introduce, be introduced. Waiwai: our wealth, imprint, nutrients collective. Our coming together with the common interest of the community, State, Hawai‘i nei nation. Kauhale - data, research, documents, documenting. History, nā iwi kūpuna ancestral burials, water health, water wealth, heiau, piko point, mo‘olelo, mo‘okuauhau, ea, education; ‘āina based, hele, lawai‘a, holoholona, lo‘i, hahai holoholona, nāhelehele, po‘e holo moku, ‘ōlelo Hawai‘i.

**Originally Registered:**  
8/30/2023

<b>Island:</b> Kaua‘i, Hawai‘i Nei	<b>Moku:</b> Pau loa - all	<b>Ahupua‘a:</b> Pau loa - all
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**Contact:** Roslyn Cummings  
 Po‘o  
 c/o Box 315  
 Kalaheo, HI 96741  
 (808) 652-9918

**E-mail:**  
[mana.eolakakouhawaii@gmail.com](mailto:mana.eolakakouhawaii@gmail.com)

**Website:**  
 None listed

**EAO Hawaii Inc.**

**Established:**

Apr 2012

**Summary:** This organization shall be to provide for education, cultural, socio-economic, and community development programs to benefit the social, health, and moral welfare of Hawaiian citizens and those of Hawaiian ancestry (Kanaka Maoli). EAO Hawaii Inc. preserves and cherishes all sources and records of ancient Hawaiian Traditional, Customs, Language, and Historic Health and Welfare of the Hawaiian Islands and its people, those of Native Hawaiian ancestry (Kanaka Maoli).

**Originally Registered:**  
8/27/2019

<b>Island:</b> Kaua'i	<b>Moku:</b> Puna	<b>Ahupua'a:</b> Puna, Ko'olau, Halale'a
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**Contact:** Kanoë Ahuna  
 President and Director  
 P.O. Box 881  
 Lihue, HI 96766  
 (808) 631-8765

**E-mail:**  
noalani482@gmail.com  
**Website:**  
None listed

**Flores-Case 'Ohana**

**Established:**

2000

**Summary:**

**Originally Registered:**  
8/22/2022

<b>Island:</b> Hawai'i, Kaua'i	<b>Moku:</b> Kohala, Hāmākua/Nāpali, Kona	<b>Ahupua'a:</b> All within listed moku
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**Contact:** E. Kalani Flores  
 Representative  
 P.O. Box 6918  
 Kamuela, HI 96743  
 No phone listed

**E-mail:**  
08ef80@gmail.com  
**Website:**  
None listed

**The Friends of Hokule‘a and Hawai‘iloa**

**Established:**

Jul 1996

**Summary:** Focus...perpetuating Hawaiian traditions and values by teaching preservation and development of canoe building - to improve understanding and appreciation for this unique Hawaiian heritage, for any person interested in learning.

**Originally Registered:**  
3/1/2013

<b>Island:</b> O‘ahu	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** William K. Richards Jr.  
President  
P.O. Box 696  
Kailua, HI 96734  
(808) 843-8414

**E-mail:**  
friends@fhh-hawaii.org  
**Website:**  
www.fhh-hawaii.org

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**Friends of ‘Iolani Palace**

**Established:**

1966

**Summary:** We are interested in topics related to the Native American Graves Protection and Repatriation Act (NAGPRA).

**Originally Registered:**  
11/15/2007

<b>Island:</b> Statewide, plus mainland	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Paula Akana  
Executive Director  
P.O. Box 2259  
Honolulu, HI 96804-2259  
(808) 522-0822

**E-mail:**  
info@iolanipalace.org  
**Website:**  
www.iolanipalace.org

**George K. Cypher ‘Ohana**

**Established:**

Pre-Contact

**Summary:** Preserving our lineal and cultural ties to Kāne‘ohe, Kahalu‘u, and He‘eia, and preserving the ‘āina and ocean resources.

**Originally Registered:**  
12/28/2010

<b>Island:</b> O‘ahu, Maui, Hawai‘i	<b>Moku:</b> Ko‘olaupoko; Hāna; Hilo	<b>Ahupua‘a:</b> Kāne‘ohe, He‘eia, Kahalu‘u
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**Contact:** Mahealani Cypher  
 Descendant  
 c/o Denise DeCosta, 45-342 Lilipuna Road #308  
 Kaneohe, HI 96744  
 (808) 226-4195

**E-mail:**  
jhd6@hawaii.edu  
**Website:**  
None listed

**God's Country Waimanalo**

**Established:**

2005

**Summary:** Ho‘oulu a me Ho‘ola La Hui; Perpetuation of all things Hawaiian - our language, history, culture, and the arts, through education, economic, and interactive activities.

**Originally Registered:**  
10/8/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Waimānalo
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**Contact:** Ilima Ho-Lastimosa  
 Executive Director  
 P.O. Box 723  
 Waimanalo, HI 96795  
 (808) 499-5055

**E-mail:**  
godscountrywaimanalo@gmail.com  
**Website:**  
http://godscountrywaimanalo.weebly.com/

**Hale Halawai ‘Ohana O Hanalei**

**Established:**

The Gathering Place for Families of Hanalei

1993

**Summary:** Locally referenced as Hanalei's Cultural Community Center, our center serves as a venue for a variety of services, classes, programs, events, and Hawaiian cultural programs. Our programs help perpetuate traditional Hawaiian culture and the Aloha Spirit. Hale Halawai ‘Ohana O Hanalei is dedicated to celebrating and increasing the resources of the people.

**Originally Registered:**  
3/8/2024

<b>Island:</b> Kaua‘i	<b>Moku:</b> Hanalei	<b>Ahupua‘a:</b> Anahola to Ha‘ena
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**Contact:** Kati Conant  
 Executive Director  
 P.O. Box 822  
 Hanalei, HI 96714  
 (808) 826-1011

**E-mail:**  
[info@halehalawai.org](mailto:info@halehalawai.org)  
**Website:**  
[www.halehalawai.org](http://www.halehalawai.org)

**Hale Mua Cultural Group**

**Established:**

1997

**Summary:** Our primary purpose is to preserve and perpetuate the Hawaiian culture, historical sites, and educational programs, supporting projects that include: repatriation of significant Hawaiian cultural objects, restoration and preservation of Hawaiian historic sites, perpetuation of Hawaiian cultural practice, and dissemination of Hawaiian knowledge amongst Native Hawaiians.

**Originally Registered:**  
6/4/2024

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Renson Madarang  
 Director  
 P.O. Box 1872  
 Kailua Kona, HI 96745  
 No phone listed

**E-mail:**  
[renson@rmvoicestudio.com](mailto:renson@rmvoicestudio.com)  
**Website:**  
 None listed

**Hanalei River Heritage Foundation**

**Established:**

Jun 2013

**Summary:** We work our Native Hawaiian community to increase opportunities for our people to learn and study traditional knowledge environmental stewardship in land/ocean & nearshore fisheries management. We also partner with cultural/spiritual practitioners/elders to work with our people to revive traditional knowledge to reclaim & restore our identity to help make our people more resilient & self reliant. Further we help our community to face & overcome challenges of living in 21st Century Hawaii.

**Originally  
Registered:**  
5/26/2021

<b>Island:</b> Kaua'i	<b>Moku:</b> Halelea	<b>Ahupua'a:</b> Hanalei
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**Contact:** Kamealoha Hanohano Pa-Smith  
Program Administrator  
P.O. Box 7  
Anahola, HI 96703  
(808) 212-4356

**E-mail:**  
khs96703@gmail.com  
**Website:**  
www.hanaleiriverheritagefoundation.org

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**Hanona**

**Established:**

Mar 2016

**Summary:** Our organization provides cultural learning opportunities for our communities to perpetuate Native Hawaiian traditional practices while maintaining the integrity of how indigenous knowledge is taught and learned. Traditional practices supported by our organization are: chants, ceremony and protocol knowledge, oral history, dance, skilled crafts/art forms, language, dry stack masonry, thatched house building, land steward practices, and archaeological and historical preservation.

**Originally  
Registered:**  
10/6/2022

<b>Island:</b> Maui	<b>Moku:</b> Wailuku	<b>Ahupua'a:</b> Wailuku
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**Contact:** Carmela Noneza  
Chair  
P.O. Box 1841  
Wailuku, HI 96793  
(808) 268-3541

**E-mail:**  
hanonamaui@gmail.com  
**Website:**  
www.hanonamaui.org

**Hau‘ouwi Homestead Association on Lāna‘i**

**Established:**

1994

**Summary:** Culture, homestead, history.

**Originally  
Registered:**  
10/8/2010

<b>Island:</b> Lāna‘i	<b>Moku:</b> Lāna‘i	<b>Ahupua‘a:</b> All
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**Contact:** Winifred Basques

Director

P.O. Box 630521

Lāna‘i City, HI 96743

(808) 565-6871

**E-mail:**

winnie@aloha.net

**Website:**

None listed

**Hawaiian Civic Club of Wahiawa**

**Established:**

1960

**Summary:** HCCW Mission Statement: To inspire, educate, and encourage all things Hawaiian - seen and unseen. We protect, preserve, and perpetuate our ‘āina (families of the land), iwikupuna (ancestral bones), mo‘olelo (traditional comprehension), and na ‘opio (youth - future generations). As stewards of Kukaniloko, one of the most

**Originally  
Registered:**  
2/20/2014

sacred sites in all the Hawai‘i islands, we are responsible for the maintenance and care of Kukaniloko Birthstones State Monument and site interpretation of the 36,000 acres of Pu‘uhonua Kukaniloko.

<b>Island:</b> O‘ahu	<b>Moku:</b> Pu‘uhonua Kūkaniloko	<b>Ahupua‘a:</b> Kalana Līhu‘e, Wahiawā, Halemanō
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**Contact:** Noelani DeVincent

President

95-524 Wehewehe Loop

Mililani, HI 96789

(808) 625-7551

**E-mail:**

[hccwahiawa@gmail.com](mailto:hccwahiawa@gmail.com)

**Website:**

[www.kukaniloko.org](http://www.kukaniloko.org)

**Additional Contacts:**

Jo-Lin Lenchanko Kalimapau

Treasurer

**E-mail:**

[kalimapau@hotmail.com](mailto:kalimapau@hotmail.com)

Kūka‘awe Thomas J. Lenchanko

Director

**E-mail:**

**Hawaiian Community Assets, Inc.**

**Established:**

Aug 2000

**Summary:** We are interested in housing, financial, and lending services and affordable housing and business development for and by Hawaiian Home Lands beneficiaries with a particular focus on helping said beneficiaries with realizing the mission of the Hawaiian Homes Commission Act.

**Originally Registered:**  
11/1/2013

<b>Island:</b> Statewide	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Chelsie Evans

Executive Director

310 Paoakalani Ave., Room 204E

Honolulu, HI 96815

(808) 587-7886

**E-mail:**

info@hawaiiancommunity.net

**Website:**

www.hawaiiancommunity.net

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**Hawaiian Islands Land Trust**

**Established:**

2011

**Summary:** We are Hawai‘i's only statewide, local, and nationally accredited land trust working to protect and steward Hawai‘i's most special places. We prioritize the protection of coastlines providing access to recreational and subsistence opportunities, wahi pana (ancestral lands) with cultural or historic sites, and farms that are growing food for our community.

**Originally Registered:**  
4/20/2023

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** ‘Olu Campbell

President & CEO

126 Queen Street, Suite 306

Honolulu, HI 96813

(808) 744-2462

**E-mail:**

info@hilt.org

**Website:**

www.hilt.org

**Hawaiian Kingdom Task Force**

**Established:**

**Summary:** The Purpose of this Organization is to provide Investigation, Search and Rescue, Reunification, Security and Emergency Relief for Native Hawaiian Communities, and additionally to our neighbors in need when possible and practical. The primary focus will be on reducing and mitigating the impact of assault, abduction, human trafficking and homicide among indigenous people. We also will engage in providing emergency relief services in disasters and times of need, for the preservation and survival of our people and strengthening our communities.

**Originally Registered:**  
9/11/2020

<b>Island:</b> Entire original homeland of the historic Kingdom of Hawaii	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Abraham Cortes-Kaleopaa  
 CEO  
 P.O. Box 920  
 Kurtistown, HI 96760  
 No phone listed

**E-mail:**  
None listed  
  
**Website:**  
None listed

**Historic Hawai‘i Foundation**

**Established:**

1974

**Summary:** Historic Hawai‘i Foundation is a statewide nonprofit organization that encourages the preservation of Native Hawaiian historic properties, including sites, objects, structures, districts and buildings. HHH fulfills its mission through advocacy, technical assistance, education and consultation. HHH recognizes and supports the unique and important role of Native Hawaiian history and culture, especially as expressed through its sites and structures, in the broader history of the Hawaiian Islands as well as the Pacific Basin.

**Originally Registered:**  
3/20/2023

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Kiersten Faulkner  
 Executive Director  
 680 Iwilei Road, Suite 690  
 Honolulu, HI 96817  
 (808) 523-2900

**E-mail:**  
preservation@historichawaii.org  
  
**Website:**  
www.historichawaii.org

**Ho Ohana**

**Established:**

**Summary:** We are a Hawaiian Chinese family from Waimanalo Homestead since 1945.

**Originally Registered:**  
10/8/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Waimānalo
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**Contact:** Ilima Ho-Lastimosa  
 4th Generation  
 41-727 Ala Koa Street  
 Waimanalo, HI 96795  
 (808) 259-7598

**E-mail:**  
None listed  
  
**Website:**  
None listed

**Honua Consulting, LLC**

**Established:**

2003

**Summary:** Honua Consulting, LLC is the longest running Hawaiian owned cultural resource management firm in Hawaii. We were established in 2003 and have been actively working in Hawaii for over 20 years. We are 100% Native Hawaiian woman owned. We are a full service firm, providing archaeology, ethnography, environmental planning and community engagement services on all islands. We have worked on hundreds of cultural resource projects throughout the paeaina. We offer pro bono supports services to NHOs on a case-by-case basis.

**Originally Registered:**  
10/31/2023

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Trisha Kehaulani Watson-Sproat  
 Owner  
 4348 Waiialae Ave., #254  
 Honolulu, HI 96816  
 (808) 392-1617

**E-mail:**  
admin@honuaconsulting.com  
  
**Website:**  
www.honuaconsulting.com

**Ho‘okano Family Land Trust**

**Established:**

1994

**Summary:** Preservation and protection of family kuleana parcels; watershed protection for lo‘i, kalo; protection and preservation for ‘ohana cemetery.

**Originally Registered:**  
12/6/2011

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Kahalu‘u
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**Contact:** Dawn N.S. Chang  
Chair  
c/o P.O. Box 6280  
Kaneohe, HI 96744  
(808) 539-3583

**E-mail:**  
dnschang@kuiwalu.com  
**Website:**  
None listed

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**Ho‘ōla Lāhui Hawai‘i**

**Established:**

1986

**Summary:** Ho‘ōla is dedicated to improving the health of our community through our clinical care and innovative integration of our Hawaiian values. We will be a model health care system distinguished by our people, quality, service and dedication to the Community Health Solutions.

**Originally Registered:**  
12/13/2022

<b>Island:</b> Kaua‘i and Ni‘ihau	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** David Peters  
Chief Executive Officer  
4491 Rice Street  
Līhu‘e, HI 96766  
(808) 240-0100

**E-mail:**  
info@hoolalahui.org  
**Website:**  
www.hoolalahui.org

**Hua Nani Impact**

**Established:**

2/26/2024

**Summary:** Hua Nani Impact advances climate action, justice, and resilience for future generations.

**Originally Registered:**  
3/8/2024

<b>Island:</b> All Hawaiiinuikea	<b>Moku:</b> N/A	<b>Ahupua‘a:</b> N/A
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**Contact:** Aimee Elise Kelii Barnes  
  
 4819 Kilauea Ave. #7  
 Honolulu, HI 96816  
 No phone listed

**E-mail:**  
[aimee@hniimpact.org](mailto:aimee@hniimpact.org)  
**Website:**  
[www.hniimpact.org](http://www.hniimpact.org)

**Hui Aloha Kīholo**

**Established:**

2007

**Summary:** Hui Aloha Kīholo perpetuates the tradition of mālama ‘āina for the lands and waters of Kīholo and the region of kekaha wai ‘ole. Our staff maintain and steward Kīholo State Park for the benefit of all, and ensure a clean, safe, welcoming place for families to connect with nature. We lead educational programs in English and Hawaiian language to impart place-based stories, history, conservation, traditional ecological knowledge, science, and values. We maintain a connection to Kīholo dating back at least 400 years.

**Originally Registered:**  
7/14/2023

<b>Island:</b> Hawai‘i	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> Pu‘uwa‘awa‘a, Pu‘uanahulu
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**Contact:** Chad Wiggins  
 Executive Director  
 P.O. Box 1868  
 Kamuela, HI 96743  
 (808) 756-2080

**E-mail:**  
[communications@kiholo.org](mailto:communications@kiholo.org)  
**Website:**  
[www.huialohakiholo.org](http://www.huialohakiholo.org)

**Hui Hana Pa‘akai o Hanapēpē**

**Established:**

1964

**Summary:** We are interested in the protection, conservation, and perpetuation of our inherent right to practice the art and culture of salt making in Hanapēpē, Kaua‘i.

**Originally Registered:**  
11/22/2023

<b>Island:</b> Kaua‘i	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> Hanapēpē
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**Contact:** Malia Nobrega-Olivera  
 President  
 PO Box 24  
 Hanapēpē, HI 96716  
 (808) 286-5461

**E-mail:**  
malianob@gmail.com  
**Website:**  
None listed

**Hui Ho‘oleimaluō**

**Established:**

To cast a net of thriving resources

2014

**Summary:** We are interested in caring for keiki and ‘ohana of our community through hands-on STEAM education of traditional practices of sustainability including loko i‘a (ancient Hawaiian fishpond) and mahi‘ai (Hawaiian farming); and Hawaiian language curriculum development and perpetuation.

**Originally Registered:**  
6/23/2023

<b>Island:</b> Hawai‘i	<b>Moku:</b> Hilo	<b>Ahupua‘a:</b> Waiākea
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**Contact:** Kamala Anthony  
 Executive Director  
 2306 Kalaniana‘ole Avenue  
 Hilo, HI 96720  
 (808) 430-2032

**E-mail:**  
kamala.anthony@huihooleimaluo.com  
**Website:**  
www.huihooleimaluo.com

**Hui Huliau Inc.**

**Established:**

Hui is defined as a group or organization. Huliau is defined as a turning point in time where we are rooted in the past, influenced by our present and creating stories for the future.

Jan 2011

**Summary:** Hui Huliau's mission is to strengthen our communities and make a positive impact on the lives we touch, and provide a brighter future for the Native Hawaiian people through education, economic opportunities and the preservation of the Hawaiian language and culture.

**Originally Registered:**  
2/10/2012

<b>Island:</b> All Hawaiian Islands	<b>Moku:</b> Wai‘anae/All	<b>Ahupua‘a:</b> All
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**Contact:** Adrian Nakea Silva  
 Chairman  
 P.O. Box 587  
 Waianae, HI 96792  
 (808) 216-4241

**E-mail:**  
 admin@huihuliau.com  
**Website:**  
 www.huihuliau.com

**Hui Iwi Kuamo‘o**

**Established:**

2015

**Summary:** We are the successors of Hui Mālama I Nā Kūpuna O Hawai‘i Nei who have continued to research, advocate, conduct, and fundraise the national and international repatriation and reburial of iwi kūpuna (ancestral bones), moepū (funerary possessions) and mea kapu (sacred objects) having completed 133 combined cases since 1990.

**Originally Registered:**  
10/6/2022

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** E. Halealoha Ayau  
 Kumu  
 144 Kulana Street  
 Hilo, HI 96720  
 (808) 646-9015

**E-mail:**  
 halealohahapai64@gmail.com  
**Website:**  
 None listed

**Hui Kaleleiki Ohana**

**Established:**

Kaleleiki Family Organization

2005

**Summary:** Our mission is the restoration and preservation of our ohana kuleana lands and our iwi kupuna in perpetuity. Our history is that we are lineal descendants of a kuleana awardee of the Great Mahele, whose lineage was authenticated in 2007. Our vision is to educate, assist, and advocate for the Native Hawaiian community, especially lineal descendants of awardees of a Palapala Sila Nui, issued by the Board of Commissioners to Quiet Land Titles beginning in 1845, on matters relevant to today.

**Originally Registered:**  
3/21/2013

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Kailua
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**Contact:** Jaynie I. Stone

**E-mail:**

Ka Mea Mookuauhau  
 1091 Lunaanela Street  
 Kailua, HI 96734  
 (808) 381-7544

jayniestone@gmail.com

**Website:**

None listed

**Hui Maka‘āinana o Makana**

**Established:**

4/12/1999

**Summary:** The Hui Maka‘āinana o Makana is a non-profit organization dedicated to perpetuating and teaching the skills, knowledge, and practices of our kupuna (ancestors) through the interpretation, restoration, care and protection of the natural and cultural resources with the Hā‘ena State Park.

**Originally Registered:**  
3/7/2025

<b>Island:</b> Kaua‘i	<b>Moku:</b> Halele‘a	<b>Ahupua‘a:</b> Hā‘ena
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**Contact:** Kathleen Chin  
 Executive Director  
 P.O. Box 1225  
 Hanalei, HI 96714  
 (808) 346-1483

**E-mail:**

info@huimakaainanaomakana.org

**Website:**

www.huimakaainanaomakana.org

**Hui Mālama O Kāneiolouma**

**Established:**

4/1/2009

**Summary:** Members of the Native Hawaiian group Hui Mālama O Kāneiolouma have officially cared for Kahua O Kāneiolouma for more than two decades. The group has an enduring vision and mission to protect, restore, interpret, and share Kāneiolouma as a cultural preserve, as an important sacred and religious site for the Kānaka Maoli.

**Originally Registered:**  
1/09/2025

Under a Stewardship Agreement signed in August 2010, the County of Kaua‘i granted formal custodianship of the Kāneiolouma complex to the group. In October 2017 the County stated that “the Hui has done an excellent job in the malama of Kāneiolouma” and formally extended the relationship for another 20 years, through 2037.

<b>Island:</b> Kaua‘i	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> Weliweli
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<b>Contact:</b> Rupert Rowe Po‘o, Executive Director P.O. Box 244 Koloa, HI 96756 (808) 272-8500	<b>E-mail:</b> info@kaneiolouma.org  <b>Website:</b> www.kaneiolouma.org
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**Hui Mālama Ola Nā ‘Ōiwi**

**Established:**

Native Hawaiian Health Care System

May 1991

**Summary:** Hui Mālama Ola Nā ‘Ōiwi operates as a 501(c)(3) nonprofit organization and serves as the Native Hawaiian Health Care System for Hawaii Island. Their mission is to enhance accessibility to quality healthcare, education, and services by offering a comprehensive range of services. These services include traditional Hawaiian healing, family medicine, behavioral health, and health education. Hui Mālama Ola Nā ‘Ōiwi strives to improve the overall well-being of the community by empowering individuals with culturally-informed and compassionate care.

**Originally Registered:**  
9/18/2014

<b>Island:</b> Hawai‘i	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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<b>Contact:</b> Kanoa Ng, MA Executive Director 1438 Kilauea Avenue Hilo, HI 96720 (808) 969-9220	<b>E-mail:</b> kanoa@hmono.org  <b>Website:</b> www.hmono.org
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**Hui o Kuapā**

**Established:**

1989

**Summary:** Hui o Kuapā rebuilds and rediscovers traditional knowledge to build and manage loko i‘a. By working with the rocks, water, marine life and other natural resources have established a fully functional loko i‘a. Since its establishment, Hui o Kuapā has travelled to neighboring loko i‘a across the islands to share their knowledge and expertise. Thanks to their long-standing dedication, numerous nonprofit organizations focusing on fishpond restoration have been formed following our model and a number of loko i‘a in Hawai‘i are in the process of being fully restored. Hui o Kuapā also links environmental restoration to cultural restoration. The team teaches the importance of cultural pride and the ingenuity of Hawaiian sustainability. By reinforcing how traditional Hawaiian natural resource management practices maintained a healthy population for 2,000 years prior to western contact, Hui o Kuapā helps to show community members today how food security can once again be achieved.

**Originally  
Registered:**  
6/22/2023

<b>Island:</b> Moloka‘i	<b>Moku:</b> Mana‘e	<b>Ahupua‘a:</b> Kūmimi
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**Contact:** Tanya Maile Naehu  
Vice Chair  
99205 Kamehameha V Highway  
Kaunakakai, HI 96748  
(808) 558-8575

**E-mail:**  
alohahaloa@gmail.com  
**Website:**  
www.huiokuapa.org

**Hui O Wa‘a Kaulua**

**Established:**

Assembly of the Double-Hull Canoe

1975

**Summary:** Since 1975, in partnership with other groups, Hui O Wa‘a Kaulua has been committed to developing and conducting model educational programs using voyaging to excite and challenge students and their communities to learn about, respect, and care for the natural and social environment. It is our vision to have a healthy, productive, safe Hawai‘i and planet Earth.

**Originally Registered:**  
11/20/2019

<b>Island:</b> Maui, Lāna‘i, Molokai	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Amy Hanaiali‘i Gilliom  
 President  
 P.O. Box 330258  
 Kahului, HI 96733  
 (808) 205-7412

**E-mail:**  
 huiowaaoffice@gmail.com  
**Website:**  
 www.huiowaa.org

**Hui ‘Ohana O Hōnaunau**

**Established:**

Lineal descendants of the Hōnaunau Ahupua‘a

2023

**Summary:** The Hui ‘Ohana O Hōnaunau focuses on the perpetuation of ‘ōiwi subsistence life-ways and practices and incorporating them into place-based resource stewardship of the coastal areas of Hōnaunau, Kona, Hawai‘i. We focus on natural and cultural resource and visitor management along the Hōnaunau coastline and are interested in civic engagement and education efforts that promote equity and diverse representation in resource management. We promote the physical, spiritual, and economic well-being of South Kona families.

**Originally Registered:**  
8/15/2023

<b>Island:</b> Hawai‘i	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> Hōnaunau
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**Contact:** Henry Cho  
 President  
 P.O. Box 332  
 Hōnaunau, HI 96726  
 (808) 895-6722

**E-mail:**  
 konagayle@gmail.com  
**Website:**  
 None listed

**The I Mua Group**

**Established:**

2002

**Summary:** To improve enhance and perpetuate traditional Hawaiian rights, entitlements, culture and values through interation with individuals, organizations, and the general public. Recent emphasis on Federal recognition for Native Hawaiians.

**Originally Registered:**  
1/31/2008

<b>Island:</b> Statewide, plus mainland	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Melvin Soong  
President  
422 Iliaina Street  
Kailua, HI 96734  
(808) 542-7869

**E-mail:**  
Soongm001@hawaii.rr.com  
**Website:**  
None listed

**Additional Contacts:**

Robert Moore  
1st Vice President

**E-mail:**

Edward Lee  
2nd Vice President

**E-mail:**

**‘Ike Lawai‘a**

**Established:**

2013

**Summary:** Our goal as a non-profit is to perpetuate the traditional art of Hawaiian net-making and fishing and all that which supports those practices (coral restoration, limu, etc.) that [our guiding kupuna Charles Kealoha Leslie] "Uncle Chuck" carries down from his ancestors with a focus on Ka‘awaloa and Kealakekua Bay. We work primarily with our local Hawaiian immersion schools, including Ke Kula o ‘Ehunuiaakaimalino, and with Ke Kula o Waimānalo and Kua‘āina Ulu ‘Auamo on O‘ahu.

**Originally Registered:**  
6/4/2024

<b>Island:</b> Hawai‘i	<b>Moku:</b> Kona Hema (South Kona)	<b>Ahupua‘a:</b> Ka‘awaloa/Kealakekua
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**Contact:** Krista Johnson

Director

82-6276 Kahauloa Street

Captain Cook, HI 96704

808-936-8600

**E-mail:**

lawaiapelu@gmail.com

**Website:**

None listed

**Imua Hawaii**

**Established:**

August 2014

**Summary:** We are committed to a more empowered future for our people by exercising our inherent right to self-governance and to efforts related to recognition to expand our collective ability to promote the general well-being of the Native Hawaiian people; implement culture-based programming to help our people; advance Native Hawaiian self-determination; enact laws that protect and advance culture and practices; among other critical goals for our people.

**Originally Registered:**  
10/21/2015

<b>Island:</b>	<b>Moku:</b>	<b>Ahupua‘a:</b>
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**Contact:** Dreanalee Kalili

Treasurer

P.O. Box 1811

Honolulu, HI 96805

**E-mail:**

imuahawaiinow@gmail.com

**Website:**

None listed

**Independent District of Puna**

**Established:**

**Summary:** Independent District of Puna (IDP) is a Native Hawaiian tribal government organization [25 USC 5304(I)] , which functions as a provider of local government for services for the Native Hawaiian Community in the area of Puna, and as a central agency organizing a voluntary representative assembly for mutual benefit, to serve as the recognized government organization of all Native Hawaiians throughout the Hawaiian Islands, to re-establish the formal government-to-government relations with the US Government. [43 CFR Part 50].

**Originally Registered:**  
9/16/2020

<b>Island:</b> Hawai'i	<b>Moku:</b> Puna	<b>Ahupua'a:</b> All
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<b>Contact:</b> Abraham Keola Cortes-Kaleopaa Official Government Representative 16-1133 Uau Road Pahoa, HI 96778 No phone listed	<b>E-mail:</b> None listed  <b>Website:</b> <a href="http://www.districtofpuna.org">www.districtofpuna.org</a>
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**Institute for Native Pacific Education and Culture**

**Established:**

INPEACE

1994

**Summary:** To improve the quality of life for Native Hawaiians through community partnerships that provide educational opportunities and promote self-sufficiency. We are committed to providing programs in parent and child development, school readiness, economic/workforce development and culture-based education for all Native Hawaiians.

**Originally Registered:**  
3/11/2020

<b>Island:</b> O'ahu	<b>Moku:</b> Wai'anae	<b>Ahupua'a:</b> All
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<b>Contact:</b> Maile Keli'ipio-Acoba Chief Executive Officer 1001 Kamokila Blvd., Suite 226 Kapolei, HI 96707 (808) 693-7222	<b>E-mail:</b> <a href="mailto:info@inpeace.org">info@inpeace.org</a>  <b>Website:</b> <a href="http://www.inpeace.org">www.inpeace.org</a>
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**KA‘EHU**

**Established:**

2014

**Summary:** KA‘EHU is a nonprofit organization with the goal to restore the land and perpetuate traditional Hawaiian culture using a community-based, inclusive, family-oriented approach to environmental stewardship and sustainable agriculture. Our staff provides culturally-grounded classes and workshops in the areas of Archaeology, Ahupua‘a Stewardship Practices, Hawaiian History, Hawaiian Arts & Crafts, Cultural Practices & Protocols, traditional fishing practices and more. All four Board of Directors are native Hawaiian women along with our Executive Director.

**Originally Registered:**  
6/23/2023

<b>Island:</b> Maui	<b>Moku:</b> Wailuku	<b>Ahupua‘a:</b> Wailuku
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**Contact:** Keolamau Tengan  
 Executive Director  
 600 Waiehu Beach Road, Unit E  
 Wailuku, HI 96793  
 (808) 856-6679

**E-mail:**  
keolamau@kaehu.org  
**Website:**  
www.kaehu.org

**Kaha I Ka Panoa Kaleponi Hawaiian Civic Club**

**Established:**

The Breath of Life in the California Desert

Apr 2010

**Summary:** Living on the continent gives us very little access to issues at home. However, our concerns lean to those museums, libraries, etc. that continue to house artifacts that need to be returned to our kulaiwi (native land), We continually work to preserve the cultural traditions of our kupuna (elders) ub iur language, music, and mo‘oku‘auhau genealogy.

**Originally Registered:**  
5/20/2014

<b>Island:</b> Continental U.S.	<b>Moku:</b> Continental U.S.	<b>Ahupua‘a:</b> N/A
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**Contact:** Sharon K. Paulo  
 President  
 P.O. Box 9817  
 Moreno Valley, CA 92552  
 (951) 575-5772

**E-mail:**  
kuuipofrom2ndroad@ymail.com  
**Website:**  
None listed

**Kāhuli Leo Le‘a**

**Established:**

2019

**Summary:** Kāhuli Leo Le‘a is a 501(c)(3) Hawai‘i non-profit organization aimed at catalyzing aloha ‘āina through the education, composition, and presentation of mele and other cultural practices. We carry out our mission through the following pathways of mele excellence:

**Originally Registered:**  
7/17/2023

WAIHONA MELE - Preserving mele as repositories of historical knowledge.

HAKU MELE - Promoting the value of haku mele (mele composition) excellence.

HŌ‘IKE MELE - Supporting venues of mele presentation and dissemination.

<b>Island:</b> O‘ahu	<b>Moku:</b>	<b>Ahupua‘a:</b>
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**Contact:** Zachary Lum

Executive Director

P.O. Box 6024

Kāne‘ohe, HI 96744

(808) 391-1064

**E-mail:**

zack@kahulileolea.org

**Website:**

www.kahulileolea.org

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**Kāko‘o ‘Ōiwi**

**Established:**

2007

**Summary:** We are interested in preserving and perpetuating the history, heritage and culture of Native Hawaiians through sustainable agriculture, environmental restoration, food security, and maintaining cultural practices and ocean resources.

**Originally Registered:**  
12/28/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> He‘eia
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**Contact:** Kanekoa Kukea-Shultz

Executive Director

46-005 Kawa Street #104

Kaneohe, HI 96744

(808) 741-3403

**E-mail:**

kanekoaks@gmail.com

**Website:**

www.kakooiwi.org

**Kalaeloa Heritage and Legacy Foundation**

**Established:**

Jan 2010

**Summary:** The Kalaeloa Heritage and Legacy Foundation is a 501(c)(3) community organization dedicated to preserving and protecting the historical, cultural, and archaeological landscape of Kapolei through the operation and maintenance of the Kalaeloa Heritage Park. Through stewardship at the Park, we perpetuate the Hawaiian cultural sites, educate the community on traditions and practices, advocate for cultural awareness, and implement and maintain an authentic Hawaiian presence in the Kalaeloa area.

**Originally Registered:**  
7/12/2012

<b>Island:</b> O‘ahu	<b>Moku:</b> Ewa	<b>Ahupua‘a:</b> Honouliuli
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**Contact:** Dwight Victor  
 President  
 P.O. Box 75447  
 Kapolei, HI 96707  
 (808) 282-3921

**E-mail:**  
 info@khlhf.org  
**Website:**  
 www.khlhf.org

**Kalama‘ula Homesteaders Association**

**Established:**

1961

**Summary:** We were established to: challenge and inspire youth who live on homestead land to achieve their full potential by providing support and opportunities for advancement in education; promote better health for our Kalama‘ula community and homesteaders outside of Kalama‘ula through education; and preserve and protect Hawai‘i’s natural environment, including Kiowea Park in Kalama‘ula in particular, through the stewardship of our lands consistent with Hawaiian culture, values, and traditional methods of resource management.

**Originally Registered:**  
10/14/2008

<b>Island:</b> Moloka‘i	<b>Moku:</b> Ahupua‘a o Moloka‘i	<b>Ahupua‘a:</b> Kalama‘ula
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**Contact:** Gayla M. Haliniak-Lloyd  
 President  
 P.O. Box 1025  
 Kaunakakai, HI 96748  
 (808) 646-0080

**E-mail:**  
 kalamaula@live.com  
**Website:**  
 None listed

**Kalihi Palama Culture & Arts Society**

**Established:**

1972

**Summary:** In 1972, Kumu Hula George Kanakilakekiahialii Naope and Kahu Wendell Silva created our organization to preserve Hawaiian culture through dance. We provide statewide opportunities to showcase hula, Hawaiian language and culture. We produce the Queen Liliuokalani Keiki Hula Competition and manage an extraordinary archive of hula and mele resources that is currently being digitized for educational use and long-term preservation.

**Originally Registered:**  
10/31/2023

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Trisha Kehaulani Watson-Sproat  
Board President  
357 N. King St.  
Honolulu, HI 96817  
(808) 521-6905

**E-mail:**  
info@keikihula.org  
**Website:**  
www.keikihula.org

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**Kalihi Palama Hawaiian Civic Club**

**Established:**

Nov 1969

**Summary:** Strong advocate for improved welfare of Native Hawaiians in culture, health, economic development, education, housing, social welfare, nationhood, supporting and defending Native Hawaiian rights, i.e., water rights, gathering rights, land rights, ali‘i trusts; perpetuating and preserving language, history, music, dance, and other cultural traditions.

**Originally Registered:**  
11/1/2013

<b>Island:</b> O‘ahu	<b>Moku:</b> O‘ahu	<b>Ahupua‘a:</b> Kalihi-Palama
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**Contact:** Leimomi Khan  
President  
c/o 1288 Kapiolani Boulevard, Unit 1905  
Honolulu, HI 96814  
(808) 372-0630

**E-mail:**  
mkhan@hawaiiantel.net  
**Website:**  
None listed

**Kamealoha**

**Established:**

**Summary:** We are interested in preserving and protecting everything affiliated to our Hawaiian culture.

**Originally Registered:**  
5/2/2011

<b>Island:</b> O‘ahu	<b>Moku:</b> Waianae, Wahiawa	<b>Ahupua‘a:</b> Waianae, Wahiawa
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**Contact:** Thomas Kamealoha  
Cultural Monitor  
84-1035 Kaulaili Road #A  
Waianae, HI 96795  
(808) 692-3153

**E-mail:**  
aliikane82@gmail.com  
**Website:**  
None listed

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**Kamehameha Schools**

**Established:**

1887

**Summary:** Kamehameha Schools is a Native Hawaiian educational institution, landowner, and trust. We are interested in all aspects of Native Hawaiian and community wellbeing, including education, housing, health, culture, language, natural and cultural resource management, history, etc.

**Originally Registered:**  
10/16/2012

<b>Island:</b> All	<b>Moku:</b> Various	<b>Ahupua‘a:</b> Various
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**Contact:** Roz Kahalelehua Makāula  
Director, Government Relations,  
Nākiakaulani - Legal Group  
567 South King Street  
Honolulu, HI 96813  
(808) 523-6348

**E-mail:**  
romakaul@ksbe.edu  
**Website:**  
www.ksbe.edu

**Kamiloloa One Ali‘i Homestead Association**

**Established:**

1992

**Summary:** Right now I am in partnership in restoring two fish ponds. My partners are Ka Honua Momona. At the fishponds, we hope to put up a Hawaiian hut made from mangrove and palms, doing a Hawaiian garden too; will be having classes on Hawaiian culture.

**Originally  
Registered:**  
7/28/2008

<b>Island:</b> Moloka‘i	<b>Moku:</b> Moloka‘i	<b>Ahupua‘a:</b> Moloka‘i
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**Contact:** Vivian L. Ainoa  
President  
P.O. Box 1349  
Kaunakakai, HI 96748  
(808) 553-5186

**E-mail:**  
vaniainoa@yahoo.com  
**Website:**  
None listed

**Kanaka Economic Development Alliance**

**Established:**

October 2019

**Summary:** Through our work, we envision a future global network of Native Hawaiian owned businesses. Our goals include:

**Originally  
Registered:**  
2/23/2023

- Connecting businesses in Hawai‘i with businesses throughout the Native Hawaiian diaspora.

- Promoting increased revenue flows through new intra-community economic activities and a Hawai‘i export market.

Advocating for the creation of new jobs, providing meaningful opportunities for our people.

Working together towards these goals empowers us to express ourselves through our culture in both a traditional and modern sense and provides us a way to live and work firmly rooted in our values systems.

<b>Island:</b> N/A	<b>Moku:</b> N/A	<b>Ahupua‘a:</b> N/A
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**Contact:** Kelea Levy

Executive Director

44-573 Kāne‘ohe Bay Drive

Kāne‘ohe, HI 96744-2560

(808) 224-2668

**E-mail:**

kelea@kanakaeconomy.org

**Website:**

www.kanakaeconomy.org

**Kanaka Kauila**

**Established:**

Hawaiian Purpose

December 12,  
2023

**Summary:** Kanaka Kauila aims to uplift Native Hawaiians on Moloka‘i, facing economic hardship since 2002, with 40% living on subsistence and 45% below poverty. Addressing a 13.9% unemployment rate, the highest in the state, the mission is to empower the community through sustainable food, energy, and resource control, countering the lack of industry and external influences. The vision is self-sufficient preservation of Hawaiian culture and use of language, free from poverty, unemployment, and external dependencies by 2040.

**Originally  
Registered:**  
1/2/2024

<b>Island:</b> Moloka‘i	<b>Moku:</b> Ko‘olau	<b>Ahupua‘a:</b> Halawa
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**Contact:** Isaac Adolpho

Chairman

14403 Kamehameha V Hwy., #502

Kaunakakai, HI 96748

(619) 756-0075

**E-mail:**

isaac.adolpho@gmail.com

**Website:**

None listed

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**Kānehūnāmoku Voyaging Academy**

**Established:**

2014

**Summary:** The mission of Kānehūnāmoku Voyaging Academy is: To Perpetuate the Knowledge of Traditional Hawaiian Navigation and to Provide Opportunities to Native Hawaiian Students to Advance in Contemporary Ocean Based Careers Through Academic, College, and Career Support

**Originally  
Registered:**  
10/6/2022

<b>Island:</b> All-O‘ahu	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Bonnie Kahapea-Tanner

Executive Director

47-705 A Kamehameha Highway

Kāne‘ohe, HI 96744

(808) 286-4176

**E-mail:**

kahapea@kanehunamoku.org

**Website:**

www.kanehunamoku.org

**Kanu o ka ‘Āina Learning ‘Ohana**

**Established:**

KALO

2000

**Summary:** Advancement of education of and about Hawaiian people; advancement of culture and tradition of Hawaiian people; training for people for the purpose of improving or developing capabilities of Hawaiian matters; literary program to encourage indigenous oppressions and analysis of recordings of indigenous history; protecting and preserving a healthful environment, relief of the the under privileged Hawaiian person; development of global awareness and knowledge about other cultures with a special emphasis on indigenous concerns and networking via telecommunications.

**Originally Registered:**  
1/22/2008

<b>Island:</b> Statewide, plus mainland	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Taffi Wise  
 Executive Director  
 P.O. Box 6511  
 Kamuela, HI 96743  
 (808) 887-1117

**E-mail:**  
 taffi@kalo.org  
**Website:**  
 www.kalo.org

**Kapolei Community Development Corporation**

**Established:**

KCDC

May 2008

**Summary:** We are interested in fostering the preservation of families and Hawaiian culture through implementing collaborative values-based projects and programs promoting environmental (‘āina) and economic (‘ohana) sustainability.

**Originally Registered:**  
7/14/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Ewa	<b>Ahupua‘a:</b> Honouliuli
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**Contact:** Scott Abrigo  
 President  
 P.O. Box 75658  
 Kapolei, HI 96707  
 (808) 389-2006

**E-mail:**  
 kakoukhc@gmail.com  
**Website:**  
 www.kapoleiheritage.org

**Kapule Organization**

**Established:**

May 2020

**Summary:** Kapule Organization (NHO) is interested in educational programs for local kids in Maunalua Bay. We take kids on Mauka to Makai day trips where they start on a hike up the ridge, then go to Kalauha‘iha‘i fishpond, then out sailing on a traditional Hawaiian sailing canoe with real P.V.S. sailors. Our goal is to build out an educational center for our students.

**Originally Registered:**  
12/7/2023

<b>Island:</b> O‘ahu	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> Waikīkī (Maunalua Bay)
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**Contact:** Nicholas Kapule  
 President  
 3702 Pelu Place  
 Honolulu, HI 96816  
 (808) 594-7081

**E-mail:**  
[info@kapulellc.com](mailto:info@kapulellc.com)  
**Website:**  
[www.kapulellc.com](http://www.kapulellc.com)

**Kaua‘i Sea Farm**

**Established:**

Oct 2017

**Summary:** With over 100 years as owners and three generations as stewards of Nomilo fishpond. Kaua‘i Sea Farm operates from a strong knowledge base of the Hawaiian culture and affairs. Dedicated to the health and well-being of the historically significant ancient Hawaiian Nomilo fishpond; we are also providing our native community with a sustainable supply of locally sourced seafoods. Our programs preserve and provide educational opportunities to the community on the culture, history, environmental and traditions at Nomilo.

**Originally Registered:**  
7/17/2023

<b>Island:</b> Kaua‘i	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> Kalaheo
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**Contact:** Lynn Maile Taylor  
 President/CEO  
 P.O. Box 746  
 Kalaheo, HI 96741  
 (808) 332-0877

**E-mail:**  
[lynn@kauaiseafarm.com](mailto:lynn@kauaiseafarm.com)  
**Website:**  
[www.kauaiseafarm.com](http://www.kauaiseafarm.com)

**Kauhakō Ohana Association**

**Established:**

Aug 2020

**Summary:** Our purpose is to perpetuate the Opelu Canoe Fishing Culture and establish sustainable, pono, harvesting practices for our traditional fishing areas. We also hope to malama na kupuna iwi interred in the burial caves at Palianihi above Kauhakō Bay.

**Originally Registered:**  
5/26/2021

<b>Island:</b> Hawai‘i	<b>Moku:</b> South Kona	<b>Ahupua‘a:</b> Kauhakō/ Hookena / Kealia
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**Contact:** Damien Kenison  
 President  
 P.O. Box 38  
 Honaunau, HI 96726  
 (808) 987-9149

**E-mail:**  
 namamo@yahoo.com  
**Website:**  
 None listed

**Ka‘uikiokapō**

**Established:**

2021

**Summary:** Ka‘uikiokapō is a non-governmental organization dedicated to advocate for social justice including, but not limited to, environmental and cultural preservation issues. Rooted in the area of Pūkaua and Waimānalo in Honouliuli, O‘ahu, Ka‘uikiokapō uses traditional knowledge to care for the land and sea of the area, making sure to teach the community and prepare the next generation to continue the good work.

**Originally Registered:**  
8/26/2023

<b>Island:</b> O‘ahu	<b>Moku:</b> ‘Ewa/Wai‘anae	<b>Ahupua‘a:</b> All
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**Contact:** William O'Brien  
 President  
 92-361 Laahaina Place  
 Kapolei, HI 96707  
 (808) 220-5375

**E-mail:**  
 obrienwjk@gmail.com  
**Website:**  
 None listed

**Kauluakalana**

**Established:**

2019

**Summary:** Our mission is to restore and grow healthy relationships between people and place through the aloha aina practices of retelling our Kailua-specific stories, replanting and eating our ancestral foods, and caring for the sacred sites, lands, and waters of our beloved ahupuaa of Kailua to chart and navigate a course leading to kanaka (people) and aina (land) reunited in a relationship that feeds us physically, intellectually, culturally, and spiritually.

**Originally Registered:**  
2/1/2022

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Kailua
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**Contact:** Bert K. Wong  
 Executive Director  
 P.O. Box 833  
 Kailua, HI 96734  
 (808) 352-7145

**E-mail:**  
[info@kauluakalana.org](mailto:info@kauluakalana.org)  
**Website:**  
[www.kauluakalana.org](http://www.kauluakalana.org)

**Kauwahi ‘Anaina Hawai‘i Hawaiian Civic Club**

**Established:**

Oct 2005

**Summary:** As an organization under the auspices of our parent the Association of Hawaiian Civic Clubs, Kauwahi ‘Anaina Hawai‘i Hawaiian Civic Club's purpose is to promote and perpetuate traditional Native Hawaiian values and cultural expressions, especially as our children born outside of our native Hawai‘i may learn and embrace those same values and practices. Also, it is of prime importance that other Native Hawaiians in Utah have a sense of identity with other Native Hawaiians in this locale through Kauwahi ‘Anaina Hawai‘i Hawaiian Civic Club, while being effective contributors in our individual communities and strong supporters of issues concerning Native Hawaiians in the State of Hawai‘i.

**Originally Registered:**  
6/4/2015

<b>Island:</b> None listed	<b>Moku:</b> None listed	<b>Ahupua‘a:</b> None listed
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**Contact:** Carol N. Johnson  
 President  
 P.O. Box 50808  
 Provo, UT 84605  
 (801) 857-0056

**E-mail:**  
[nalanijohnson@yahoo.com](mailto:nalanijohnson@yahoo.com)  
**Website:**  
 None listed

**Kawaihapai Ohana**

**Established:**

2001

**Summary:** Protection and preservation of na iwi kupuna, cultural & historical sites with their applicable mo‘olelo (stories) of Waialua with a primary emphasis of the northwest coastline of Waialua that encompasses the ahupua‘a of Kamananui, Mokuleia, Aukuu, Kikahi, Kawaihapai, Kealia & Kaena. The ultimate emphasis is ahupua‘a of Kawaihapai.

**Originally Registered:**  
 12/19/2007

<b>Island:</b> O‘ahu	<b>Moku:</b> Waialua	<b>Ahupua‘a:</b> Northwest Coastline of Waialua
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**Contact:** Thomas T. Shirai Jr.  
 Po‘o  
 P.O. Box 601  
 Waialua, HI 96791  
 (808) 637-4690

**E-mail:**  
 kawaihapai@hawaii.rr.com  
**Website:**  
 None listed

**Kawaileo Law A Limited Liability Law Company**

**Established:**

Jan 2016

**Summary:** Kawaileo Law, LLC has interest in preservation and protection of traditional knowledge and Hawaiian culture, including federal action affecting aina and sacred sites. We have served to forward meaning full Native Hawaiian consultation in compliance with section 106 of NHPA, involving Environmental Impact Statements and in compliance with other federal and state laws requiring meaningful consultation with Native Hawaiian peoples.

**Originally Registered:**  
 10/1/2020

<b>Island:</b> All islands	<b>Moku:</b> All moku	<b>Ahupua‘a:</b> All ahupua‘a
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**Contact:** Na‘unanikinau Kamali‘i  
 212 Merchant Street, Suite 330  
 Honolulu, HI 96813  
 (808) 521-0005

**E-mail:**  
 contact@kawaileolaw.com  
**Website:**  
 kawaileolaw.com

**Ke Kula Nui O Waimānalo**

**Established:**

2017

**Summary:** Our Vision: Kūkulu Kaiāulu

\*Kūkulu - To build, as a house; to construct, erect, establish, organize, set up; to put up, as mast and sail; to found, as a society; to establish, as a name or dynasty

\*Kaiāulu - Community, neighborhood, village

Our Mission: Provide a community of practice through collaboration of Kānaka to promote strong and healthy ahupua‘a.

**Originally Registered:**  
6/23/2023

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Kirk Deitschman

Board President

P.O. Box 723

Waimānalo, HI 96795

(808) 753-4098

**E-mail:**

info@kekulanuiowaimanalo.org

**Website:**

www.kekulanuiowaimanalo.org

**Ke One O Kākuhihewa**

**Established:**

O‘ahu Council of the Association of Hawaiian Civic Clubs

1959

**Summary:** Ke One O Kakuhihewa, the O‘ahu Council of the Association of Hawaiian Civic Clubs, is an organization of the 27 chartered member clubs on O‘ahu. We actively pursue the civic, economic, social, physical, and spiritual well-being of our community. We are committed to the rights of Native Hawaiians to self-determination with a sensitivity for the traditional cultural values and assets of our culture.

**Originally Registered:**  
10/23/2015

<b>Island:</b> O‘ahu	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Jacob Aki

President

P.O. Box 37874

Honolulu, HI 96837-1122

**E-mail:**

puahalaroth@gmail.com

**Website:**

www.kakuhihewa.org

**Keaukaha Community Association**

**Established:**

Kōmike O Aina Hoopulapula Ma Keaukaha 1926 as Kuhio Settlement

1926

**Summary:** To better the conditions of the native Hawaiians as defined pursuant to 42 Stat 108, HHCA 1920 as amended July 9, 1921. We continue to preserve and perpetuate our culture through the ‘olelo (language), mele (music) and the mo‘olelo (story) of our kaiaulu. Work to minimize neighborhood tension, prevent juvenile delinquency, help to prevent domestic, drug, alcohol abuses and providing opportunities for our young. Malama na Kupuna.

**Originally Registered:**  
10/7/2019

<b>Island:</b> Moku O Keawe	<b>Moku:</b> East Hawai‘i	<b>Ahupua‘a:</b> Waiākea-Kai, South Hilo
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**Contact:** Patrick L. Kahawaiolaa  
 President  
 P.O. Box 5146  
 Hilo, HI 96720  
 (808) 937-8217

**E-mail:**  
kcaiprez@gmail.com  
**Website:**  
www.keaukaha.org

**Keoni Kealoha Alvarez**

**Established:**

2008

**Summary:** I am a descendant and land owner to a Hawaiian burial cave in Waikahekahe Iki and my Ohana name Kahihikolo and Kau. I am recognized by the Hawai‘i Island Burial Council and State Historic Preservation Department as a descendant to our Hawaiian burial cave. I am interested in protecting iwi kupuna in Waikahekahe Iki (Hawai‘i Island), Pelekunu (Moloka‘i) and Queen Lili‘uokalani Protestant Church Cemetery, Wailua (O‘ahu).

**Originally Registered:**  
4/28/2021

<b>Island:</b> Hawai‘i Island & Moloka‘i	<b>Moku:</b> District of Puna	<b>Ahupua‘a:</b> Waikahekahe Iki, Maku‘u
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**Contact:** Keoni Kealoha Alvarez  
 RR3 Box 1043  
 Pahoa, HI 96778  
 (808) 209-2156

**E-mail:**  
keonialvarez@gmail.com  
**Website:**  
www.keonialvarez.com

**Kia‘i Kanaloa**

**Established:**

Guardians of Kanaloa

2010

**Summary:** Kia‘i Kanaloa is a community-based, statewide network of Hawaiian cultural practitioners who care for distressed, stranded & deceased Kanaloa (marine animals). Currently, Kia‘i Kanaloa has Kia‘i on the islands of Hawai‘i, Maui, Kaua‘i, O‘ahu and Lāna‘i who can be called upon to respond to distress/stranding events or for native Hawaiian consultation on issues relating to our Kanaloa. Upon request, Kia‘i Kanaloa members can provide response and advocacy training for communities.

**Originally Registered:**  
1/27/2023

<b>Island:</b> Statewide network	<b>Moku:</b> Various moku on islands listed	<b>Ahupua‘a:</b> Various ahupua‘a
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**Contact:** Roxane Keli‘ikipikāneokolohaka  
 Kia‘i  
 1889-A Kilauea Avenue  
 Hilo, HI 96720  
 (808) 896-4715

**E-mail:**  
kiaikanaloa@gmail.com  
**Website:**  
None listed

**Kimokeo Foundation**

**Established:**

2015

**Summary:** Kimokeo Foundation is a non-profit 501(c)(3) organization on the island of Maui whose mission is to preserve and perpetuate the Hawaiian culture, its traditions, practices, language and Maui community’s health and environment through education programs which benefit the people of Hawai‘i. We primarily support Hawaiian immersion education on Maui, Hawaiian cultural enhancement and environmental programs and work with the community to improve the health of our kūpuna (elders).

**Originally Registered:**  
6/23/2023

<b>Island:</b> Maui	<b>Moku:</b> Wailuku	<b>Ahupua‘a:</b> Wailuku
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**Contact:** Joylynn Paman  
 Executive Director  
 95 Mahalani Street, Suite 12  
 Wailuku, HI 96793  
 (808) 446-3030

**E-mail:**  
info@kimokeofoundation.org  
**Website:**  
www.kimokeofoundation.org

**Kingdom of Hawai‘i**

**Established:**

before 1810

**Summary:** Reinstate the de jure Kingdom of Hawai‘i.

**Originally Registered:**  
9/18/2014

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Dennis W. Ragsdale  
 Advocate General  
 1777 Ala Moana Blvd, #142-102  
 Honolulu, HI 96815-1603  
 (808) 235-2425

**E-mail:**  
kingdom@pixi.com  
**Website:**  
www.kingdom-hawaii.org

**Kipuka Olowalu**

**Established:**

July 2020

**Summary:** To perpetuate the traditional and customary practices of kanaka maoli of these Hawaii Islands and promote opportunities to regain the spiritual connection of malama aina of our ancestors by ensuring these beliefs and customs are passed down to future generations. To foster in longevity an intuitive comprehension of cultural and environmental connectivity through the education practice of activities that honor Hawaii's heritage and will strengthen the community for generations to come.

**Originally Registered:**  
6/22/2023

<b>Island:</b> Maui	<b>Moku:</b> Lahaina, Kealahou	<b>Ahupua‘a:</b> Olowalu
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**Contact:** Karin Osuga  
 Executive Director  
 P.O. Box 122  
 Lahaina, HI 96767  
 (808) 276-5593

**E-mail:**  
karin@kipukaolowalu.com  
**Website:**  
www.KipukaOlowalu.org

**Koa Ike**

**Established:**

2003

**Summary:** Koa Ike's mission is dedicated to the advancement of all peoples in Ko Hawai'i Pae Aina to perpetuate the traditions of kanaka maoli in efforts to achieve a quality of life that is pono for the people of Hawai'i.

**Originally Registered:**  
4/23/2014

<b>Island:</b> Ko Hawai'i Pae Aina	<b>Moku:</b> Waianae	<b>Ahupua'a:</b> Kanehunamoku
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**Contact:** Glen Kila

Program Director

89-530 Mokiawe Street

Waianae, HI 96792-3840

(808) 294-2441

**E-mail:**

makakila@gmail.com

**Website:**

www.koaike.org

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**Kohe Malamalama O Kanaloa Protect Kaho'olawe Fund**

**Established:**

1976

**Summary:** Education on historical, cultural, religious, and social significance of Kaho'olawe - Kohe Malamalama O Kanaloa. Cultural and religious customs and practice, and ceremonies on Kaho'olawe. Stewardship of Kaho'olawe.

**Originally Registered:**  
8/9/2024

<b>Island:</b> Kaho'olawe	<b>Moku:</b> Kaho'olawe	<b>Ahupua'a:</b> Kaho'olawe
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**Contact:** Davianna McGregor

Treasurer

1733 Wili Pa Loop, B-1

Wailuku, HI 96793

(808) 222-9278

**E-mail:**

davianna.mcgregor@gmail.com

**Website:**

www.protectkahoolaweohana.org

**Ko‘i‘ula**

**Established:**

October 2022

**Summary:** We seek to educate and facilitate the perpetuation, preservation, and stewardship of all natural and cultural resources of spiritual and historic significance that are important for the benefit of present and future generations, and to assist our diverse population in perpetuity.

**Originally Registered:**  
2/20/2024

<b>Island:</b> Maui	<b>Moku:</b> All Moku of Maui	<b>Ahupua‘a:</b> All Ahupua‘a of Maui
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**Contact:** Leona Lei‘ohu Ryder  
President  
1215 South Kihei Road, Suite 0,  
PMB #526  
Kihei, HI 96753  
No phone listed

**E-mail:**  
koiula.maui@gmail.com  
**Website:**  
www.koi-ula.org

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**Ko‘olau Foundation**

**Established:**

2008

**Summary:** Preserve our cultural resources, landscapes, traditional and customary practices; preserve historic and sacred sites.

**Originally Registered:**  
12/28/2010

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All, especially Kaneohe and Heeia
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**Contact:** Mahealani Cypher  
Secretary  
P.O. Box 4749  
Kaneohe, HI 96744  
(808) 226-4195

**E-mail:**  
malama pono744@aol.com  
**Website:**  
None listed

**Ko‘olaupoko Hawaiian Civic Club**

**Established:**

1937

**Summary:** Our organization is dedicated to the preservation and perpetuation of Hawaiian culture, history, and heritage in the Ko‘olaupoko area between Kane‘ohe and Kualoa.

**Originally Registered:**  
12/28/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Kaneohe (including Mokapu), Heeia, Kahaluu, Waihee, Kaalaea, Waiahole, Waikane, Hakipuu, Kualoa
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**Contact:** Mahealani Cypher  
 Government Relations Chair  
 P.O. Box 664  
 Kaneohe, HI 96744  
 (808) 235-8111

**E-mail:**  
malamapono744@aol.com  
**Website:**  
www.koolaupokohcc.org

**Kua‘āina Ulu ‘Auamo**

**Established:**

KUA

2012

**Summary:** KUA empowers communities to improve their quality of life through caring for their biocultural (natural and cultural) heritage. Our vision is ‘āina momona -- abundant and healthy ecological systems in Hawai‘i that contribute to community well-being.

**Originally Registered:**  
8/22/2022

We held advance aloha and malama aina efforts through the facilitation of community-based natural resource management (malama aina) networks. As of 2022, 1) E Alu Pu; 2) the Hui Malama Loko I‘a; and 3) the Limu Hui.

<b>Island:</b> Statewide	<b>Moku:</b> Statewide	<b>Ahupua‘a:</b> Statewide
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**Contact:** Kevin Chang  
 Executive Director  
 47-200 Waihee Road, c/o Key Project  
 Kāne‘ohe, HI 96744  
 (808) 672-2545

**E-mail:**  
info@kuahawaii.org  
**Website:**  
www.kuahawaii.org

**Kula no na Po‘e Hawaii**

**Established:**

School for the People of Hawaii

1992

**Summary:** We work to improve the health and well-being of the residents of the Native Hawaiian Homestead communities of Kewalo, Kalawahine, and Papakolea. Our work is in health and education which encompasses culture, language and social services.

**Originally Registered:**  
4/5/2017

<b>Island:</b> O‘ahu	<b>Moku:</b> Honolulu	<b>Ahupua‘a:</b> Kona
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**Contact:** Adrienne Dillard  
 Executive Director  
 P.O. Box 23268  
 Honolulu, HI 96823  
 (808) 520-8997

**E-mail:**  
[kula.papakolea@gmail.com](mailto:kula.papakolea@gmail.com)  
**Website:**  
[www.kula-papakolea.com](http://www.kula-papakolea.com)

**Kuloloi‘a Lineage - I ke Kai ‘o Kuloloi‘a**

**Established:**

9th Century

**Summary:** Our hui has the kuleana of preserving ancestral knowledge and the protection of human, cultural, and natural resources.

**Originally Registered:**  
10/21/2015

<b>Island:</b> Maui, Kaho‘olawe, O‘ahu	<b>Moku:</b> Hāmākualoa, Hāmākuapoko, Honua‘ula, Ka‘anapali, Wailuku, Kona, ‘Ewa	<b>Ahupua‘a:</b> Pa‘uwela, Lahaina, Makena
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**Contact:** Manuel Kuloloio  
 Makuakāne  
 469 Ma‘alo Street  
 Kahului, HI 96732  
 (808) 479-2377

**E-mail:**  
[manuel.kuloloio@gmail.com](mailto:manuel.kuloloio@gmail.com)  
**Website:**  
 None listed

**Additional Contacts:**

Leinā‘ala Kuloloio Vedder  
 Kaikamahine

**E-mail:**  
[puniawalei@hotmail.com](mailto:puniawalei@hotmail.com)

**Kupa O Waihe‘e**

**Established:**

Waihe‘e Valley Restoration Project

2013

**Summary:** Kupa O Waihe‘e is a 501(c)3 Native Hawaiian non-profit organization whose mission is to restore a living and thriving ahupua‘a. We will accomplish this through (1) restoration, (2) preservation, and (3) stewardship. Firstly, we seek to restore traditional food systems such as ‘auwai and lo‘i kalo through conservation efforts. Second, we seek to preserve traditional farming practices informed by our kūpuna. Finally, we seek to steward our community's relationship to ‘āina through service projects and cultural protocol.

**Originally Registered:**  
2/5/2024

<b>Island:</b> Maui	<b>Moku:</b> Wailuku	<b>Ahupua‘a:</b> Waihe‘e
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**Contact:** Joshua Chavez  
 Co-Founder  
 PO Box 6240  
 Kahului, HI 96733  
 (808) 268-9726

**E-mail:**  
[kupaowaihee@gmail.com](mailto:kupaowaihee@gmail.com)  
**Website:**  
[www.kupaowaihee.org](http://www.kupaowaihee.org)

**Kupeke Ahupua‘a**

**Established:**

January 2020

**Summary:** We are interested in all matters related to cultural and natural resources on Molokai.

**Originally Registered:**  
9/16/2020

<b>Island:</b> Molokai	<b>Moku:</b> Mana‘e	<b>Ahupua‘a:</b> Kupeke
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**Contact:** Mahina M. Poepoe  
 Board President  
 P.O. Box 1687  
 Kaunakakai, HI 96748  
 (808) 658-6010

**E-mail:**  
[KupekeAhupuaa@gmail.com](mailto:KupekeAhupuaa@gmail.com)  
**Website:**  
 None listed

**Lahui Kaka‘ikahi**

**Established:**

Endangered Species

May 2009

**Summary:** This organization is exclusively for charitable and educational purposes. It is our mission to provide Native Hawaiians with hand-on training in the construction industry. We will accomplish this mission by fostering the sense of "doing" and innovative thinking that is an intrinsic part of our culture. We envision a Native Hawaiian workforce that is both leading-edge and culturally cognizant at the same time. We will encourage our students to cultivate the value of Malama by passing on their knowledge to others in their community and by providing additional career opportunities for other Native Hawaiians, should they choose to go into business for themselves.

**Originally Registered:**  
4/9/2012

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Waimānalo
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**Contact:** Kaleo Keeno  
President

**E-mail:**

41-210 Hihimanu Street  
Waimanalo, HI 96795

**Website:**

**La‘i‘Ōpua 2020**

**Established:**

Mar 2006

**Summary:** La‘i ‘Ōpua 2020's mission is to develop social infrastructure to include social, educational, recreational, cultural, medical service, and programs in the Kealakehe Ahupua'a couth and bordering Kealakehe High School. Envisioned as a pu‘uhonua (place of cultural agreement, safe place) will be a place where all can reflect, receive help, and reconnect again with family & community. Health & Wellness in both western & traditional method. We are interested in seeking funding sources to bring our Community Center to fruition.

**Originally Registered:**  
4/9/2012

<b>Island:</b> Hawai‘i	<b>Moku:</b> Hawai‘i Island	<b>Ahupua‘a:</b> Kealakehe
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**Contact:** Diana Akao  
Interim Executive Director  
P.O. Box 1764  
Kailua Kona, HI 96745-1764  
(808) 327-1221

**E-mail:**  
diana.akao@laiopua.org  
**Website:**  
www.laiopua.org

**La‘i‘ōpua Community Development Corporation**

**Established:**

August 2009

**Summary:** The corporation is organized for charitable purposes which promote the betterment of the community in the La‘i‘ōpua homestead region by establishing, implementing and managing charitable, religious, educational, and scientific programs which promote education, economic development, renewable energy, energy self-sufficiency, health and human services, and housing.

**Originally Registered:**  
8/30/2023

<b>Island:</b> Hawai‘i	<b>Moku:</b> Big Island	<b>Ahupua‘a:</b> Kealakehe/Keahuolu
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<b>Contact:</b> Craig "Bo" Kahui Executive Director 74-5146 Haleolono Place Kailua-Kona, HI 96740 (808) 896-2252	<b>E-mail:</b> bokahui65@gmail.com  <b>Website:</b> None listed
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**Las Vegas Hawaiian Civic Club**

**Established:**

July 1989

**Summary:** Perpetuate the traditions, songs (Mele) and chants (‘Oli), culture, customs and language (‘Ōleleo Hawai‘i) of Hawai‘i and to encourage their use. Promote educational projects for the benefit of any race (with the primary emphasis on the people of Hawaiian Ancestry or Hawaii born) by furthering their education with the aid of scholarships. To unite members into one harmonious group, while working to promote good government. Provide a forum for the free discussion of issues in the public interest and programs beneficial.

**Originally Registered:**  
9/15/2023

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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<b>Contact:</b> F. Patrick Filbert Hope Pelekikena ‘Elua (2nd Vice President) 7260 West Azure Dr., Ste. 140-1052 Las Vegas, NV 89130 (702) 907-3667	<b>E-mail:</b> lasvegashcc@gmail.com  <b>Website:</b> www.lasvegashawaiiancivicclub.net
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**Ma‘a ‘Ohana c/o Lani Ma‘a Lapilio**

**Established:**

**Summary:** We are interested in all matters relating to Hawaiian cultural heritage, such as preserving and perpetuating our historic sites, iwi kupuna, language, music, etc.

**Originally Registered:**  
10/16/2012

<b>Island:</b> O‘ahu	<b>Moku:</b> All	<b>Ahupua‘a:</b> Honolulu
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**Contact:** Lani Ma‘a Lapilio

**E-mail:**

lani@aukahi.com

c/o Aukahi, P.O. Box 6087

**Website:**

Kaneohe, HI 96744-9998

None listed

(808) 540-5741

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**Machado-Akana-Aona-Namakaeha Ohana**

**Established:**

**Summary:** Family heiau in Puuhonua o Honaunau: human remains in the heiau; human remains of Kaiana Ahu'ula, brother of Mauna Namakaeha, uncle of Bennett Namakaeha, father of Malia Namakaeha, Great Grandmother of Brenda Luana Machado Lee

**Originally Registered:**  
11/29/2010

<b>Island:</b> Hawai‘i	<b>Moku:</b> Hawai‘i	<b>Ahupua‘a:</b> Honaunau/Captain Cook
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**Contact:** Brenda Luana Machado Lee

**E-mail:**

Loea

None listed

1505 Railroad Avenue

**Website:**

Hilo, HI 96720

None listed

(808) 959-8892

**Mahamoku Ohana Council**

**Established:**

North Shore Council of Native Families

June 2018

**Summary:** We are a group that convenes to support Native Practitioners and Native Hawaiian Families in topics related to Hawaiian language, culture, history, as well as engage in the preservation of language, cultural/sacred sites and related practices in these areas. We are also concerned with ancient burials in the two moku we malama (take care of), Halelea and Napali, as well as collect oral stories from kupuna and written stories from traditional knowledge resources in both English and Hawaiian.

**Originally Registered:**  
2/24/2020

<b>Island:</b> Kaua'i	<b>Moku:</b> Halelea, Napali	<b>Ahupua'a:</b> All in these two moku
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**Contact:** Kamealoha Smith  
 Board Member  
 P.O. Box 510015  
 Kealia, HI 96751  
 (808) 212-4356

**E-mail:**  
khs96703@gmail.com  
**Website:**  
None listed

**Mahu Ohana**

**Established:**

1994

**Summary:** To Protect and preserve places our kupuna lived, fished, grew kalo, ginger and are buried. To be stewards of our iwi kupuna. Our kuleana is from Kaena Point to Waimea Valley and from Waialua to Ewa, including Schofield.

**Originally Registered:**  
6/22/2012

<b>Island:</b> O'ahu	<b>Moku:</b> All, Waialua, Schofield	<b>Ahupua'a:</b> All
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**Contact:** Keona Mark  
 P.O. Box 2  
 Haleiwa, HI 96712  
 (808) 637-2778

**E-mail:**  
keonamark@gmail.com  
**Website:**  
None listed

**Mainland Council Association of Hawaiian Civic Clubs**

**Established:**

Jul 1990

**Summary:** To promote Native Hawaiian culture, language and traditions. To actively assert and defend the cultural, traditional knowledge, and intellectual property rights of the Native Hawaiian people, of Kupuna and cultural practitioners. To protect, respect, and promote the inherent rights of Native Hawaiian people that derive from our political, economic, and social structures and from our culture, spiritual traditions, histories, and philosophies, especially our rights/kuleana to our lands, territories, and resources.

**Originally Registered:**  
3/7/2014

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Carol Nalani Johnson  
President  
Pleasant Grove, UT 84062

**E-mail:**  
mcahcc@gmail.com  
**Website:**  
www.mcahcc.com

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**Makaha Hawaiian Civic Club**

**Established:**

2005

**Summary:** Stewards to the land and surrounding areas, adopt a park, beautification, citizens patrol, graffiti busting.

**Originally Registered:**  
5/9/2012

<b>Island:</b> O‘ahu	<b>Moku:</b> Wai‘anae	<b>Ahupua‘a:</b> Makaha
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**Contact:** Lu Faborito  
Secretary  
P.O. Box 305  
Wai‘anae, HI 96792  
(808) 351-5650

**E-mail:**  
kaluhiokalanik@aol.com  
**Website:**  
<http://makanahawaiiancivicclub.webs.com>

**The Makua Group**

**Established:**

2008

**Summary:** Our mission is to help our Native Hawaiian People, through the promotion and the fostering of various programs in Health & Welfare, Education, quality of life for Kūpuna (Grandparent) & Keiki (children) and Enhancement of Cultural Preservation.

**Originally Registered:**  
12/7/2017

<b>Island:</b> All islands	<b>Moku:</b> Wai‘anae/All	<b>Ahupua‘a:</b> Nānākuli to Makua and All
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**Contact:** Eugene O'Connell  
Project Coordinator  
87-282 Holopono Street  
Wai‘anae, HI 96792  
(808) 668-6470

**E-mail:**  
eugene.oconnell@makuagroup.com  
**Website:**  
www.makuagroup.com

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**Maku‘u Farmers Association**

**Established:**

1985

**Summary:** We are interested in preserving native Hawaiian plants, historic places, and identifying ancient burial grounds in our moku and ahupua‘a. Collecting and sharing of oral history by our kūpuna is also important to us.

**Originally Registered:**  
5/30/2012

<b>Island:</b> Hawai‘i	<b>Moku:</b> Puna	<b>Ahupua‘a:</b> All
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**Contact:** Paula K. Kekahuna  
President  
15-2131 Keaau Paho Highway  
Paho, HI 96778  
(808) 896-5537

**E-mail:**  
makuufarmersassociation@gmail.com  
**Website:**  
None listed

**Malama Anahola**

**Established:**

Oct 2020

**Summary:** We are a nonprofit that convenes to support Native Practitioners and Native Hawaiian Families in topics related to Hawaiian language, culture, history, as well as engage in the preservation of language, cultural/sacred sites and related practices in these areas. We are also concerned with ancient burials in our moku, Ko‘olau, but also have familial connections to other moku on Kaua‘i. Further, we collect oral stories from kupuna and written stories from traditional and modern resources in both English and Hawaiian.

**Originally Registered:**  
11/18/2020

<b>Island:</b> Kaua‘i	<b>Moku:</b> Ko‘olau	<b>Ahupua‘a:</b> Anahola
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**Contact:** Sherri Cummings  
President  
4377B Nani Street  
Lihue, HI 96766  
(808) 651-3039

**E-mail:**  
malamaanahola96703@gmail.com  
**Website:**  
None listed

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**Mālama Hulē‘ia**

**Established:**

August 2015

**Summary:** The primary topical areas of interest for Mālama Hulē‘ia are restoration of Alakoko fishpond, mangrove eradication and community education.

**Originally Registered:**  
11/21/2022

<b>Island:</b> Kaua‘i	<b>Moku:</b> Puna	<b>Ahupua‘a:</b> Niumalu
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**Contact:** Sara Bowen  
Executive Director  
P.O. Box 662092  
Līhu‘e, HI 96766  
(808) 626-5210

**E-mail:**  
info@malamahuleia.org  
**Website:**  
www.malamahuleia.org

**Malama Ka‘u Foundation**

**Established:**

Dec 2021

**Summary:** Malama Ka‘u Foundation is a nonprofit Native Hawaiian Organization (NHO) with a single purpose . . . to elevate the physical health and financial well-being of Native Hawaiians living in the rural Ka‘u District on the island of Hawai‘i.

**Originally Registered:**  
6/22/2023

<b>Island:</b> Hawa‘i	<b>Moku:</b> Ka‘u	<b>Ahupua‘a:</b> All
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**Contact:** Melvin K. Yokoyama Jr.  
Chairman of the Board  
P.O. Box 273  
Pahala, HI 96777  
(619) 855-5709

**E-mail:**  
mel.yokoyama@akamai-intelligence.com  
**Website:**  
www.malamakau.org

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**Mālama Loko Ea Foundation**

**Established:**

2011

**Summary:** Our mission is to perpetuate the Native Hawaiian culture through education, land stewardship, and community building, while restoring our precious natural resources. MLEF's vision is rooted in proverb, "Ka wa ma mua, ka wa ma hope. Lessons from the past are the key to the future." Our goal is to ensure all Native Hawaiian learners have

**Originally Registered:**  
6/22/2023

<b>Island:</b> O‘ahu	<b>Moku:</b> Waialua	<b>Ahupua‘a:</b> Kawaioloa
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**Contact:** Rae DeCoito  
Executive Director  
P.O. Box 553  
Haleiwa, HI 96712  
(808) 637-3232

**E-mail:**  
info@lokoea.org  
**Website:**  
www.lokoea.org

**Malu‘ōhai Residents Association**

**Established:**

Mar 2001

**Summary:** Malu‘ōhai Residents' Association is the first homestead in Kapolei serving 226 homes. Our mission is to perpetuate our cultural heritage by enhancing the education, safety and well being of our ohana with aloha. We support restoration and preservation of cultural sites, best use of natural resources and trust lands for the betterment of native Hawaiians.

**Originally Registered:**  
1/10/2008

<b>Island:</b> O‘ahu	<b>Moku:</b> Ewa	<b>Ahupua‘a:</b> Hono‘uli‘uli
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**Contact:** Homelani Schaedel  
 President  
 P.O. Box 700911  
 Kapolei, HI 96709  
 (808) 520-2267

**E-mail:**  
[homeshaedel@hawaii.rr.com](mailto:homeshaedel@hawaii.rr.com)  
**Website:**  
 None listed

**Mana Health Services, Inc.**

**Established:**

Feb 2015

**Summary:** Mana Health Services, Inc. (MHS) is a Native Hawaiian Organization (NHO) established to provide healthcare, community and economic development for Native Hawaiians and kama‘aina communities across the islands of Hawai‘i, U.S. States and territories. As a NHO, we are a recognized 501(c)(3) private nonprofit organization incorporated under the laws of the State of Hawai‘i with the primary purpose of serving the Native Hawaiian communities in Hawai‘i and across the Pacific.

**Originally Registered:**  
2/15/2018

<b>Island:</b> O‘ahu	<b>Moku:</b> ‘Ewa, Wai‘anae, Waialua	<b>Ahupua‘a:</b> Honolulu, Kapālama, Kalihi, Waikīkī
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**Contact:** Vincent Manuwai  
 CEO  
 94-307 Farrington Hwy, Unit B01  
 Waipahu, HI 96797  
 (808) 200-3305

**E-mail:**  
[contact@manaservices.net](mailto:contact@manaservices.net)  
**Website:**  
[www.manaservices.net](http://www.manaservices.net)

**Marae Ha'a Koa**

**Established:**

2003

**Summary:** Koa Ike's mission is dedicated to the advancement of all peoples in Ko Hawai'i Pae Aina to perpetuate the traditions of kanaka maoli in efforts to achieve a quality of life that is pono for the people of Hawai'i.

**Originally Registered:**  
4/23/2014

<b>Island:</b> Ko Hawai'i Pae Aina	<b>Moku:</b> Wai'anae	<b>Ahupua'a:</b> Kanehunamoku
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**Contact:** Glen Kila

Program Director

89-530 Mokiawe Street

Waianae, HI 96792-3840

(808) 294-2441

**E-mail:**

makakila@gmail.com

**Website:**

www.maraehaakoa.org

**The Mary Kawena Pūku'i Cultural Preservation Society**

**Established:**

Jan 2015

**Summary:** Our purpose is to be a unique and invaluable education resource based on the life's work of Mary Kawena Pūku'I, who dedicated her life to the preservation of Hawaiian culture, customs, traditions and language, authoring/co-authoring over 50 books and scholarly papers, including the Hawaiian Dictionary; composing over 150 chants & songs while helping many others in their own work concerning Hawaiian culture.

**Originally Registered:**  
8/10/2017

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua'a:</b> All
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**Contact:** La'akea Suganuma

President

835 Ahuwale Street

Honolulu, HI 96821

(808) 377-5611

**E-mail:**

marykawenapukui@gmail.com

**Website:**

www.marykawenapukui.com

**Meje, Inc.**

**Established:**

2017

**Summary:** We are interested in preserving the cultural understandings of the traditional work values and ethics of the Hawaiian Culture.

**Originally Registered:**  
8/13/2021

<b>Island:</b> O‘ahu	<b>Moku:</b> Waipahu	<b>Ahupua‘a:</b> Waipio
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**Contact:** Yolanda Carreira  
President  
94-1111 Moololo Street  
Waipahu, HI 96797-4128  
(808) 200-9001

**E-mail:**  
etjg@mymeje.com  
**Website:**  
www.mymeje.com

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**Meleana Kawaiaea, LLC**

**Established:**

1999

**Summary:** Na Kawaiaea ‘Ohana is the governing board of the children of Mele Ana Kawaiaea land trust located in Kaupō, Maui, to preserve and establish a self-governing and sustainable entity.

**Originally Registered:**  
10/8/2010

<b>Island:</b> O‘ahu/Maui	<b>Moku:</b> Ko‘olaupoko/Kaupō	<b>Ahupua‘a:</b> Waimānalo/Kaupō
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**Contact:** Linda Kawaiaea  
Member  
2169 Kauhana Street  
Honolulu, HI 96816  
No phone listed

**E-mail:**  
None listed  
**Website:**  
None listed

**Menehune Foundation**

**Established:**

Jul 2005

**Summary:** The Mission of the Foundation - To cultivate, manage, and supports programs that perpetuate the Native Hawaiian community and its culture. It includes but is not limited to:

**Originally Registered:**  
9/18/2014

- a. Strengthening Native Hawaiian traditions and core family values
- b. Re-educating Native Hawaiians to be self-sufficient through a self-sustainable lifestyle
- c. Supporting the preservation of Hawaii's economy and ecosystem
- d. Promoting scientific research and technological innovation that enhance the way we live
- e. Teaching life and business skills

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Kane‘ohe
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<b>Contact:</b> Michael Kahue President 1188 Bishop Street, Suite 3004 Honolulu, HI 96813 (808) 943-0050	<b>E-mail:</b> plazachiro@hotmail.com <b>Website:</b> None listed
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**Na Aikane O Maui**

**Established:**

2011

**Summary:** Na Aikane O Maui is an educational organization regarding all aspects of Hawaiian culture - history, archaeology, ???, iwi, etc.

**Originally Registered:**  
10/16/2012

<b>Island:</b> Maui	<b>Moku:</b> Lahaina	<b>Ahupua‘a:</b> Wainee
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<b>Contact:</b> Uilani Kapu Treasurer 562A Front Street Lahaina, HI 96761 (808) 250-1479	<b>E-mail:</b> uilani.kapu@gmail.com <b>Website:</b> None listed
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**Na Koa Ikaika Ka Lahui Hawaii**

**Established:**

2004

**Summary:** Cultural, Social & Economic Development. Education, Health & Housing. Land entitlements, Energy and Water issues.

**Originally Registered:**  
7/27/2015

<b>Island:</b> Hawai‘i, Lāna‘i, O‘ahu, Maui, Kaua‘i, Molokai, Ni‘ihau, Kaho‘olawe, archipelago	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Mililani Trask  
 Convenor  
 P.O. Box 6377  
 Hilo, HI 96720  
 (808) 961-4811

**E-mail:**  
 mililani.trask@icllchawaii.com  
**Website:**  
 None listed

**Na Ku‘auhau ‘o Kahiwakaneikopolei**

**Established:**

2006

**Summary:** Na Ku‘auhau ‘o Kahiwakaneikopolei is a federal 501c3 charitable organization in Hawaii dedicated in providing educational workshops to individuals interested in learning about the Hawaiian culture.

**Originally Registered:**  
12/19/2007

<b>Island:</b> Statewide, plus mainland	<b>Moku:</b> Crown Land	<b>Ahupua‘a:</b> Crown Land
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**Contact:** H. Kanoekalani Cheek  
 Vice President  
 P.O. Box 5411  
 Kane'ohe, HI 96744  
 (808) 778-5598

**E-mail:**  
 kcheek0722@yahoo.com  
**Website:**  
 None listed

**Nā Kuleana o Kānaka ‘Ōiwi**

**Established:**

The responsibilities of native Hawaiians

2013

**Summary:** We are interested in the protection and preservation of all aspects of Hawaiian culture, and to integrate the knowledge and protocols of our kūpuna for the preservation, cultivation, and management of all cultural and natural resources on Kaua‘i.

**Originally Registered:**  
2/11/2015

<b>Island:</b> Kaua‘i	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Donna Kaliko Santos

**E-mail:**

kaliko08@outlook.com

P.O. Box 1541

**Website:**

Līhu‘e, HI 96766

None listed

(808) 346-0841

**Na Kupuna Moku O Keawe**

**Established:**

Aug 2003

**Summary:** We are interested in preservation of Traditional historic sacred places and sacred features; collecting oral histories from our Kupuna and other cultural specialists. We are also interestd in preserving and promoting traditional and customary knowledge dealing with natural flow of water from mountain to sea; gathering and distribution of traditional knowledge regarding utilization of Land and management.

**Originally Registered:**  
4/30/2018

<b>Island:</b> Hawai‘i	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Hanalei Fergerstrom

**E-mail:**

hankhawaiian@yahoo.com

Spokesperson

**Website:**

P.O. Box 951

None listed

Kurtistown, HI 96760

(808) 938-9994

**Nā Manu o Kaiona**

**Established:**

2023

**Summary:** To preserve and protect ancestral lands through historic preservation, cultural continuity, and environmental conservation. Demonstrate expertise in aspects of historic preservation through archaeology, anthropology, and cultural practice. Knowledgeable of and concerned with historic and traditional cultural properties and can identify issues relating to an activity's effects on properties. We are concerned with the continuation of traditional ecological knowledge and the repatriation and disposition of iwi kupuna.

**Originally Registered:**  
 10/6/2023

<b>Island:</b> O‘ahu	<b>Moku:</b> Wai‘anae, Waialua	<b>Ahupua‘a:</b> Wai‘anae Kai, Lualualei, Wai‘anae Uka, Mākaha, Kea‘au, ‘Ōhikilolo, Mākua, Kahanahāiki, Keawa‘ula, Ka‘ena, Keālia, Kawaihāpai
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**Contact:** Carly Antone

**E-mail:**

namanuokaiona@gmail.com

No address listed

**Website:**

None listed

No phone listed

**Na Mookupuna O Wailua**

**Established:**

The Bloodlines of Wailua

Oct 2017

**Summary:** Protection of ahupuaa lineal descendant and native tenant rights and interest in the Wailua Ahupuaa for subsistence, cultural, and religious purposes such as protection, restoration, and preservation of all waterways, taro patches, fish ponds, burials, and heiau (temples) in the Wailua Ahupuaa, Island of Kauai, including mineral rights and rights of piscary . . . Hawaiian Laws 1841-1842, Kamehameha III, Lahainaluna, Maui, Hawaiian Islands.

**Originally  
Registered:**  
12/7/2017

<b>Island:</b> Kaua'i	<b>Moku:</b> Puna	<b>Ahupua'a:</b> Wailua
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**Contact:** Noa Mau-Espirito

**E-mail:**

nkeliua@gmail.com

6200 Olohena Road, Unit A

**Website:**

Kapaa, HI 96746

None listed

(808) 855-5575

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**Na Ohana o Puaoi a me Hanawahine**

**Established:**

**Summary:** We want to preserve our homestead lands so that our culture, history, burial grounds, historical places, language, etc. are kept safe for my ohana and many others.

**Originally  
Registered:**  
10/8/2010

<b>Island:</b> O'ahu	<b>Moku:</b> Ko'olaupoko	<b>Ahupua'a:</b> Waimānalo
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**Contact:** Roxanne Hanawahine

**E-mail:**

Representative

roxy\_96795@yahoo.com

41-153 Nalu Street

**Website:**

Waimanalo, HI 96795

None listed

(808) 489-2533

**Nā Pu‘uwai**

**Established:**

1984

**Summary:** The vision of Nā Pu‘uwai is to reclaim Native Hawaiian health. Culturally, Native Hawaiians view health through the lens of Maui Ola (wholeness, optimal wellbeing) which is inclusive of the physical, spiritual, emotional, and mental domains of health. As a Native Hawaiian Healthcare System, we are committed to delivering an innovative approach to healthcare delivery that focuses on providing integrative treatment options, culturally tailored health education programs and empowering community resources.

**Originally Registered:**  
12/13/2022

<b>Island:</b> Moloka‘i and Lāna‘i	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Landon Oponui  
Interim Executive Director  
P.O. Box 130  
Kaunakakai, HI 96748  
(808) 560-3653

**E-mail:**  
appointments@napuuwai.org  
**Website:**  
www.napuuwai.org

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**Nakupuna Foundation**

**Established:**

Jan 2017

**Summary:** Nakupuna Foundation's mission is to support the economic advancement of Native Hawaiians through culturally-centered STEM educational programs, career opportunities, and services that prepare individuals to succeed professionally as part of a global, borderless talent pool.

**Originally Registered:**  
8/22/2022

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Cariann Ah Loo  
Chair  
3375 Koapaka Street, Suite B200  
Honolulu, HI 96819  
(808) 445-9525

**E-mail:**  
info@nakupuna.org  
**Website:**  
www.nakupunafoundation.org

**Nanakuli Housing Corporation**

**Established:**

1989

**Summary:** Our mission is that all Native Hawaiians will build their personal assets through homeownership regardless of their economic status. Our vision is that every Native Hawaiian will have a home.

**Originally Registered:**  
7/24/2012

<b>Island:</b> All islands	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Paige Kapiolani Barber  
Executive Director  
P.O. Box 17489  
Honolulu, HI 96817  
(808) 520-2607

**E-mail:**  
info@baseyard.com  
**Website:**  
www.baseyard.com

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**Native Hawaiian Chamber of Commerce**

**Established:**

1974

**Summary:** NHCC's mission is to connect and strengthen Native Hawaiian businesses, communities and professions by building on a foundation of relationships, resources, and Hawaiian values.

**Originally Registered:**  
9/30/2015

<b>Island:</b> O‘ahu	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Leilani Williams-Solomon  
President  
P.O. Box 597  
Honolulu, HI 96809  
(808) 265-6349

**E-mail:**  
nhccoahu@gmail.com  
**Website:**  
www.nativehawaiianchamberofcommerce.com

**Native Hawaiian Church**

**Established:**

2009

**Summary:** Protect, promote, and preserve native Hawaiian religious, cultural, and spiritual practices and traditions related to the people of old. These traditions and practices have evolved and continue to develop to enrich and nurture the wellness and health of the people and the land. These practices and traditions include Makahiki, Hooponopono, Hookuikahi, Laau Lapaau, and Lomilomi as passed down and practiced in today's world. These practices and traditions require a commitment to protect and preserve all archeological, historical, and iwi kupuna burial sites as sacred sites deserving respect and preservation. The protection and preservation of these sacred sites includes traditional cultural properties, places, and natural resources, and foods, plants, fishes, birds, and animals.

**Originally  
Registered:**  
10/8/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Kona, Ewa, Wai‘anae	<b>Ahupua‘a:</b> All
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**Contact:** Kaleo Patterson  
President  
1127 Bethel Street, Suite 16  
Honolulu, HI 96813  
(808) 330-3769

**E-mail:**  
pjrcgo@gmail.com  
**Website:**  
None listed

**Native Hawaiian Community Development Corporation**

**Established:**

NHCDC

Jan 2003

**Summary:** The mission of NHCDC is to promote and provide educational opportunities that will benefit Hawai‘i’s people, with an emphasis on the Native Hawaiian community. Our domestic non-profit supports community-based programs that facilitate higher learning, scholastic achievement, and professional excellence in the field of science, technology, engineering, and mathematics. We strive to achieve our mission through monetary donations, merit scholarships, and technical training.

**Originally  
Registered:**  
6/28/2022

<b>Island:</b> Statewide	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Derek J. Sakaguchi

Executive Director

181 South Kukui Street

Honolulu, HI 96813

(808) 864-5050

**E-mail:**

dsakaguchi@gsisg.com

**Website:**

www.gsi-companies.com

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**Native Hawaiian Education Council**

**Established:**

NHEC

1994

**Summary:** The Native Hawaiian Education Council was established by the Native Hawaiian Education Act to carry out the purposes of the Act through the coordination of educational and related services and programs available to Native Hawaiians.

**Originally  
Registered:**  
5/30/2012

<b>Island:</b> Statewide	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:**

Executive Director

735 Bishop Street, Suite 224

Honolulu, HI 96813

(808) 523-6432

**E-mail:**

nhec@nhec.org

**Website:**

www.nhec.org

**Native Hawaiian Hospitality Association**

**Established:**

NaHHA

1997

**Summary:** Dedicated to promoting and perpetuating the thriving culture that encompasses vast history, extensive knowledge, spiritual depth, relevant values, and natural treasures of Hawai‘i, NaHHA was created to address concerns about how Native Hawaiians and Hawaiian culture were represented in tourism. Our work is conducted via consulting, education, developing and implementing effective communication tools, researching, providing project support, coordination, and advocating for the advancement of Native Hawaiians in tourism.

**Originally Registered:**  
10/23/2015

<b>Island:</b> O‘ahu	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> Waikiki
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**Contact:** Mālia Sanders

**E-mail:**

Executive Director

info@nahha.com

310 Paoakalani Avenue, #201A

**Website:**

Honolulu, HI 96815

www.nahha.com

(808) 628-6374

**Native Hawaiian Legal Corporation**

**Established:**

1974

**Summary:** The Native Hawaiian Legal Corporation (NHLCH) is a public interest, non-profit law firm. NHLCH's mission is to advance and protect Native Hawaiian culture and identity. NHLCH is the only law firm exclusively dedicated to Native Hawaiian rights litigation and advocacy.

**Originally Registered:**  
4/1/2022

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Makalika Naholowaa

**E-mail:**

Executive Director

info@nhlchi.org

1164 Bishop Street, Suite 1205

**Website:**

Honolulu, HI 96813

www.nhlchi.org

(808) 521-2302

**Native Hawaiian Philanthropy**

**Established:**

2015

**Summary:** Native Hawaiian Philanthropy is an organization dedicated to improving the socio-economic conditions of native Hawaiians.

**Originally Registered:**  
5/10/2024

<b>Island:</b> Maui, O‘ahu, Hawai‘i	<b>Moku:</b> Maui	<b>Ahupua‘a:</b> Waiohuli
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**Contact:** Kuuleinani Maunupau  
Chief Executive Officer  
112 Pueo Drive  
Kula, HI 96790  
808-250-2348

**E-mail:**  
kuulei@hawaiianphilanthropy.org  
**Website:**  
www.nativehawaiianphilanthropy.org

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**Nekaifes Ohana**

**Established:**

Pre-Contact

**Summary:** Department of Hawaiian Home Lands; Hawaiian culture; preserving historical places.

**Originally Registered:**  
5/9/2012

<b>Island:</b> Maui, Molokai	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Maraëa K. Nekaifes  
  
212 Hiipali Loop  
Kula, HI 96790-7273  
(808) 760-2077

**E-mail:**  
None listed  
**Website:**  
None listed

**Nohona Health, Inc.**

**Established:**

July 2022

**Summary:** We are an organization interested in promoting Native Hawaiian health through traditional practices. Our focus is to perpetuate traditional healing within the community through agriculture and lā‘au lapa‘au.

**Originally  
Registered:**  
2/9/2024

<b>Island:</b> Maui	<b>Moku:</b> Wailuku	<b>Ahupua‘a:</b> Waikapū
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**Contact:** Cory K. Lehano  
Executive Director  
95 Mahalani Street, 28-1A  
Wailuku, HI 96793  
(808) 793-0023

**E-mail:**  
cory.lehano@nohonahealth.org  
**Website:**  
www.nohonahealth.org

**Nohopapa Hawai‘i, LLC**

**Established:**

2013

**Summary:** Nohopapa Hawai‘i is a Native Hawaiian-owned and operated cultural resource management firm and social enterprise. Our experience, passion, commitment, and motivation to document and honor Hawai‘i's wahi kūpuna (ancestral places) and ‘ike kupuna (ancestral knowledge) extends over 20 years. We use our platform to increase awareness of our collective responsibility to steward (document, preserve, and protect) knowledge concerning wahi kūpuna and other cultural resources.

**Originally  
Registered:**  
6/23/2023

<b>Island:</b> N/A - We work throughout the pae ‘āina (southeastern Hawaiian Islands) and the Kūpuna Islands (northwestern extent of the Hawaiian archipelago)	<b>Moku:</b> See "Island Interest"	<b>Ahupua‘a:</b> See "Island Interest"
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**Contact:** Kelley Uyeoka

Founder and Principal

P.O. Box 197

Hakalau, HI 96710

(808) 265-3284

**E-mail:**

[kelley@nohopapa.org](mailto:kelley@nohopapa.org)

**Website:**

[www.nohopapa.com](http://www.nohopapa.com)

**‘O Maku‘u Ke Kahua Community Center**

**Established:**

2019

**Summary:** ‘O Maku‘u Ke Kahua Community Center (OMKKCC) is a non-profit 501(c)(3) organization developed in 2019 in order to continue the voyage approved and set forth by the founders of Makuu Farmers Hawaiian Homestead Association (MFHHA) in 1997. OMKKCC's mission is to promote and perpetuate Native Hawaiian values and traditions, to provide educational and employment opportunities while also developing small businesses, and to become self-sufficient as established by the Hawaiian Homes Commission Act of 1920.

**Originally Registered:**  
 7/17/2023

<b>Island:</b> Hawai‘i	<b>Moku:</b> Puna	<b>Ahupua‘a:</b> Maku‘u Popoki Halona
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**Contact:** Lauae Kekahuna  
 Executive Director  
 15-2131 Kea‘au-Pahoa Road  
 Pahoa, HI 96778  
 (808) 989-1136

**E-mail:**  
 None listed  
**Website:**  
 None listed

**O‘ahu Canoe Racing Association**

**Established:**

1979

**Summary:** Our Mission

To maintain & perpetuate Hawaiian culture through the promotion of Hawaiian water sports

To teach, train, instruct & expose children, men, & women in the ancient art, craft & history of Hawaiian canoeing

To provide means & facilities for activities to foster the development & maintenance of strong & healthy minds, bodies, & spirits among all people

To provide opportunities for the interaction & communion of people in the interest of mental & social well-being

To promote international canoe racing competition

**Originally  
Registered:**  
6/23/2023

<b>Island:</b> O‘ahu	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Clinton Schultz  
President  
P.O. Box 22807  
Honolulu, HI 96823  
No phone listed

**E-mail:**  
info@ohcra.com  
**Website:**  
www.ohcra.com

**Office of Hawaiian Affairs**

**Established:**

OHA

1978 Hawai'i  
 Constitutional  
 Convention,  
 Art. XII, Sec. 5

**Summary:** OHA is obligated to work towards the betterment of the Hawaiian people, and to serve the needs and interests of a wide and diverse beneficiary group. Thus, OHA requests to be notified and/or consulted on any Federal undertaking related to the Hawaiian people.

**Originally  
 Registered:**  
 12/19/2007

<b>Island:</b> Statewide	<b>Moku:</b> All	<b>Ahupua'a:</b> All
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**Contact:** Stacy Kealohalani Ferreira  
 Ka Pouhana, Chief Executive Officer  
 560 N. Nimitz Hwy., Suite 200  
 Honolulu, HI 96817  
 (808) 594-1835

**E-mail:** stacyf@oha.org

**Website:** www.oha.org

**Additional Contacts:**

Kēhaulani Pu'u  
 Ka Pou Nui, Chief Operating Officer

**E-mail:** kehaup@oha.org

Ramona G. Hinck  
 Ka Pou Kihī Kanaloa Wai,  
 Chief Financial Officer

**E-mail:** ramonah@oha.org

Carla J. Hostetter  
 Ka Pou Kihī Kāne, Research and  
 Evaluation Division Director

**E-mail:** carlah@oha.org

Kū'ikeokalani "Kū'ike" Kamakea-  
 'Ōhelo  
 Ka Pōhaku Kihī Lono, 'Ōiwi  
 Wellbeing and 'Āina Director

**E-mail:** kuikek@oha.org



**‘Ohana Keohokālōle**

**Established:**

Keohokālōle Family

1999

**Summary:** We exist for two major reasons: 1) to repatriate and rebury disturbed ‘iwi kūpuna; and 2) to promote Hawaiian education through the study of the Hawaiian language, lead field excursions to sacred sites, do genealogy research, provide seed money for Hawaiian curriculum, provide training to kūpuna and students to further their knowledge of the Hawaiian heritage, and provide scholarships for kūpuna and student travel for cultural exchange throughout Hawai‘i, the mainland and overseas.

**Originally Registered:**  
6/1/2021

<b>Island:</b> Hawai‘i, Maui, O‘ahu	<b>Moku:</b> Ka‘ū, Hana, Kona, Ko‘olaupoko, Ko‘olauloa	<b>Ahupua‘a:</b> Kiolaka‘a, Mū‘ole‘a, Waikīkī, Kāne‘ohe, Malaekahana
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**Contact:** Emma Emalia Keohokalole  
 Secretary-Treasurer  
 P.O. Box 565  
 Kāne‘ohe, HI 96744  
 (808) 371-3398

**E-mail:**  
eek4@hawaii.edu  
**Website:**  
None listed

**‘Ohana Lo**

**Established:**

Pre-contact

**Summary:** Ka ‘Ohana Lo are interested in preserving our lineal and cultural ties to O‘ahu. Ho‘oulu a me Ho‘ola La Hui; Perpetuation and advocacy of all things Hawaiian - our language, history, culture, iwi kūpuna and the arts, through education, economic, and interactive activities.

**Originally Registered:**  
9/21/2023

<b>Island:</b> O‘ahu	<b>Moku:</b> O‘ahu	<b>Ahupua‘a:</b> All Ahupua‘a of O‘ahu
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**Contact:** Nanea Lo  
 2131 S. Beretania St., Apt. 404  
 Honolulu, HI 96826  
 (808) 444-1229

**E-mail:**  
naneaclo@gmail.com  
**Website:**  
None listed

**Order of Kamehameha I**

**Established:**

1865

**Summary:** Knightly Order of the Kingdom of Hawai‘i, today the members of the Order of Kamehameha I are obligated to the reinstatement of the Kingdom of Hawai‘I and it is the duty and responsibility of the members to educate, train, prepare themselves and others as current community leaders as well as future leaders of our Nation. The Order of Kamehameha I has active committees for Trust Oversight, Environmental Oversight, Cultural Oversight, as well as Legislative Affairs, Reinstatement of the de jure Kingdom of Hawai‘i.

**Originally Registered:**  
9/18/2014

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Dennis W. Ragsdale  
 Advocate General  
 1777 Ala Moana Blvd, #142-102  
 Honolulu, HI 96815-1603  
 (808) 235-2425

**E-mail:**  
[order@kamehameha-1.org](mailto:order@kamehameha-1.org)

**Website:**  
[www.kamehameha-1.org](http://www.kamehameha-1.org)

**Pacific Agricultural Land Management Systems**

**Established:**

PALMS

Jun 2012

**Summary:** Interested in conservation of wildlife and agricultural land and their restoration and cultivation in sustainable ways using Hawaiian cultural methods where possible.

**Originally Registered:**  
1/28/2014

<b>Island:</b> Hawai‘i	<b>Moku:</b> Puna	<b>Ahupua‘a:</b> All
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**Contact:** William W. Moekahi Steiner  
 Member  
 P.O. Box 4565  
 Hilo, HI 96720  
 (808) 294-0750

**E-mail:**  
[wwmsteiner@gmail.com](mailto:wwmsteiner@gmail.com)

**Website:**  
 None listed

**Pacific Justice & Reconciliation Center**

**Established:**

1989

**Summary:** Our organization provides education, advocacy, and promotion of healing traditions, including hooponopono, hookeikahi, and the restoration from political injustices.

**Originally Registered:**  
10/8/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Wai‘anae	<b>Ahupua‘a:</b> Makaha
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**Contact:** Kaleo Patterson  
President  
1127 Bethel Street, Suite 16  
Honolulu, HI 96813  
(808) 531-5122

**E-mail:**  
pjrcgo@gmail.com  
**Website:**  
www.pacificpeace.org

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**Paepae o He‘eia**

**Established:**

2001

**Summary:** Paepae o He‘eia is the 501(c)(3) non-profit organization that have been active stewards of He‘eia Fishpond since 2001. He‘eia Fishpond is an 88-acre, 800 year old ancient Hawaiian site of traditional aquaculture and on the National Register of Historic Places. We employ education as a vehicle for change in order to restore He‘eia Fishpond as a site of sustainable food production.

**Originally Registered:**  
11/22/2023

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> He‘eia
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**Contact:** Hi‘ilei Kawelo  
Executive Director  
PO Box 6355  
Kāne‘ohe, HI 96744  
(808) 236-6178

**E-mail:**  
admin@paepaeoheeia.org  
**Website:**  
www.paepaeoheeia.org

**PA‘I Foundation**

**Established:**

2001

**Summary:** Preserving and Perpetuating Native Hawaiian Arts and Culture for Future Generations.

**Originally Registered:**  
12/7/2017

<b>Island:</b> O‘ahu	<b>Moku:</b> O‘ahu	<b>Ahupua‘a:</b> N/A
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**Contact:** Victoria Holt Takamine  
Executive Director  
P.O. Box 17483  
Honolulu, HI 96817  
(808) 844-2001

**E-mail:**  
vicky@paifoundation.org  
**Website:**  
www.paifoundation.org

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**Panaewa Hawaiian Home Lands Community Association**

**Established:**

PHHLCA

1980

**Summary:** Develop several beneficiary driven homestead development plans maximizing 100% beneficiary (50% blood quantum) usage of all HHCA trust lands designated as the Panaewa Homestead.

**Originally Registered:**  
10/6/2022

<b>Island:</b> Hawai‘i	<b>Moku:</b> Panaewa, Hilo Hema	<b>Ahupua‘a:</b> Waiakea
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**Contact:** Antoinette Kauilani Almeida  
President  
132 Kalele Place  
Hilo, HI 96720  
(808) 938-3330

**E-mail:**  
panaewahlca@gmail.com  
**Website:**  
None listed

**Papa Ola Lokahi**

**Established:**

Native Hawaiian Health Board

1987

**Summary:** Papa Ola Lokahi is the Native Hawaiian Health Board. It is interested in all things that make for Indigenous Peoples' health and wellbeing including native lands and waters and their use/misuse, traditional health practices, and cultural practices that promote health and wellbeing, including promoting traditional languages, arts, crafts, sports, etc.

**Originally Registered:**  
10/10/2007

<b>Island:</b> Nationwide Purview	<b>Moku:</b> State of Hawai‘i	<b>Ahupua‘a:</b> All
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**Contact:** Sheri-Ann Daniels Ed.D.  
 Executive Director  
 894 Queen Street  
 Honolulu, HI 96813  
 (808) 597-6550

**E-mail:**  
sdaniels@papaolalokahi.org  
**Website:**  
www.papaolalokahi.org

**Papakōlea Community Development Corporation**

**Established:**

PCDC

1999

**Summary:** We are interested in economic development and professional/career development on native land. We are also interested in all forms of community development strategies/initiatives. Our community center also has a heavy emphasis on health and wellness initiatives. Please notify us of all the above areas.

**Originally Registered:**  
2/19/2008

<b>Island:</b> O‘ahu	<b>Moku:</b> O‘ahu	<b>Ahupua‘a:</b> Kona
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**Contact:** Lilia Kapuniai  
 Executive Director  
 2150 Tantalus Drive  
 Honolulu, HI 96813  
 (808) 520-8998

**E-mail:**  
lilia@papakolea.org  
**Website:**  
www.papakolea.com

**Partners in Development Foundation**

**Established:**

Apr 1997

**Summary:** Since 1997, Partners in Development Foundation (PIDF), a 501(c)(3), has been managing programs embedded in the Hawaiian culture and value and aimed at serving the most needy in our Native Hawaiian communities. PIDF's programs fall primarily in the areas of education (early childhood, middle, high school, adults), social service (foster resource family recruitment, safehouse for teens), and environmental work (wastewater remediation using natural processes).

**Originally Registered:**  
2/11/2015

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua'a:</b> All
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**Contact:** Shawn Kana'iaupuni Ph.D.  
President and CEO  
2040 Bachelot Street  
Honolulu, HI 96817  
(808) 595-2752

**E-mail:**  
pid@pidfoundation.org  
**Website:**  
www.pidfoundation.org

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**Paukukalo Hawaiian Homes Community Association**

**Established:**

1967

**Summary:** Preserving all of our historical places and archeological places of interest.

**Originally Registered:**  
10/8/2010

<b>Island:</b> Maui	<b>Moku:</b> Maui	<b>Ahupua'a:</b> Central Maui
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**Contact:** Olinda Aiwohi  
President  
781 Kawanakoa Street  
Wailuku, HI 96793  
(808) 244-3288

**E-mail:**  
None listed  
**Website:**  
None listed

**Peahi Ohana**

**Established:**

**Summary:** We are a Hawaiian Chinese family from Waimanalo Homestead since 1999.

**Originally Registered:**  
10/8/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Waimānalo
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**Contact:** Apela Peahi  
Representative  
41-205 Lupe Street  
Waimanalo, HI 96795  
(808) 216-2039

**E-mail:**  
speahi@htbyb.com  
**Website:**  
None listed

---

**Pele Defense Fund**

**Established:**

1985

**Summary:** Pele Defense Fund is a 501(c)(3) current with federal and state. Our organization's purpose is to defend and protect kanaka maoli traditional and customary beliefs and practices. Ancestral burials, fauna and flora, mauka and makai and litigation. Pele Defense Fund vs. Campbell Estate - Hawaiian gathering rights upheld. This case is being used on Hawaiian gathering rights at UH Richardson School of Law.

**Originally Registered:**  
1/20/2022

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Palikapu Dedman  
President  
P.O. Box 4969  
Hilo, HI 96720  
(808) 959-4930

**E-mail:**  
palidedman@gmail.com  
**Website:**  
None listed

**Piihonua Hawaiian Homestead Community Association**

**Established:**

PHHCA

Jul 2011

**Summary:** PHHCA's purpose is to promote the social welfare of the homestead community in Piihonua through activities that strengthen communities and families; to educate and strengthen the cultural identity of Hawaii's youth through instruction in Hawaiian history, culture and values; to preserve and protect Hawaii's natural environment through stewardship of lands consistent with traditional methods of resource management.

**Originally Registered:**  
5/30/2012

<b>Island:</b> Hawai'i	<b>Moku:</b> Hilo	<b>Ahupua'a:</b> Piihonua
------------------------	-------------------	---------------------------

**Contact:** Jordan "Kama" Lee Loy  
President

**E-mail:**

**Website:**

**Additional Contacts:**

Ron Kodani  
Past President

**E-mail:**  
phhcahilo@gmail.com

**Pōhaku Pelemaka**

**Established:**

The process of when liquid lava turns into rock.

2013

**Summary:** Pōhaku Pelemaka's mission is to protect, perpetuate, and enhance: the intrinsic qualities of the lower Puna area, Native Hawaiian well-being, and heritage of our home in partnership with county, state, government, public and private sectors. Pōhaku Pelemaka's educational, charitable and scientific purpose is to Aloha 'āina (reconnect, study, steward, protect, enhance, maintain, and celebrate) the lower Puna areas, the communities, and natural resources through culturally grounded programs and partnerships.

**Originally Registered:**  
6/22/2023

<b>Island:</b> Hawai'i	<b>Moku:</b> Puna	<b>Ahupua'a:</b> None listed
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**Contact:** Leila Kealoha  
Executive Director  
13-3749 Old Kalapana Road  
Pahoa, HI 96778  
(808) 937-7991

**E-mail:**  
leila@pohakupelemaka.org  
**Website:**  
www.pohakupelemaka.org

**Protect Kaho‘olawe ‘Ohana**

**Established:**

1976

**Summary:** The mission of the Protect Kaho‘olawe ‘Ohana is to perpetuate Aloha ‘Āina throughout our islands through cultural, educational and spiritual activities that heal and revitalize the cultural and natural resources on Kanaloa Kaho‘olawe. In our work to heal Kanaloa Kaho‘olawe we strengthen our relationship with the land and honor our kūpuna. On our own islands, we work to protect the cultural and natural resources of our ancestral lands.

**Originally  
Registered:**  
8/9/2024

<b>Island:</b> Kaho‘olawe	<b>Moku:</b> Kaho‘olawe	<b>Ahupua‘a:</b> Kaho‘olawe
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**Contact:** Davianna McGregor  
Treasurer  
1733 Wili Pa Loop, B-1  
Wailuku, HI 96793  
(808) 222-9278

**E-mail:**  
pko.huakai@gmail.com  
**Website:**  
www.protectkahoolaweohana.org

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**Protect Keopuka Ohana**

**Established:**

2000

**Summary:** Protect Keopuka Ohana is a coalition of Hawaiian cultural practitioners and environmental activists dedicated to the preservation and practice of Hawaiian culture and the environmental landscape upon which that practice depends. We are most specifically involved in protection of Hawaiian grave sites and since the year 2000 have been involved in the repatriation of hundreds of Hawaiian remains to their appropriate resting places. Our membership has cultural and lineal status throughout Hawai‘i.

**Originally  
Registered:**  
8/15/2023

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Walter J. Kelly  
Vice President  
P.O. Box 166  
Hōnaunau, HI 96726  
(808) 345-9229

**E-mail:**  
konajack@icloud.com  
**Website:**  
None listed

**Purple Mai‘a Foundation**

**Established:**

2013

**Summary:** Our mission is to educate and empower the next generation of culturally grounded, community serving technology makers and problem solvers. Our work focuses on culturally grounded computer science and STEM education for Native Hawaiian youth, technology workforce development, indigenous innovation and entrepreneurship, and place-based design.

**Originally Registered:**  
6/4/2024

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Donavan Kealoha  
 Chief Executive Officer  
 98-820 Moanalua Road, 15-547  
 Aiea, HI 96701  
 808-234-3603

**E-mail:**  
[kokua@purplemaia.org](mailto:kokua@purplemaia.org)

**Website:**  
[www.purplemaia.org](http://www.purplemaia.org)

**Pu‘uhonua o Wailupe**

**Established:**

The Sanctuary of Wailupe

February 2022

**Summary:** We are interested in the protection of Protect Iwi Kūpuna (Native Hawaiian Burials) from desecration and perpetuating a living sanctuary, Pu‘uhonua o Wailupe, for the stewardship and protection if iwi kūpuna, cultural sites, natural resources, and traditional Hawaiian rights and practices.

**Originally Registered:**  
2/16/2023

<b>Island:</b> O‘ahu and Molokai	<b>Moku:</b> O‘ahu - Kona; Molokai - Mana‘e	<b>Ahupua‘a:</b> Waikīkī - Wailupe; Hālawa; Kumu‘eli, Kamalō, Pūko‘o
----------------------------------	--	--

**Contact:** Michael Hikalea  
 President  
 P.O. Box 240454  
 Honolulu, HI 96824  
 (808) 392-4695

**E-mail:**  
[puuhonuaowailupe@gmail.com](mailto:puuhonuaowailupe@gmail.com)

**Website:**  
[www.puuhonuaowailupe.org](http://www.puuhonuaowailupe.org)

**Royal Hawaiian Academy of Traditional Arts**

**Established:**

Nov 1996

**Summary:** Protect, preserve and perpetuate the Hawaiian culture and traditions.

**Originally Registered:**  
12/19/2007

<b>Island:</b> Statewide, plus mainland	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** L. La‘akea Suganuma  
 President  
 835 Ahuwale Street  
 Honolulu, HI 96821  
 (808) 377-5611

**E-mail:**  
 laakeas001@gmail.com

**Website:**  
 None listed

**Sovereign Council of Hawaiian Homestead Associations**

**Established:**

1987

**Summary:** The SCHHA was founded in 1987 as a hui or coalition of Homestead Beneficiary Associations (HBAs) located in every homestead community in the State of Hawai‘i. More than 40 HBAs are members of the SCHHA, working together to advance good policy and the fulfillment of the promise of the HHCA. Registered with the U.S. Department of the Interior, SCHHA is also the only national HBA dedicated to both enrolled native Hawaiians issued a homestead or on a homestead waitlist with a service area of the entire 203,000 acre land trust.

**Originally Registered:**  
10/13/2015

<b>Island:</b> Statewide	<b>Moku:</b> Statewide	<b>Ahupua‘a:</b> Those with Trust Lands
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**Contact:** KipuKai Kualii  
 Chairman  
 P.O. Box 646  
 Anahola, HI 96703  
 (808) 431-4067; (808) 652-3684

**E-mail:**  
 info@hawaiianhomesteads.org;  
 kipukai@hawaiianhomesteads.org

**Website:**  
 www.hawaiianhomesteads.org

**Sustain Hawai‘i**

**Established:**

April 2003

**Summary:** Our efforts are focused upon creating a scalable prototype of a systemically healthy, ag-centric, Native Hawaiian Community in Waimānalo. We also help preserve cultural practices like ho‘oponopono, la‘au lapa‘au & lua.

**Originally Registered:**  
2/15/2024

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Waimānalo
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**Contact:** Ramsay Taum  
Board President  
41-902 Kaulukanu Street  
Waimānalo, HI 96795  
(808) 739-5200

**E-mail:**  
info@sustainhawaii.org  
**Website:**  
www.sustainhawaii.org

---

**The Hawaiian Church of Hawai‘i Nei**

**Established:**

**Summary:** An indigenous cultural faith-based organization committed to strengthening and empowering Hawaiian spirituality through traditional Hawaiian ceremonies, rituals & protocols. It promotes, protects, presertves, and continues the indigenous Hawaiian religious practices, cultural rights, and traditions that are inclusive of spiritual and physical healing, spiritual and physical health, self-reflective understanding, ho‘oponopono and peace for Native Hawaiians and people worldwide. Includes malama na iwi kupuna & pa‘ahao.

**Originally Registered:**  
2/15/2024

<b>Island:</b> All	<b>Moku:</b> All	<b>Ahupua‘a:</b> All
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**Contact:** Loko‘olu Quintero  
Kahu & President  
PO Box 159328  
Honolulu, HI 96830  
(808) 537-4213

**E-mail:**  
hawaiianchurchhawaiiinei@gmail.com  
**Website:**  
www.hawaiianchurchhawaiiinei.org

**Wahiawa Ahupuaa LCA 7714B Apana 6 RP 7813**

**Established:**

2018

**Summary:** We are a Ohana of Cultural Religious Practitioners, the Descendants of Hawaiians who inhabited the Hawaiian Islands prior to 1778, here to restore and protect our Sacred Historic Cultural sites and resources.

**Originally Registered:**  
8/17/2018

<b>Island:</b> Kaua‘i	<b>Moku:</b> Kona	<b>Ahupua‘a:</b> Wahiawa
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**Contact:** Lance Kamuela Gomes  
Konohiki Chief  
P.O. Box 382  
Kalaheo, HI 96741  
(808) 631-1737

**E-mail:**  
kamuela@live.com

**Website:**  
None listed

**Additional Contacts:**

Punohu Kekaulua III  
Konohiki Chief

**E-mail:**

Noa K. Mau-Espirito  
Konohiki Chief

**E-mail:**

**Wai Koa Kaua'i**

**Established:**

2019

**Summary:** Donation based: specialize in welding, crane operating. Hui, organization. To organize our waiwai (health, wealth, well-being, collective) Hana work pertaining to the progress of Kauhale Village Community. Interest in ironwork fabricating, Federal work, Federal intake, protection of wai, health of wai, access to punawai, protection of punawai, building of trade schools for Hawaiians kanaka maoli. Ho'olauna to come together, restore protect preserve Hawai'i. Bridge work, building, iron material.

**Originally Registered:**  
8/30/2023

<b>Island:</b> Kaua'i, O'ahu, Moloka'i, Maui, Hawai'i	<b>Moku:</b> nā moku āpau	<b>Ahupua'a:</b> ahupuaa a pau
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**Contact:** Jesse Cummings  
 Po'o  
 c/o Box 315  
 Kalaheo, HI 96741  
 (808) 651-1468

**E-mail:**  
 jessekekoacummings@yahoo.com  
**Website:**  
 None listed

**Wai'anae Hawaiian Civic Club**

**Established:**

Jun 1935

**Summary:** Traditional Navigational Sailing: Steward of E Ala Canoe. Goal: to educate community in entity that brought native Hawaiians to islands; instill in our opio the history and background of voyaging.

**Originally Registered:**  
5/30/2012

<b>Island:</b> O'ahu	<b>Moku:</b> Wai'anae	<b>Ahupua'a:</b> Wai'anae
----------------------	-----------------------	---------------------------

**Contact:** Mele Worthington  
 President  
 P.O. Box 687  
 Wai'anae, HI 96792-0687  
 (808) 347-6549

**E-mail:**  
 makahamele@gmail.com  
**Website:**  
 www.waianaehcc.org

**Waiehu Kou Phase 3 Association**

**Established:**

2005

**Summary:** We are the kanaka maoli of the ili of Waiehu Kou, a united self reliant community guided by the values of Aloha (love), Ahonui (tolerance), Kuleana (responsibility), Kokua (helpfulness), Laulima (cooperation), Lokahi (harmony), Malama (stewardship), Pono (proper procedure), and who live, work, and play together in a safe environment.

**Originally Registered:**  
5/9/2012

<b>Island:</b> Maui	<b>Moku:</b> Waiehu, Waihe'e	<b>Ahupua'a:</b> Waiehu, Waihe'e
---------------------	------------------------------	----------------------------------

**Contact:** Roy Oliveira  
 President  
 49 Kaulana Na Pua Circle  
 Wailuku, HI 96793  
 (808) 760-8374

**E-mail:**  
 waiehukouphase3association@hotmail.com  
**Website:**  
 www.waiehukouphase3.org

**Additional Contacts:**

Daniel L. Ornellas  
 Vice President

**E-mail:**  
 daniel.l.ornellas@hawaii.gov

**Waimānalo Canoe Club**

**Established:**

1969

**Summary:** WCC teaches Hawaiian canoe culture and practices outrigger canoe paddling, oli chanting (songs), legends, food, imu (underground cooking), plants, native voyaging plants, medicine plants, foods, history, legends (winds, mountains, wind), educate, help our Hawaiians to be successful in all life aspects.

**Originally Registered:**  
3/8/2024

<b>Island:</b> O'ahu	<b>Moku:</b> Ko'olaupoko	<b>Ahupua'a:</b> Waimānalo
----------------------	--------------------------	----------------------------

**Contact:** Scotty K. Reis Moniz  
 President  
 P.O. Box 259  
 Waimānalo, HI 96795  
 (808) 852-7910

**E-mail:**  
 scottyreismoniz@gmail.com  
**Website:**  
 None listed

**Waimānalo Hawaiian Homes Association**

**Established:**

1938

**Summary:** The purpose is to protect the Hawaiian Homes Commission Act, 1920, and to improve the quality of life, school, health, church, and welfare of the homestead residents of Waimānalo.

**Originally Registered:**  
10/8/2010

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Waimānalo
----------------------	--------------------------	----------------------------

**Contact:** Kenneth Ho Jr.  
 President  
 P.O. Box 353  
 Waimānalo, HI 96795  
 (808) 426-1223

**E-mail:**  
[hana@waimanalohha.org](mailto:hana@waimanalohha.org)  
**Website:**  
[www.waimanalohha.org](http://www.waimanalohha.org)

**Waimānalo Health Center**

**Established:**

1992

**Summary:** Waimānalo Health Center is rooted in Native Hawaiian values and devoted to improving the health and wellness of all people, regardless of ability to pay, by providing comprehensive primary and preventive health care services of the highest quality. Waimānalo Health Center welcomes all members of the Ko‘olaupoko community to access holistic services ranging from Western medicine to traditional Hawaiian healing practices of lā‘au lapa‘au, lomilomi, ‘ai pono, and no‘ono‘opono.

**Originally Registered:**  
6/22/2023

<b>Island:</b> O‘ahu	<b>Moku:</b> Ko‘olaupoko	<b>Ahupua‘a:</b> Waimānalo
----------------------	--------------------------	----------------------------

**Contact:** Mary Frances Oneha APRN, PhD,  
 FAAN  
 Chief Executive Officer  
 41-1347 Kalaniana‘ole Highway  
 Waimānalo, HI 96795  
 (808) 259-7948

**E-mail:**  
[MOneha@waimanalohealth.org](mailto:MOneha@waimanalohealth.org)  
**Website:**  
[www.waimanalohealth.org](http://www.waimanalohealth.org)

**Waimea Hawaiian Homesteaders’ Association, Inc.**

**Established:**

1952

**Summary:** All trust lands as described by the Waimea Nui Regional Plan as approved by the Chairman and the Commissioners of the Hawaiian Homes Commission to include; Lalamilo, Pu‘ukapu, Pauahi, Waimanu, Keoniki, Kamoku-Kapulena - Waikoloa-Wai‘ale‘ale, Honokaia, Ni‘eni‘e, and shall include Humu‘ula - ‘Ainahou, Pi‘ihonua.

**Originally Registered:**  
6/9/2021

<b>Island:</b> Hawai‘i	<b>Moku:</b> Waimea	<b>Ahupua‘a:</b> Waimea Nui
------------------------	---------------------	-----------------------------

**Contact:** Michael Hodson  
 President  
 P.O. Box 126  
 Kamuela, HI 96743  
 (808) 640-3453

**E-mail:**  
[waimeahomestead@gmail.com](mailto:waimeahomestead@gmail.com)  
**Website:**  
[www.waimeahomestead.org](http://www.waimeahomestead.org)

**WATRRS GROUP**

**Established:**

Worker Against The Recidivism Rates

7/8/2024

**Summary:** The vision of the WATRRS GROUP is to address the recidivism rate from both ends of life. To educate all at-risk young native Hawaiians and others and help to develop them into leaders and productive individuals in society that will eventually be the examples for others. The WATRRS GROUP would like to help with the native Hawaiian youth and the native Hawaiian adults returning from incarceration by providing a place for them to go to where they can settle in and build their futures.

**Originally Registered:**  
9/12/2024

<b>Island:</b> O‘ahu	<b>Moku:</b> ‘Ewa Beach	<b>Ahupua‘a:</b> Honouliuli
----------------------	-------------------------	-----------------------------

**Contact:** John Penitani  
 President  
 P.O. Box 1652  
 Pearl City, HI 96782  
 (808) 673-9606

**E-mail:**  
[watrrsHI@yahoo.com](mailto:watrrsHI@yahoo.com)  
**Website:**  
 None listed



Find address or place



**Legend 2** ⌵ ✕

**Indian Land Cessions in the United States**

Indian Land Cessions in the United States

Indian Land Cessions in the United States

Cession Number

- 1
- 2
- 3
- 4
- 5

# OISC Handling, Mixing, Storage and Use of Herbicide Standard Operating Procedure

## SOP for Herbicide Operations PCSU OISC

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## DEFINITION OF HERBICIDE TERMS

Adjuvant – any substance added to an herbicide mixture that modifies herbicide activity, application characteristics, or the physical characteristics of the mixture

Amine – refers to organic chemical compounds derived from ammonia by replacement of one or more hydrogen atoms by organic radicals; amine salt formulations are soluble in water (for the most part)

Backpack sprayer – a spraying apparatus where the tank is situated on a worker's back and secured with straps around the shoulders and waist; the backpack spraying apparatus will include a pressurizing device (usually a pump handle), a line, a wand, and an adjustable spraying nozzle.

Basal Thinline – a treatment method referring to the application of herbicide around the base of a plant's stem, completely encompassing the circumference of the stem with a thin ring of herbicide mixture

Contact Herbicide – an herbicide that kills only the plant tissue that comes in direct contact of the chemical mixture

Cut- Stump – a treatment method referring to the application of herbicide on the cut surface to the stump of a tree or woody shrub.

Drench – a treatment method referring to the application of herbicide directly to the soil in an even and uniform fashion

Emulsifiable – any colloidal suspension of a liquid in another liquid

Ester – refers to organic chemical compounds derived by replacing the hydrogen of an acid by an alkyl or other organic group; ester formulations are non-soluble in water but soluble in organic solvents and oils

Foliar application – a treatment method referring to the application of herbicide to a plant's foliage

Frill – a treatment method referring to the application of herbicide to the continuous downward cuts made around the entire base of the stem, deep enough to hit the sapwood.

Girdle – a treatment method referring to the application of herbicide to a notch cut into the stem all the way around the trunk

Granular herbicide – a chemical substance comprised of small pellets, grains, or fragments used to kill unwanted vegetation

Hand sprayer – a small, hand-held spraying apparatus that is configured with a handle, trigger, small tank, and a pressurizing component (usually a hand pump on the top of the lid)

Herbicide – a chemical substance, toxic to plants, used to kill unwanted vegetation; a type of pesticide that specifically targets plants

Herbicide Ballistic Technology (HBT) or Targeted Aerial Application - is a concept for pneumatically administering encapsulated herbicide aliquot projectiles to weed targets with long-range accuracy

Pesticide – a chemical substance used to attract, kill, and mitigate any pest. In this SOP, the term pesticide includes herbicide.

Post-emergent – referring to herbicides aimed at killing the plants after they have already emerged from the ground

Power sprayer – a mechanized spraying apparatus, usually quite large, used to disperse large amounts of herbicide mixtures over large amounts of land; this apparatus is also configured with a tank, line, gun or wand, and a pressurizing component that is usually regulated by a small motor

Pre-emergent – referring to herbicides applied to the soil before the plant emerges from the ground to prevent seed germination or early growth of weeds

Restricted Use Pesticide – a pesticide that requires specialized training and certification to purchase and apply due to its more hazardous properties

Systemic Herbicide – an herbicide that must be translocated through the plant for efficacy

## **PURPOSE**

The purpose of this herbicide operations standard operating procedure (SOP) is to outline safe procedures and methods to follow when conducting all herbicide/pesticide operations in the field, including but not limited to: aerial, ground and roadside operations.

## **SCOPE**

The scope of this herbicide operation SOP encompasses all aspects of safety, procedures, protocols & efficacy for field operations that will entail the deployment of herbicides/pesticides. Please note that herbicide and pesticide may be used interchangeably, and this SOP should apply to both types of chemical operations.

## **RESPONSIBILITIES**

1. **MANAGER:** Review herbicide procedures with FIELD SUPERVISOR to ensure understanding and compliance. Conduct safety briefings regularly and ensure staff has all appropriate certifications.
2. **FIELD SUPERVISOR:** Review herbicide procedures with the FIELD CREW LEADER(S) and HERBICIDE SPECIALIST on a continual and regular basis to ensure understanding and compliance. Conduct safety and logistical briefings with field crew prior to any herbicide operation and ensure that staff has all appropriate certification.
3. **HERBICIDE SPECIALIST:** Posts relevant info on herbicide hutches, maintains a clean herbicide storage shed, communicates to crew regarding herbicide storage, supply needs, keeps track of new herbicide and PPE purchasing needs, develops respirator program and monitors it, works with safety officer on herbicide operations and herbicide safety, and distributes SDS's and labels to vehicles (organized, printed double-sided and labelled clearly)
4. **FIELD CREW LEADER(S):** Execute all herbicide operations in accordance with the Product Label(s) and this SOP in a safe and efficient manner. In the absence of FIELD SUPERVISOR, brief entire field crew prior to any herbicide operation in regards to safety, logistics, & other pertinent information.
5. **Support staff:** Execute herbicide operations in accordance with the SOP. Provide field assistance to Field Crew Supervisor and/or Field Crew Leader(S), under the direct supervision of the Field Crew Supervisor, Field Crew Leader(S), and Manager.
6. Failure to comply with this SOP may result in disciplinary action.

## **CERTIFICATIONS/TRAININGS**

1. All staff involved in operations dealing with herbicides/pesticides must have undergone and passed the Pesticide Risk Reduction Education safety training course. It is recommended to complete this training within the first year of employment or, as soon as the course is offered, if it is not offered within the first year of employment.
2. A Restricted-Use Pesticide Applicator License is required to be obtained by supervisors of organizations that use Restricted-Use Pesticides. OISC currently does not use Restricted-Use Pesticides in its operations. However, OISC supervisors and the Pest Response Specialist should acquire one of these in the event Restricted-Use Pesticides become required for an operation.

**PROCEDURES**

**General Considerations**

1. Safety is always the first priority. Make sure to wear the required PPE, comply with and fully understand all label specific and organizational safety requirements, and make sure to use your discretion during any operation involving the deployment of herbicide.
2. Compliance with RCUH/PCSU (standards, training) and the OISC guidelines (SOPs & policies) is required.

**Basic Handling and Operation Guidelines**

1. Prior to conducting an herbicide operation, all staff shall be briefed by the operations leader (FIELD SUPERVISOR, FIELD CREW LEADER, or HERBICIDE SPECIALIST) as to management goal, target weed species, location of herbicide operation, and safety.
2. Inspect all equipment prior to operations. Never use damaged or out of date equipment or materials.
3. FIELD SUPERVISOR shall coordinate with the HERBICIDE SPECIALIST to develop a maintenance schedule for all herbicide equipment and make sure that the equipment is in working order.
4. Always exercise care when handling and operating herbicide and herbicide deployment equipment. These materials are costly to repair or replace and need to be in excellent working condition in order for our crew to operate safely.

**Personal Protective Equipment (PPE)**

All OISC employees, volunteers, and contributors applying or handling herbicides/pesticides shall wear the PPE required by the pesticide label. Additional PPE may be worn as long as it does not cause additional safety concerns and can be worn with comfort and ease. If a respirator or other breathing mask is required by the label, employees must be certified from a physician that they are healthy enough to wear one. Everyone involved in a pesticide field operation is at risk of exposure to hazardous chemicals, so please exercise extreme caution and stay alert. Make sure to always refer to the label for specific safety and use requirements.

Required PPE: Ground Activities	Required PPE: Aerial Activities	Required Training
Employees shall wear PPE described on the label which may include: <ul style="list-style-type: none"> <li>• Eye protection</li> <li>• Chemical resistant gloves.</li> <li>• Long-sleeve shirt</li> <li>• Long pants</li> <li>• Closed-toe shoes</li> <li>• Socks</li> </ul>	<ul style="list-style-type: none"> <li>• Nomex</li> <li>• Flight Suit</li> <li>• Long shirt</li> <li>• Long pants</li> <li>• Closed-toe shoes</li> <li>• Socks</li> </ul>	<ul style="list-style-type: none"> <li>• First Aid &amp; CPR</li> <li>• Pesticide Risk Reduction Educational course**</li> </ul>

\*Use of respirators would require additional training and medical clearance. [PENDING]

\*\*All full-time employees must complete this course within the first year of employment or as soon as the course is offered, if course is not available during first year of employment.

## Herbicide Mixing

USE EXTREME CAUTION WHEN MIXING HERBICIDES! Dermal exposure to a small amount of a concentrated herbicide can be equivalent to the exposure received after a full day of working in a treated field. Before mixing any herbicide, READ THE LABEL. Establish a mixing area. Herbicides should be mixed only in pre-designated areas -preferably either near the storage site or in an area near the treatment site(s) in which damage from small spills or other herbicide contamination would be minimal. Field mixing sites should have relatively few native or other desirable species, not be susceptible to erosion or runoff, and rarely, if ever, be visited by the public. In addition, mixing sites should provide easy access for containment and clean-up of spills. At the mixing site, assemble the appropriate equipment including safety and clean-up gear and measuring and mixing utensils. Spill kits, a shovel, and water must be easily available at field mixing sites in case of a larger spill. Remember to wear all protective gear while handling and mixing herbicides. Avoid metal measuring utensils as some pesticides can react with metal. Clearly label herbicide-measuring equipment to avoid confusion with equipment used for measuring food. Wash all utensils before storage to prevent contamination of future mixes.

- Wear all required PPE
- Choose an area with a clear level surface that is low traffic and away from food, laundry, and non-target plants.
- Refer to mixing instruction on label of specific herbicide to inform you of proper mixing procedures.
- Have a spill kit accessible.
- Have all materials (herbicide, adjuvant, marker, water) and equipment (herbicide mixture bottles, funnels, & graduated cylinders) ready before you make the first pour.
- Have another person(s) assist when needed.
- Pour water from a previously filled container to prevent back siphoning of herbicide into hose or make sure hose nozzle never contacts herbicide mixture.
- Mix herbicides only in containers approved to carry herbicide and not labeled otherwise.
- Take your time to ensure all materials are measured out properly and mixture is evenly proportioned.
- When mixing is finished, secure all containers and deposit contaminated mixing equipment into decontamination area.
- Be sure to label containers well with the mixture formula, the date mixed, and the initials of mixer.
- Put mixed herbicide in proper containers for transport and in proper areas for storage.

## Ground Transport

All herbicides/pesticides shall be transported in accordance with the requirements outlined in each specific product label and OSHA guidelines. All herbicides/pesticides and herbicide/pesticide-contaminated mixing materials shall be contained in “Herbicide Use Only” labelled action-packers. Action-packers specifically labelled “Herbicide Use Only” should not be transported in the cab of a vehicle.

## Staging Areas

During an OISC herbicide operation that involves backpack or power spraying, the crew shall set up mixing and decontamination stations suitable distances from each other and from the

designated treatment area. The MIXING STATION shall be on level ground with sufficient shade and shelter for the herbicides. DO NOT bring potable water, food, or tobacco products into this area whatsoever. All mixing shall take place in the designated location.

The designated DECONTAMINATION STATION shall be no less than 50 feet from the mixing station and no less than 50 feet from the treatment area as well. This will provide adequate spacing to ensure that the additional safety equipment will not become contaminated should an accident occur. The decontamination station should be equipped with extra water for washing, soap, the herbicide only solar shower. Spare clothes may be kept in the truck cab rather than left out in the open.

### **Decontamination of Herbicide Equipment**

Following use, application equipment and empty containers should be triple rinsed with clean water and Simple Green using 10% of the container volume for each rinse. If possible, rinse equipment in the treatment area and apply the wastewater to weeds or store for future use as a dilutant. Left over herbicide mix that will not be used later should be treated as hazardous waste.

If there is not enough time to triple rinse application equipment and gear the day of an ops, place all contaminated gear in the designated TRIPLE RINSE BIN. The triple rinse bin will be located inside the Herbicide Hutch at the baseyard. The Triple rinse Bin will be checked and if necessary triple rinsed weekly.

- Wear proper PPE (rubber gloves, eye pro, long-sleeve shirt, long pants, close-toed boots with socks)
- Prepare two tubs with Simple Green and water solution and one with water for triple rinse.
  - Use two tubs with ammonia and water solution and one with water for triple rinsing Oust XP
  - NEVER MIX AMMONIA AND CLOROX BLEACH TOGETHER
- To make the most efficient use of soap mix, it is important to begin triple rinsing from the least contaminated gear to the most contaminated. Triple rinsing should be done in this order:
  - Gloves
  - Ziplocks
  - Dry bags
  - Herbicide containers
- Submerge all gloves in first Simple Green solution tub
- Soak the inside of the gloves and rub gloves together to remove any substances stuck to surface.
- Repeat the last two steps in the second soap mix tub and in the water filled tub.
- Make sure to drain as much moisture out of the gloves as possible.
- Hang gloves on drying rack.
- Fill empty spray bottles halfway with soap solution from the first tub.
- Secure top on spray bottles and agitate.
- Spray the contaminated rinse solution (rinsate) in an undesired patch of weeds covered by the label until empty.

- Repeat last three steps with the soap mix in the second tub and with the water in the third tub.
- Empty bottles of liquid and hang on drying rack.
- Proceed to decontaminate other herbicide equipment with the same triple rinse method.

### **Application Methods**

Herbicides can be applied in a variety of ways. The most appropriate application method is determined by the weed being treated, the herbicide being applied, the skills of the applicator, and the application site. Standard application techniques can sometimes be modified to better suit the needs of natural area management.

Methods of application can be broadly classified as follows:

1. To intact, green leaves (foliar application)
  - a. Spot application (backpack applicator, spray bottle);
  - b. Wick application (wipe-on);
  - c. Boom application;
2. Around the circumference of the trunk on the intact bark (basal bark);
3. To cuts in the trunk/stem (frill; hack and squirt);
4. Injected into the inner bark;
5. To cut stems and stumps (cut stump)

#### ***Foliar with Hand Sprayers:***

- Wear proper PPE
- Read ALL herbicide product label(s)
- Assess environmental factors (rain, wind, temperature, etc.)
- Address potential hazards (uneven terrain, roadways, desirable plants, etc.)
- Communicate with other workers in area about your intent to treat.
- Use a counter to keep track of plants treated or assign someone to keep track of controlled plants when there is more than one applicator.
- Minimize contact with treated plants by planning your route.
- Never stand down wind of spray or immediately upwind because of back draft factor.
- Test the nozzle setting by pumping sprayer a few times and applying to target and adjust to get desired spray pattern and coverage.
- Note the amount of herbicide in sprayer and keep track of amount used.
- Agitate herbicide by shaking spray bottle intermittently throughout application.
- Flag area of herbicide treatment if re-entry before approved time is a possibility.
- Any unused herbicide should be clearly labeled with formulation of contents, approximate amount left, mix date, and initials.
- Store unused, clearly labeled herbicide in herbicide locker.

#### ***Foliar/Drench with Backpack Sprayer:***

- Wear proper PPE.
- Read ALL herbicide product label(s).
- Assess environmental factors (rain, wind, temperature, etc.)
- Address potential hazards (uneven terrain, roadways, desirable plants, etc.)
- Communicate with others your intent to treat.

- Minimize contact with treated plants by planning your route.
- Never stand down wind of spray or immediately upwind because of back draft factor.
- Test the nozzle setting by pumping sprayer a few times and applying to target and adjust to get desired spray pattern and coverage.
- Note the amount of herbicide in sprayer and keep track of amount used.
- Agitate herbicide by shaking spray bottle intermittently throughout application.
- Flag area of herbicide treatment if re-entry before approved time is a possibility.
- Any unused herbicide should be clearly labeled with formulation of contents, approximate amount left, mix date, and initials.
- Store unused, clearly labeled herbicide in herbicide locker.

***Foliar/Drench with Motorized Power Sprayer:***

- Wear proper PPE.
- Read ALL herbicide product label(s).
- Assess environmental factors (rain, wind, temperature, etc.)
- Address potential hazards (uneven terrain, roadways, desirable plants, etc.)
- Communicate with others your intent to treat.
- Minimize contact with treated plants by planning your route.
- Never stand down wind of spray or immediately upwind because of back draft factor.
- Note the amount of herbicide in sprayer and keep track of amount used.
- Pull-start motor and set pressure level at “2.5” and adjust accordingly while applying to target to get desired spray pattern and coverage.
- Have spotter(s) checking the hose connections continuously throughout the herbicide application.
- Have a spotter monitor pressure levels and motor condition continuously throughout the herbicide application.
- Flag area of herbicide treatment if re-entry before approved time is a possibility.
- Any unused herbicide should be labeled with formulation of contents, approximate amount left, mix date, and initials.
- Store unused, clearly herbicide in herbicide locker.

***Basal bark:***

Basal bark herbicide applications are made using a low-pressure backpack sprayer to thoroughly wet the lower 12–18 inches of the stem using a solid cone or flat fan nozzle. To be effective, it is important to thoroughly wet the entire stem, root collar area, and any exposed roots. Basal bark herbicides use an oil carrier (commercially available basal oil, diesel fuel, no. 1 or no. 2 fuel oil, or kerosene) to penetrate the bark. Trees with old or rough bark may require increased coverage to be effective.

***Frill Method:***

Using a handsaw or similar cutting tool, make continuous cuts around the base of the stem. The cuts should angle downward, be less than 2.5 cm (1 in) apart, and extend into the sapwood. Apply the recommended herbicide to the entire cut area to the point of over flow.

***Cut-stump:***

This method is often used on woody species that normally re-sprout after being cut. Cut

down the tree or shrub, and immediately spray or squirt herbicide on the exposed cambium (living inner bark) of the stump. The herbicide must be applied to the entire inner bark (cambium) within minutes after the trunk is cut.

- Wear proper PPE.
- Read ALL herbicide product label(s).
- Assess environmental factors (rain, wind, temperature, etc.)
- Address potential hazards (uneven terrain, roadways, desirable plants, etc.)
- Communicate with others your intent to treat.
- Cut stump application is usually used with herbicides mixed with oil-based adjuvants, which can resist being washed off by rain to a certain degree.
- Mechanically saw or otherwise expose a cross section of the target low to the ground.
- Clear the exposed area of any saw dust or other debris/organic material.
- Quickly follow up with an even, continuous application of herbicide over the exposed area.
- If treating a large population of plants, it is a good practice to employ this method in pairs or small teams where one person is the applicator and the other(s) use mechanical methods to prepare target for chemical application.
- Be sure to, at the minimum, wet the outer ring of exposed area to administer uptake of herbicide into the phloem of target.
- Keep track of amount of herbicide used and the number of plants treated.
- Flag area of herbicide treatment if re-entry before approved time is a possibility.
- Any unused herbicide shall be clearly labeled with formulation of contents, approximate amount left, mix date, and initials.
- Store unused, clearly labeled herbicide on correct shelf in herbicide locker.

## SAFETY PROCEDURES

### General Safety Considerations

All crewmembers shall know which pesticides they are using, why they are using them, and all pertinent safety information related to each. An “herbicide cheat sheet” can be found in the herbicide field folders and should be referred to for information. If unsure of the specific mixture, information can be accessed through the OISC database. Fill out the “chemical application report form” which can be accessed by pressing the “database reports” button on the main menu then selecting the “chemical treatments” tab. Next click on the “chemical application and location summary” button and fill out the appropriate information, finally click on the appropriate menu action to initiate the database query.

Weather is a factor. Rain is a significant factor in the risk of the residue from the application being washed off killing non-targets and harming the environment. Wind is another factor. Strong winds increases the risk of spray drift, which is a health and environmental hazard. Also, try to avoid application in high temperatures. Some pesticide formulations are more volatile and have a higher potential risk of vaporizing and causing vapor drift that is a health and environmental hazard. Refer to local weather reports for current and forecasted conditions and do an on-site assessment of weather conditions to inform the decision whether to apply pesticides.

Certain measures can be taken to reduce risk that may be entailed by mechanical, human, and environmental factors. If herbicides need to be applied in an area where there is high potential for rain, an oil emulsifiable ester formulation (lipophilic or oil soluble) may be better to use than an amine salt formulation (hydrophilic or water soluble). Also, avoid the use of persistent, soil mobile herbicides in high rainfall areas to reduce the risk of herbicide run off. Some surfactants (surface active agents) can help herbicide effectiveness by enhancing the uptake of chemical into plant, reducing the rate of application being washed off by rain, minimizing spray drift by reducing the proportion of fine spray particles, as well as allowing suspension of insoluble particles. Herbicide flow rate and spray pattern are factors when considering spray drift. A higher sprayer pressure (higher flow rate) setting causes spray to have a higher proportion of fine droplets which are carried by wind easier and therefore a higher risk of spray drift. Markers such as turf mark may be utilized to mark a treated area for workers to avoid retreating or walking through.

Understand the function of the herbicide active ingredient after exposure to target. For example, if a systemic herbicide is being used the efficacy is dependent on the translocation of active ingredient throughout the target utilizing the phloem structures in the plant. An over dose of active ingredient may cause these structures to fail prematurely inhibiting the translocation and producing inferior results. The target may exhibit a rapid partial or complete defoliation but will probably soon recover rendering the treatment a failure and consequentially a useless introduction of chemicals into the environment.

### **Spill Response**

Be sure to carry an Herbicide Spill Kit for emergency spills. If a spill occurs, keep unnecessary people away from affected areas until the clean-up process is complete. When small volumes of dilute herbicide are spilled they may be treated by carefully digging up the affected soil and litter, and spreading this material at the legal rate or concentration.

- Whenever mixing herbicides at the base yard or in the field, have an herbicide spill kit.
- Always have label and MSDS of herbicides on hand.
- Wear proper PPE.
- Contain the spill and warn people to avoid contaminated area.
- Treat anyone who has been contaminated.
- Contain the spill by using spill containment “socks” or “snakes” in the spill kit or create a dyke around the area.
- Use the chemical absorbent pads supplied in the spill kit to soak up liquid.
- If no absorbent pads are available, use saw dust, shredded paper, cat litter, or other absorbent material.
- Collect contaminated absorbent material and dyke material and put into a plastic container for disposal.
- If spill has contaminated soil or other similar substrate, collect contaminated material and put into a plastic container for disposal.

### ***Herbicide Spill Kit***

- Emergency phone numbers & map/list of medical facilities
- Labels and SDSs of all herbicides/pesticides on hand
- Personal Protective Equipment: gloves, footwear, apron, goggles, face shield, respirator

- Heavy plastic bags for material storage
- Containment “snakes” (chemsorb tubes or pads to contain & absorb spilled chemicals)
- Absorbent materials (cat litter, vermiculite, paper, etc.)
- Neutralizing agents (bleach and hydrated lime)
- Sweeping compound for dry spills
- Shovel, hand digger, broom, or dustpan
- Heavy duty detergent, chlorine bleach, and water
- Fire extinguisher certified for all types of fires
- Sturdy plastic container that closes tightly and will hold the largest quantity of pesticide on hand
- First aid supplies
- Fresh water (at least 3 gallons; bring extra for wash-up after application)
- Eyewash
- Soap (dish soap or hand soap)
- Towels
- Change of clothes
- Additional items required by labeling

Decontamination/Spill kits are available from many suppliers or can be assembled independently. Rubber buckets or tubs with tight sealing lids are convenient for homemade kits and should include:

1. Three (or more) 1 gallon containers filled with potable water,
2. Eyewash kits or eyewash bottles with buffered isotonic eyewash,
3. Hand or body soap (bring enough for all workers to thoroughly wash their hands when in the field),
4. Paper or other disposable towels,
5. A full tyvek coverall with foot covers,
6. A map and directions to the nearest medical facilities.

### **Splash-back Personnel Contamination Response**

All labels of herbicides/pesticides OISC uses can be found in the herbicide field folders, in herbicide binder in office, or in electronic form on the OISCNAS network drive through the computer. In case of emergency have the EPA Reg No. of the pesticide(s) being used when contacting a doctor. EPA Reg. No. is found in the pesticide label. Make sure that all OISC staff are familiar with safety concerns listed on the label and where to find that information on the label.

### **MAINTENANCE**

In order to ensure that our herbicide application equipment functions correctly and efficiently, the OISC FIELD-CREW MEMBERS shall regularly service ALL components of equipment. This includes Nalgene squirt bottle dispensers, back-pack sprayers, hand sprayers, and power sprayer(s). Regular servicing shall occur no later than (1) day prior to every herbicide operation to make sure components and equipment are in sufficient working order. Application equipment may require additional servicing by FIELD CREW MEMBERS or certified repair professionals depending on the type of equipment and the nature of its working order.

- The FIELD CREW SUPERVISOR, FIELD CREW LEADER(S), and the HERBICIDE SPECIALIST shall be responsible for maintaining all application equipment
- The FIELD CREW SUPERVISOR and FIELD CREW LEADER(S) shall be responsible for delegating maintenance duties to FIELD CREW MEMBERS
- Any FIELD CREW MEMBER may be tasked with maintenance duties at the discretion of the FIELD CREW SUPERVISOR and the FIELD CREW LEADER(S)
- All FIELD CREW MEMBERS shall report any issues or concerns regarding this equipment *directly* to the FIELD CREW LEADER(S) and THE FIELD CREW SUPERVISOR.

In addition to thorough cleanings after each herbicide operation, each piece of equipment requires specific maintenance for specific components. Below is a detailed outline specific to each piece of equipment that OISC uses:

***Nalgene squirt bottle dispensers:***

- Triple rinse the bottle, bottle-top, and red/blue cap
- Reassemble, fill-up, and squirt out diluted Simple Green mixture to ensure all crevices & lines are cleaned and any blockages are removed
- Disassemble and leave each component to dry on drying rack
- Return dried assemblage to correct location in Herbicide shed (keep in a cool, dry & dark place)

***Hand-Sprayers:***

- Triple rinse the bottle, the red-lid, the small black rubber washer around the nozzle, and the black nozzle itself
- Reassemble, fill-up, and squirt out diluted Simple Green mixture to ensure all crevices & lines are cleaned and any blockages are removed
- Disassemble and leave each component to dry on drying rack
- Return dried assemblage to correct location in Herbicide shed (keep in a cool, dry & dark place)

***Back-pack Sprayers:***

- Unscrew and triple rinse the spray-pack lid, the circular cross-hatched tank filter, the large black rubber O-ring, the brass nozzle tip, the small gray rubber washer underneath, the grey nozzle apparatus, the black wand shaft, the white plastic filter inside of the wand handle, and the other grey rubber washer
- Reassemble, fill-up, and squirt out diluted Simple Green mixture to ensure all crevices & lines are cleaned and any blockages are removed
- Disassemble and leave each component to dry on drying rack
- Return dried assemblage to correct location underneath bathrooms (keep in a cool, dry & dark place)

If leakages or other operational issues occur with any piece of application equipment attempt to resolve the issue (in the field or at the base yard) immediately. Sometimes lids may not be screwed on properly or tight enough. Other times the rubber washers or O-rings may be damaged or out of place. Make sure to spray leaking area with silicone spray to create a more secure seal.

If issues with application equipment cannot be resolved make sure to flag the equipment and label it accordingly. This will allow OISC to take the piece of equipment out of commission until the equipment can be repaired.

### **STORAGE**

Store herbicides in a well ventilated, cool, dry area where food and drinks are never stored or prepared. The floor should be concrete or lined with plastic or other impermeable material to prevent leaks from reaching the soil. The area should be inaccessible to the public and/or locked except when chemicals are being removed or returned.

All pesticides shall be stored in accordance with the requirements outlined in each specific product label and OSHA guidelines. Usually these labels will call for an area that is protected from the sun and from extreme temperatures and weather elements. OISC pesticides are stored in a locked chemical hutch, inside the blue locker labeled "Herbicides." Each shelf is labelled to indicate the correct location for concentrates, adjuvants, and left-over mixtures. This secure storage facility allows us to comply with all label-specific and OSHA storage requirements.

Although all chemicals do have a shelf life, (expiration date), always refer to the product label to ascertain the length of time an herbicide can still work effectively. Most of the products that we use here at OISC do not specify any specific length of time but the manufacturers usually recommend disposal after 2-3 years. Make sure to contact the distributor, manufacturer, and the State of Hawaii Department of Agriculture if questions about certain products arise.

Herbicide mixtures should be applied as soon as possible, however if they need to be stored, make sure to follow the same OSHA and label guidelines for each product used. As long as these mixtures are stored properly they will only expire, or lose herbicidal capability, if one of or all concentrates used in the mixture have an expiration date.

### **DISPOSAL**

Pesticides and herbicides require special attention in order to be disposed of. All OISC employees shall refer to specific product labels and OSHA requirements in order to properly dispose of pesticides and herbicides. It is both cost effective and more environmentally sound to mix and apply the smallest amount of herbicide in order to complete an operation.

Herbicide and pesticide concentrates cannot be disposed of without taking special precautions as directed by the State of Hawaii Department of Agriculture.

## APPENDIX A: HERBICIDE CHECKLIST

### I. Pre-Herbicide Operations Checklist

At the baseyard – before leaving:

- Make sure to pack all of the following required supplies:
  - Make sure that ALL PPE & equipment is packed in the designated area and accounted for: PPE (pants, shirts, socks, closed toe boots, chem-resistant gloves, eye pro, dust masks, chem-resistant vests nitrile gloves etc.)
  - (3) Gallons of excess potable water
  - (3) Grey Wash Bins
  - Adjuvants
  - Application equipment & tools
  - Change of clothes
  - Clean Rags
  - Concentrates
  - Dye
  - Eye Wash Kit
  - Herbicide Shower
  - Measuring Equipment
  - Simple Green
  - Shovel or hand digger
  - Soap
  - Spill Kit
- Pack spill kits, herbicide shower, disposable gloves and dust masks, eye wash kit, clean rags, and extra Neoprene Chem-Resistant gloves in the “work bin” action packer. This action packer can be transported with non-herbicide cargo as it is not contaminated;
- Pack concentrates, adjuvants, dye, application equipment tools, and measuring equipment into an “Herbicide Only” labelled action packer(s). Do not transport these action packers in the same truck with potable water, food, & all other non-herbicide contaminated cargo;
- Pack application equipment into designated herbicide truck or herbicide action packer depending on the size of the equipment;

On-site:

- Set up decontamination area with herbicide shower, soap, and three (3) gallons of potable water no less than 50 feet from mixing/staging area;
- Set up and transport all necessary mixing materials to a staging area no less than 50 feet from target operations area;
- Field leader designates mixing duties, application duties, and safety observation duties and the personnel for each duty prior to mixing;
- Make sure the application equipment is not leaking and every piece of equipment functions properly;
- Hike in and stage a hydration station near the treatment site if needed;
- Field leader makes sure all PPE is worn, utilized correctly, and fitting properly.

### II. Post-Herbicide Operations Checklist

On-site:

- Rinse all equipment and place into contaminated storage compartment in order to transport back to base yard for decontamination protocols
- All contaminated personnel must thoroughly wash hands

- Discharge any excess water from large tank
- Place all contaminated PPE into contaminated storage compartment for transport back to the base yard
- Secure all herbicide contaminated material into the designated truck and all non-contaminated material back into separate truck:
  - Make sure that ALL PPE & equipment is packed in the designated area and accounted for: PPE (pants, shirts, socks, closed toe boots, chem-resistant gloves, eye pro, dust masks, chem-resistant vests nitrile gloves etc.)
  - (3) Gallons of excess potable water
  - (3) Grey Wash Bins
  - Adjuvants
  - Application equipment & tools
  - Change of clothes
  - Clean Rags
  - Concentrates
  - Dye
  - Eye Wash Kit
  - Herbicide Shower
  - Measuring Equipment
  - Simple Green
  - Shovel or hand digger
  - Soap
  - Spill Kit

At the base yard – end of day:

- Fill up the (3) grey bins with diluted Simple green solution in first bin and water in the next two;
- Triple-rinse all chemical-resistant neoprene gloves first. Triple rinse all measuring and application equipment and make sure to empty rinsate into desired area;
- Place all gloves and application equipment onto drying rack;
- Empty wash bins in desired area as well once all gloves and equipment have been properly decontaminated;
- Store backpack sprayers and grey bins under the bathroom hutch;
- Place hand-sprayers and squirt-bottles back into designated areas inside of the herbicide hutch;
- Unpack and rinse all containers containing concentrates, adjuvants, & dyes;
- Rinse out all herbicide contaminated action packers and leave to dry in the decontamination area;
- Unpack all work-bin, non-contaminated herbicide material and place clean gloves back into Herbicide hutch and all other material back into the Utility hutch;
- Rinse out bed of truck with decontamination hose and then wash entire truck;
- At the end of the day, ensure that all materials are placed into properly designated areas and that the Herbicide and Utility hutches are securely locked.



# United States Department of the Interior



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

In Reply Refer To:  
2025-0004681-S7-001

February 9, 2026

Ms. Elizabeth Borowiec  
Attn: Ms. Clarice Olson  
Environmental Protection Agency  
300 Ala Moana Boulevard, 5-152  
Honolulu, Hawai'i 96850

Subject: Informal Consultation for the Proposed Pearl Harbor Aquifer Recovery Project,  
O'ahu

Dear Ms. Borowiec:

The U.S. Fish and Wildlife Service (Service) Pacific Islands Fish and Wildlife Office received your letter dated February 25, 2025, regarding the proposed Pearl Harbor Aquifer Recovery Project, located on the island of O'ahu. The Environmental Protection Agency (EPA) is requesting our concurrence with your determination that the proposed project may affect, but is not likely to adversely affect the following federally listed species: endangered O'ahu 'elepaio (*Chasiempis ibidis*); threatened 'a'o (Newell's shearwater, *Puffinus newelli*), endangered 'ua'u (Hawaiian petrel, *Pterodroma sandwichensis*), endangered Hawai'i distinct population segment (DPS) of the 'akē'akē (band-rumped storm-petrel, *Hydrobates castro*) (hereafter collectively referred to as Hawaiian seabirds); endangered 'ōpe'ape'a (Hawaiian hoary bat, *Lasiurus cinereus semotus*); endangered *Drosophila hemipeza*, *D. obatai*, *D. substenoptera* (hereafter collectively referred to as Hawaiian picture-wing flies); endangered *Megalagrion leptodemas*, *M. oceanicum*, *M. nigrohamatum nigrolineatum*, (hereafter collectively referred to as Hawaiian damselflies); endangered *Achatinella* spp. (hereafter collectively referred to as Hawaiian snails); and the following listed endangered plants: *Cyanea acuminata* (hāhā), *C. calycina* (hāhā), *C. crispa* (hāhā), *C. grimesiana* ssp. *grimesiana* (hāhā), *C. humboldtiana* (hāhā), *C. koolauensis* (hāhā), *C. lanceolata* (hāhā), *C. st.-johnii* (hāhā), *Cyrtandra gracilis* (ha'iwale), *C. kaulantha* (ha'iwale), *C. sessilis* (ha'iwale), *C. subumbellata* (ha'iwale), *C. waiolani* (ha'iwale), *Euphorbia deppeana* ('akoko), *E. rockii* ('akoko), *Gardenia mannii* (nānū), *Hesperomannia swezeyi*, *Joinvillea ascendens* subsp. *ascendens* ('ohe), *Labordia cyrtandrae* (kāmakahala), *Lobelia monostachya*, *L. oahuensis*, *Melicope cornuta* var. *cornuta*, *Myrsine fosbergii* (kōlea), *M. juddii* (kōlea),

## PACIFIC REGION 1

IDAHO, OREGON\*, WASHINGTON,  
AMERICAN SAMOA, GUAM, HAWAI'I, NORTHERN MARIANA ISLANDS

\*PARTIAL

*Phyllostegia hirsuta*, *P. parviflora* var. *parviflora*, *Plantago princeps* var. *princeps* (kuahiwi laukahi), *Polyscias gymnocarpa* (‘ohe‘ohe), *P. lydgatei*, *Pritchardia bakeri*, *Psychotria hexandra* var. *oahuensis* (kōpiko), *Sanicula purpurea*, *Trematolobelia singularis*, *Zanthoxylum oahuense* (a‘e) (hereafter collectively referred to as Hawaiian plants). You have also requested our concurrence that the proposed project is not likely to adversely modify the following designated critical habitats: O‘ahu ‘elepaio—Units 3, 4, and 5; O‘ahu—Lowland Wet—Units 14, 15, and 16 for Hawaiian plants and Units 9, 10, 11, and 12 for Hawaiian damselflies; and O‘ahu—Wet Cliff—Unit 8 for Hawaiian plants and Units 14 and 15 for Hawaiian damselflies.

The findings and recommendations in this consultation are based on: 1) your informal consultation request and 2) other information available to us. A complete administrative record is on file in our Pacific Islands Fish and Wildlife Office in Honolulu, Hawai‘i. This response is in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

### **Project Description**

The aim of the proposed project is to protect native rainforests and mitigate future flood risks in the Pearl Harbor watershed by increasing regional eradication efforts of the region’s most threatening invasive species: *Miconia calvescens* (miconia) and *Tibouchina herbacea* (cane tibouchina), and to protect and improve habitats for federal and state listed species. The State of Hawai‘i Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) plans to remove invasive plants using established methods that have been shown to be effective and have minimal impact on the environment. No construction is included in this project. Proposed project activities include walking, hiking, conducting surveys on the ground and in the air; and cutting and removing invasive vegetation by hand, hand tools, and weeding.

Weed control will be performed within both fenced and unfenced surrounding areas in the Pearl Harbor watershed. Crews of one to 12 people will walk transects to locate and control invasive plant species. Herbicide use will include only registered products. Both ground and aerial (i.e., precision applicator sprayer, or individual plant treatment using herbicide-ballistic-technology) application will be used. All products will be used in a manner consistent with labeling, including a data management system that tracks the application of herbicide. Herbicide applicators will only use allowable application concentrations and amounts indicated by herbicide labels and will be trained to minimize herbicide use so that runoff is avoided or minimal and over-spray and drift is minimized. Ground-based herbicide application involves precision drip or targeted foliar spray. Aerial-based herbicide will use targeted application such as ball sprayer or herbicide-ballistic-technology. Additionally, information related to listed species locations will be shared with staff and contractors prior to commencement of work. And contractors will be trained in listed species identification and how to avoid those species. All field crews will follow biosecurity measures (sanitization and decontamination protocols to avoid the spread of invasive species, including the use of rubbing alcohol on field gear and shoes).

Miconia removal will use cut stump method with 20 percent Garlon 4 Ultra, 79.5 percent crop oil, and 0.5 percent dye. Cane tibouchina removal will use either cut stump method with 20 percent Garlon 4 Ultra, 79.5 percent crop oil, and 0.5 percent dye, or pull and spray/foliar spray with 0.16 percent Oust XP, 1.5 percent Round Up Pro Max or Ranger Pro, 97.84 percent water. The control of these invasive species will focus on known seedbank areas utilizing a buffering system based on seed biology and dispersal range. Immature invasive trees will be removed, and fruits and flowers of mature invasive trees will be removed by hand. Surveys will be done mostly by ground transects, with occasional air transects in a helicopter. If helicopters are used, landing locations will be selected to avoid known occurrences of listed species.

The proposed project is in the upland forests above Joint Base Pearl Harbor Hickam in the central and southern Ko‘olau Mountains and includes over 20,000 acres (ac) [8,094 hectares (ha)] in the Pearl Harbor Watershed. A cumulative area of less than 1 ac (0.4 ha) of invasive vegetation will be removed by hand, hand tools, and weeding during project implementation. DOFAW’s Native Ecosystems Protection Management Division will be overseeing all actions before, during, and after project implementation.

#### Conservation Measures

The following conservation measures will be implemented as a part of this project:

##### *O‘ahu ‘Elepaio*

- Helicopter use will be avoided during the breeding season of January through July.
- If an area is identified as an active territory for the O‘ahu ‘elepaio, trees determined to be used for nesting will be avoided during their breeding season.
- If vegetation removal is required, wildlife biologists will survey trees for the O‘ahu ‘elepaio prior to beginning vegetation removal.
- DOFAW will avoid conducting activities within forest bird habitat that promote the spread or survival of invasive species, increase mosquito populations or stagnant water habitat, or increase wildfire threat to montane forest habitats.

##### *Hawaiian Seabirds*

- There will be no nighttime work.
- Any new baseyard lights will utilize full cutoff exterior down-lighting fixtures.
- Outdoor lights will be fully shielded such that bulbs will only be visible from below.
- Automatic motion sensor switches will be installed and/or controls on all outdoor lights will be turned off to ensure that lights are off when not in active use.

##### *‘Ōpe‘ape‘a*

- Any trees or woody vegetation 15 feet (ft) (4.6 meters [m]) in height or taller will not be trimmed or cleared during the ‘ōpe‘ape‘a pupping season (June 1 through September 15).

*Hawaiian picture-wing flies and Hawaiian damselflies*

- DOFAW's invertebrate biologist (authorized to conduct surveys under the section 6 Cooperative Agreement with the Service) will conduct surveys if Hawaiian picture-wing host plants or habitat for Hawaiian damselflies are present.
  - All host plants for Hawaiian picture-wing flies will be flagged and herbicide spraying will not occur in those areas.

*Hawaiian Snails*

- DOFAW snail biologists will conduct thorough searches of vegetation for Hawaiian snails, flag their locations, and determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected.
- DOFAW will select alternate helicopter landing areas if an area is occupied by Hawaiian snails.

*Hawaiian Plants and Critical Habitat*

- Prior to work being conducted in an area, a DOFAW botanist or the Plant Extinction Prevention Program staff (as determined by DOFAW) will determine if Hawaiian plants are present in the area prior to conducting invasive species removal activities. Surveyors will identify and mark all Hawaiian plant locations either with flagging or a Global Positioning System (GPS) point that will be shared with project staff and contractors prior to the commencement of work.
- Helicopters will be crewed by staff trained in rare plant identification.
- Surveys will occur the day of the spray to identify spray areas as well as what the target species looks like to avoid non-target treatment.
- A biologist with experience conducting invasive species removal around Hawaiian plants will be on-site or in a supervisory position when project activities are being carried out.
- Vegetation clearing will be done by hand with the use of hand tools or weed machines (i.e., weed whackers, hedge trimmers, chainsaws).
- Herbaceous weed control in the vicinity of native plants will be removed or cut back using hand tools and then by spot treating remaining individuals to minimize herbicide application.
- Recommended windspeeds on the herbicide labels will be followed. Windspeeds will be taken at the application site immediately prior to work beginning to determine if herbicide application can occur.
- Cut-stump method will be the preferred method and soil spray of pre-emergent will only be applied within patches of cane tibouchina.
- Aerial-based herbicide application such as a ball sprayer or herbicide-ballistic-technology will not be used if Hawaiian plants are downwind of the area of application.

- To mitigate drift large droplet size will be maintained and the spray rig will hover directly over the plant being treated no more than ten feet above the target plant. Aerial spray will not occur if there is a temperature inversion. Aerial-based herbicide application will not occur on windy days. Flights will only occur when winds are less than ten miles per hour and provide for clear visibility.
- The following measures will be implemented related to weeding:
  - No more than 20 percent of the canopy will be treated or removed at a time above Hawaiian plants.
  - Herbicides used will be as taxon-specific as possible to limit non-target effects (e.g., grass specific herbicide around listed herbs).
  - Staff will only hand pull species with fibrous shallow roots, not weeds with tap roots.
- If locations of rare plants are known or are found while carrying out activities, propagule collection of those species will occur and collection will be secured ex situ (e.g., plants in nursery, viable seeds in seed bank/tissue culture) under the section 6 Cooperative Agreement with the Service.
- Work will be conducted by using established trails and minimizing clearing to the furthest extent possible.
- DOFAW will minimize vegetation clearing when determining helicopter drop zones and landing zones.
- Buffer distances in Table 1 will be adhered to for project activities.

Table 1. Buffer distances for Hawaiian plants for proposed project activities.

<b>Action</b>		<b>Buffer Distance from Hawaiian Listed Plant (feet)</b>
Walking, hiking, surveys		3
Cutting and removing vegetation by hand or hand tools (e.g., weeding)		3
Mechanical removal of individual plants or woody vegetation (e.g., chainsaw, weed eater)		3
Use of approved herbicides (following label)	Ground-based direct application with precision applicator (no spray; spot treatment)	3
	Ground-based spray application; hand application (no wand applicator; spot treatment)	15
	Ground-based spray application; manual pump with wand, backpack	20
	Aerial spray (precision applicator)	50
	Aerial application – herbicide-ballistic-technology (individual plant treatment)	25

## **Analysis of Effects**

### Consequences of the Proposed Action on the O‘ahu ‘Elepaio

Hawaiian forest birds' current ranges are predominately restricted to montane forests (above 3,500 ft (1,067 m) in elevation) due to habitat loss and threats at lower elevations. ‘Elepaio are also affected by mosquito-borne diseases. Hawaiian forest bird habitat has been lost due to development, agriculture, grazing, wildfire, and spread of invasive habitat-altering species. Current populations of O‘ahu ‘elepaio are small, fragmented, and isolated, making them vulnerable to extinction. Removal of invasive species, such as nonnative plants and predators, helps maintain and restore suitable forest habitat, improving connectivity between populations and decreasing fragmentation and isolation. Expanding habitat and creating dispersal corridors will result in positive impacts for the O‘ahu ‘elepaio.

O‘ahu ‘elepaio are highly territorial and depend on forested areas for foraging and nesting, with the highest populations occurring in closed-canopy riparian forests with dense understory. The O‘ahu ‘elepaio breeding season is January through July, during which nests are built in a variety of native and nonnative trees and after which young are fed by parents for at least a month. If trees are cleared (potentially destroying nests with eggs or chicks) or helicopters are used (with rotor wash that could dislodge nests or harm birds) during the breeding season in areas where O‘ahu ‘elepaio occur, there is a risk of injury to the birds and the loss of eggs or chicks from nests.

Because surveys will be conducted during breeding season to avoid removing occupied trees and helicopter activities will be avoided during the breeding season, it is highly unlikely that adults, eggs, or chicks be injured or killed. Additionally, invasive species will not be spread because any activities that promote the spread of invasive species, mosquitoes, or wildlife threat will be avoided. Because effects to O‘ahu ‘elepaio are not likely to occur, they are therefore considered discountable.

### Consequences of the Proposed Action on Hawaiian Seabirds

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

Because nighttime work will not occur and any new baseyard lighting will be full cutoff, shielded, and have automatic sensors, it is not likely that Hawaiian seabirds be disoriented by

nighttime lights and fallout, resulting in injury or death. Because effects are not likely to occur, impacts are considered discountable.

#### Consequences of the Proposed Action on the 'Ōpe'ape'a

'Ōpe'ape'a roost in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 ft (4.6 m) or taller are cleared during the pupping season, there is a risk that young 'ōpe'ape'a could inadvertently be injured or killed since they are too young to move away from their roost tree.

Because trimming or clearing of trees or woody vegetation 15 ft (4.6 m) or taller will not occur during the pupping season, it is not likely that young 'ōpe'ape'a be injured or killed by removal of their roost tree. Because effects are not likely to occur, they are considered discountable.

#### Consequences of the Proposed Action on Hawaiian Picture-wing Flies

Hawaiian picture-wing flies live in montane forest habitat and are restricted to single islands. Adult Hawaiian picture-wing flies are opportunistic generalists who rely on microbes in decaying plants, but are not dependent on host plant species, while larvae are dependent on a single or a few related host plant species and feed exclusively on their host plants. Threats from the proposed project include destruction of habitat from invasive weeds and introduction of invertebrates. Invasive plants threaten native forests by outcompeting native species, altering habitat structure, and increasing fire risk. Some invasive plant species form dense thickets, inhibit other plant growth, or promote fire, leading to long-term ecosystem degradation. Introduced predatory invertebrates, such as ants and yellowjackets, threaten picture-wing flies by preying on all life stages and displacing them from essential microhabitats, leading to severe population declines.

The proposed project includes invasive plant removal and biosecurity measures (i.e., the use of rubbing alcohol on field gear and shoes) to minimize or avoid the introduction or spread of additional threats to listed species. As a result, destruction of habitat from invasive weeds and the introduction of predatory invertebrates is unlikely to occur. The project is aiming to remove invasive plants and improve native habitats; therefore, it is expected to have an overall positive impact for Hawaiian picture-wing flies.

Additionally, because surveying for host plants, providing training for contractors in species' and host plant identification and avoidance, and minimizing herbicide over-spray of non-target species will occur, it is not likely that host plants that larvae use or microbes on decaying plants that adults may use be destroyed. Because it is not likely that the food source for adult and larvae Hawaiian picture-wing flies is destroyed, effects to are not likely to occur; and therefore, considered discountable.

#### Consequences of the Proposed Action on Hawaiian Damselflies

Hawaiian damselflies are found in aquatic habitats across the islands, with high species endemism within islands. *Megalagrion leptodemas* adults breed in slow reaches of streams and seep-fed pools while the naiads are fully aquatic. *M. nigrohamatum nigrolineatum* adults occur in slow sections or pools along mid-reach and headwater sections of upland streams and seep-fed pools, while the naiads occur under stones or mats of algae. *M. oceanicum* adults are found in swiftly flowing sections of streams, usually amid rocks and gravel in stream riffles, while the naiads usually crawl among gravel or submerged vegetation instead of being in the stream channel. During invasive species removal and subsequent increased stream flow, naiads may be washed out of streams into the surrounding terrestrial habitat or washed downstream into portions of streams that are occupied by nonnative predatory fish.

By providing training for contractors in species' identification and avoiding areas where Hawaiian damselflies occur, it is not likely that destruction of habitat such as increased stream flow from invasive species removal would occur, resulting in naiads being washed out of streams and killed by predatory fish. Because effects to Hawaiian damselflies are not likely to occur, they are therefore considered discountable.

#### Consequences of the Proposed Action on Hawaiian Snails

Hawaiian snails are found in montane wet forests, usually dominated by *Metrosideros polymorpha* ('ōhi'a). Snails feed on fungi and algae that grow on the leaves of trees. Clearing of trees occupied by Hawaiian snails or helicopter rotor wash could dislodge Hawaiian snails and subsequent pedestrian traffic through areas could result in snails being trampled and crushed.

By surveying for Hawaiian snails, marking areas where they have been found, and selecting alternate helicopter landing areas for areas occupied by Hawaiian snails, it is not likely for Hawaiian snails to be dislodged and subsequently trampled or crushed. Because effects to Hawaiian snails are not likely to occur, they are therefore considered discountable.

#### Consequences of the Proposed Action on Hawaiian Plants

Hawaiian plants are vulnerable to project activities, including human impacts such as trampling, habitat modification by invasive invertebrates, destruction and degradation of habitat from invasive plants that may result in increased threats from landslides, erosion, or rockfalls. Hawaiian plants are also directly impacted by the spread of invasive invertebrates that damage native plants. Project activities may also affect Hawaiian plant species by causing physical damage to plant parts (roots, stems, flowers, fruits, seeds, etc.) as well as impacts to other life requisite features of their habitat, which may result in reduction of germination, growth and/or reproduction.

Because biosecurity measures (i.e., the use of rubbing alcohol on field gear and shoes) will be

implemented to prevent the spread of invasive invertebrates that could modify habitat or damage native plants, it is not likely for Hawaiian plants to be impacted. Additionally, because the area will be surveyed, marked, and the buffer distances in Table 1 will be implemented for all project activities, and because herbicides will be used according to their label and with measures to minimize drift and overspray, it is not likely that Hawaiian plants would be physically damaged by staff walking or for the soil seed bank to be sprayed with herbicides, resulting in plants dying or not being able to reproduce. Because impacts are not likely, effects of the action are considered discountable.

#### Consequences of the Proposed Action on O‘ahu ‘Elepaio Critical Habitat

Lands designated as critical habitat for the O‘ahu ‘elepaio occur in five separate units and provide the full range of PCEs needed by the species, including a variety of currently occupied, undeveloped forested areas that are used for foraging, roosting, sheltering, nesting, and raising offspring; a variety of currently unoccupied and undeveloped forested areas that are adjacent to occupied areas and provide for expansion of existing subpopulations; and shrubland and cliff habitats that link subpopulations and can be used for dispersal. The proposed action will occur in three units of designated critical habitat for O‘ahu ‘elepaio: Unit 3—Central Ko‘olau Mountains, Unit 4—Kalihi-Kapālama, and Unit 5—Southern Ko‘olau Mountains.

Removal of invasive species will help to restore connectivity between O‘ahu ‘elepaio populations resulting from the current fragmentation and isolation of populations. Additionally, because biosecurity measures (i.e., the use of rubbing alcohol on field gear and shoes) will be implemented and personnel will conduct work only on established trails and minimize clearing to avoid further degradation of the habitat for the O‘ahu ‘elepaio critical habitats, the threat of invasive species causing modification of the PCEs of the respective units from the proposed project is not probable, and therefore considered discountable. Because effects from the action are discountable, the proposed project is not likely to adversely modify the O‘ahu ‘elepaio critical habitat units.

#### Consequences of the Proposed Action on O‘ahu—Lowland Wet and O‘ahu—Wet Cliff Critical Habitat

Within the area of the proposed project, Hawaiian plants and Hawaiian damselflies have designated critical habitat within the following ecosystem types: O‘ahu Lowland Wet and O‘ahu Wet Cliff. PCEs for these ecosystems were defined as the PBFs essential to support the functioning of the ecosystem upon which each species depends. Each ecosystem’s features collectively provide the suite of environmental conditions within each ecosystem essential to meeting the requirements of each species, including the appropriate microclimatic conditions for germination and growth of Hawaiian plants (e.g., light availability, soil nutrients, hydrologic regime, temperature); adequate instream flows and upland habitat for cover and foraging for Hawaiian damselflies; maintenance of upland habitat so that it provides for the proper ecological

functioning of streams for Hawaiian damselflies (e.g., water quality, water temperature); and in all cases, space within the appropriate habitats for population growth and expansion, as well as to maintain the historical, geographical, and ecological distribution of each species. Therefore, the PBFs for these species are defined by each ecosystem’s elevation, annual levels of precipitation, substrate type and slope, and the ability to support viable populations of characteristic native plant genera that are found in the canopy, subcanopy, and understory levels of the vegetative community where applicable (Table 2). Some PCEs were defined for specific life history requirements for some species such as those for Hawaiian damselflies: perennial stream, slow reaches of streams or pools, and swift-flowing sections and riffles of streams.

Table 2. Physical or Biological Features in the Lowland Wet and Wet Cliff Ecosystems.

Ecosystem	Elevation	Annual Precipitation	Substrate	Capable of Supporting Viable Populations of Associated Native Plant Genera		
				Canopy	Subcanopy	Understory
Lowland Wet	<3,300 ft (<1,000 m)	>75 in (>190 cm).	Clays; ashbeds; deep, well drained soils; lowland bogs.	<i>Antidesma</i> , <i>Metrosideros</i> , <i>Myrsine</i> , <i>Pisonia</i> , <i>Psychotria</i> .	<i>Cibotium</i> , <i>Claoxylon</i> , <i>Kadua</i> , <i>Melicope</i> .	<i>Alyxia</i> , <i>Cyrtandra</i> , <i>Dicranopteris</i> , <i>Diplazium</i> , <i>Machaerina</i> , <i>Microlepia</i> .
Wet Cliff	Unrestricted.	>75 in (>190 cm).	>65-degree slope, shallow soils, weather lava.	None.	<i>Broussaisia</i> , <i>Cheirodendron</i> , <i>Leptecophylla</i> , <i>Metrosideros</i> .	Ferns, <i>Bryophytes</i> , <i>Coprosma</i> , <i>Dubautia</i> , <i>Kadua</i> , <i>Peperomia</i> .

When critical habitat was designated for these species in 2012, threats to these areas were identified. Threats to the PBFs essential to the conservation of these species that are anticipated to be impacted by proposed project activities include habitat modification by invasive invertebrates, destruction and degradation of habitat from invasive plants that may result in increased threats from landslides, erosion, or rockfalls. Hawaiian damselflies are additionally threatened by destruction and modification of their aquatic habitat due to stream alterations.

The proposed action will occur in a total of four different critical habitat units for Hawaiian plants and Hawaiian damselflies. While the locations of these units remain the same for multiple species, the unit number may differ by species. For Hawaiian plants, the designated critical habitat units within the proposed project area are as follows: O‘ahu Lowland Wet Unit 14, 15,

and 16; and O‘ahu Wet Cliff Unit 8. For Hawaiian damselflies, the critical habitat units are as follows: for *M. leptodemas*, O‘ahu Lowland Wet Unit 9, 10, and 11, and O‘ahu Wet Cliff Unit 14; for *M. nigrohamatum nigrolineatum*, O‘ahu Lowland Wet Unit 9, 10, and 11; and for *M. oceanicum*, O‘ahu Lowland Wet Unit 10, 11, and 12; and O‘ahu Wet Cliff Unit 15.

O‘ahu—Lowland Wet—Unit 14 (Hawaiian plants), Unit 9 (Blackline Hawaiian Damselfly and Crimson Hawaiian Damselfly), and Unit 10 (Oceanic Hawaiian Damselfly)

This area is occupied by the plant *Cyanea koolauensis*, and by the blackline Hawaiian damselfly, and includes the wet forest and shrubland, the moisture regime, and canopy, subcanopy, and understory native plant species identified as PBFs in the lowland wet ecosystem, as well as unique PCEs for the Hawaiian damselfly. Although this area is not currently occupied by the plants *Adenophorus periens*, *Cyanea acuminata*, *C. calycina*, *C. crispa*, *C. grimesiana* ssp. *grimesiana*, *C. humboldtiana*, *C. lanceolata*, *C. purpurellifolia*, *C. st.-johnii*, *C. truncata*, *Cyrtandra dentata*, *C. gracilis*, *C. kaulantha*, *C. polyantha*, *C. sessilis*, *C. subumbellata*, *C. viridiflora*, *C. waiolani*, *Euphorbia rockii*, *Gardenia mannii*, *Hesperomannia swezeyi*, *Huperzia nutans*, *Isodendrion longifolium*, *Labordia cyrtandrae*, *Lobelia gaudichaudii* ssp. *koolauensis*, *L. oahuensis*, *Melicope cornuta* var. *cornuta*, *Melicope hiiakae*, *M. lydgatei*, *Myrsine juddii*, *Phyllostegia hirsuta*, *P. parviflora*, *Plantago princeps*, *Platanthera holochila*, *Psychotria hexandra* ssp. *oahuensis*, *Pteralyxia macrocarpa*, *Pteris lidgatei*, *Sanicula purpurea*, *Polyscias gymnocarpa*, *Trematolobelia singularis*, *Viola oahuensis*, or *Zanthoxylum oahuense*, or by the crimson or oceanic Hawaiian damselflies, this area is essential for the conservation and recovery of these lowland wet species because it provides the PCEs necessary for the reestablishment of wild populations within the historical ranges of the species.

O‘ahu—Lowland Wet—Unit 15 (Hawaiian plants), Unit 10 (Blackline Hawaiian Damselfly and Crimson Hawaiian Damselfly), Unit 11 (Oceanic Hawaiian Damselfly)

This area is occupied by the plant *Cyanea crispa*, and by the blackline Hawaiian damselfly, and includes the wet forest and shrubland, the moisture regime, and canopy, subcanopy, and understory native plant species identified as physical or biological features in the lowland wet ecosystem, as well as unique PCEs for the Hawaiian damselflies. This area also contains unoccupied habitat that is essential to the conservation of these species by providing the PCEs necessary for the expansion of the existing wild populations. Although this area is not currently occupied by the plants *Adenophorus periens*, *Cyanea acuminata*, *C. calycina*, *C. grimesiana* ssp. *grimesiana*, *C. humboldtiana*, *C. koolauensis*, *C. lanceolata*, *C. purpurellifolia*, *C. st.-johnii*, *C. truncata*, *Cyrtandra dentata*, *C. gracilis*, *C. kaulantha*, *C. polyantha*, *C. sessilis*, *C. subumbellata*, *C. viridiflora*, *C. waiolani*, *Euphorbia rockii*, *Gardenia mannii*, *Hesperomannia swezeyi*, *Huperzia nutans*, *Isodendrion longifolium*, *Labordia cyrtandrae*, *Lobelia gaudichaudii* ssp. *koolauensis*, *L. oahuensis*, *Melicope cornuta* var. *cornuta*, *Psychotria Melicope hiiakae*, *M. lydgatei*, *Myrsine juddii*, *Phyllostegia hirsuta*, *P. parviflora*, *Plantago princeps*, *Platanthera holochila*, *hexandra* ssp. *oahuensis*, *Pteralyxia macrocarpa*, *Pteris lidgatei*, *Sanicula purpurea*,

*Polyscias gymnocarpa*, *Trematolobelia singularis*, *Viola oahuensis*, or *Zanthoxylum oahuense*, or by the crimson or oceanic Hawaiian damselflies, this area is essential for the conservation and recovery of these lowland wet species because it provides the PCEs necessary for the reestablishment of wild populations within the historical ranges of the species.

O‘ahu—Lowland Wet—Unit 16 (Hawaiian plants), Unit 11 (Blackline Hawaiian Damselfly and Crimson Hawaiian Damselfly), Unit 12 (Oceanic Hawaiian Damselfly)

This area is occupied by the plants *Cyanea acuminata*, *C. calycina*, *C. crispa*, *C. humboldtiana*, *C. koolauensis*, *C. lanceolata*, *C. st.-johnii*, *Cyrtandra gracilis*, *C. polyantha*, *C. sessilis*, *Gardenia mannii*, *Hesperomannia swezeyi*, *Melicope cornuta* var. *cornuta*, *Sanicula purpurea*, and *Polyscias gymnocarpa*. This area includes the wet forest and shrubland, the moisture regime, and canopy, subcanopy, and understory native plant species identified as physical or biological features in the lowland wet ecosystem, as well as unique PCEs for Hawaiian damselflies. This area also contains unoccupied habitat that is essential to the conservation of these species by providing the PCEs necessary for the expansion of the existing wild populations. Although this area is not currently occupied by the plants *Adenophorus periens*, *Cyanea grimesiana* ssp. *grimesiana*, *C. purpurellifolia*, *C. truncata*, *Cyrtandra dentata*, *C. kaulantha*, *C. subumbellata*, *C. viridiflora*, *C. waiolani*, *Euphorbia rockii*, *Huperzia nutans*, *Isodendrion longifolium*, *Labordia cyrtandrae*, *Lobelia gaudichaudii* ssp. *koolauensis*, *L. oahuensis*, *Melicope hiiakae*, *M. lydgatei*, *Myrsine juddii*, *Phyllostegia hirsuta*, *P. parviflora*, *Plantago princeps*, *Platanthera holochila*, *Psychotria hexandra* ssp. *oahuensis*, *Pteralyxia macrocarpa*, *Pteris lidgatei*, *Trematolobelia singularis*, *Viola oahuensis*, *Zanthoxylum oahuense*, or Hawaiian damselflies, this area is essential for the conservation and recovery of these lowland wet species because it provides the PCEs necessary for the reestablishment of wild populations within the historical ranges of the species.

O‘ahu—Wet Cliff—Unit 8 (Hawaiian plants), Unit 14 (Crimson Hawaiian Damselfly), and Unit 15 (Oceanic Hawaiian Damselfly)

This area is occupied by the plants *Cyanea acuminata*, *C. calycina*, *C. humboldtiana*, *C. purpurellifolia*, *C. st.-johnii*, *Cyrtandra kaulantha*, *C. sessilis*, *C. subumbellata*, *C. viridiflora*, *Huperzia nutans*, *Labordia cyrtandrae*, *Lobelia oahuensis*, *Lysimachia filifolia*, *Phyllostegia hirsuta*, *P. parviflora*, *Plantago princeps*, *Pteralyxia macrocarpa*, *Sanicula purpurea*, *Polyscias gymnocarpa*, *Trematolobelia singularis*, and *Viola oahuensis*. This unit also contains unoccupied habitat that is essential to the conservation of these species by providing the PCEs necessary for the expansion of the existing wild populations. Although this area is not currently occupied by the plants *Adenophorus periens*, *Euphorbia deppeana*, *Cyanea crispa*, *C. truncata*, *Euphorbia rockii*, *Psychotria hexandra* ssp. *oahuensis*, *Schiedea kaalae*, or Hawaiian damselflies, this area is essential for the conservation and recovery of these wet cliff species because it provides the PCEs necessary for the reestablishment of wild populations within the historical ranges of the species. This unit includes the shrubland, the moisture regime, and subcanopy and understory

native plant species identified as PBFs in the wet cliff ecosystem, as well as unique for the species PCEs for Hawaiian damselflies.

By incorporating the above conservation measures, including biosecurity measures (i.e., the use of rubbing alcohol on field gear and shoes) implemented and that personnel will conduct work only on established trails and minimize clearing to avoid further degradation of the habitat for the O‘ahu—Lowland Wet and O‘ahu—Wet Cliff critical habitat units, the threat of invasive species and modification of the PCEs of the respective Hawaiian plant and Hawaiian damselfly critical habitat units from the proposed project is not probable, and therefore effects of the action are discountable. Because project activities will be removing invasive species, resulting in an increase of the ability to support viable populations of species essential to support the PCEs for Hawaiian plant critical habitat, there will also be a positive impact as a result of the proposed project goals.

Additionally, because herbicides will be used according to label and runoff will be avoided and minimized, it is not likely that there will be destruction or modification of streams that provide PCEs (i.e., perennial stream, slow reaches of streams or pools, or swift-flowing sections of riffles of streams) for Hawaiian damselfly critical habitat. Because effects from the action are discountable, the proposed project is not likely to adversely modify O‘ahu—Lowland Wet or O‘ahu—Wet Cliff critical habitat units.

#### *Summary*

Based on our review, we concur that the proposed project may affect, but is not likely to adversely affect the O‘ahu ‘elepaio, Hawaiian seabirds, the ‘ōpe‘ape‘a, Hawaiian picture-wing flies, Hawaiian damselflies, and Hawaiian snails. Additionally, we concur that the proposed project is not likely to adversely modify the following designated critical habitat units: O‘ahu ‘elepaio—Units 3, 4, and 5; O‘ahu—Lowland Wet—Units 14, 15, and 16 for Hawaiian plants and Units 9, 10, 11, and 12 for Hawaiian damselflies; and O‘ahu—Wet Cliff—Unit 8 for Hawaiian plants and Units 14 and 15 for Hawaiian damselflies.

This concludes section 7 consultation for your proposed project. Reinitiation of this consultation is required and shall be requested by the Service, where discretionary Federal involvement or control over the proposed actions has been retained or is authorized by law and:

- 1) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- 2) If the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered herein; or
- 3) If a new species is listed or critical habitat designated that may be affected by the proposed actions.

We appreciate your efforts to conserve protected species. If you have questions regarding this response, please contact Elyse Sachs, Fish and Wildlife Biologist (email: [Elyse\\_Sachs@fws.gov](mailto:Elyse_Sachs@fws.gov)). When referring to this project, please include reference number 2025-0004681-S7-001.

Sincerely,

Island Team Manager  
O‘ahu, Kaua‘i, Northwest Hawaiian Islands  
and American Samoa

cc: State of Hawai‘i DLNR, Division of Forestry and Wildlife