KA : 24-01

Ho'ala Loko I'a Application

Fishpond Name: Alakoko

Applicant Name: Malama Huleia

APR - 2 2024

Pond location: Alakoko Fishpond Lihue, Kauai

Nearest Tax Map Key(s): 330030160000, 330010140000, 320010010000

Ahupua`a: Niumalu District: Puna

Island: Kauai

Commencement Date: January 1, 2024 Completion Date: December 31, 2025

Wall length: 2,700-ft Pond surface area: ~40-acres

Work Summary

☐ Operations only

☐ Construction of accessory structures

☐ Minor repair and restoration of pond walls, ʻauwai, mākāhā, etc.

☐ Moderate repair and restoration (10% to 50% damage)

☐ Major repair and restoration (greater than 50% damage)

Linear feet of wall to be repaired (rocks on site):

Linear feet of wall to be restored (new rock):

Source of new rock:

Amount of "fill" (expansion beyond original footprint):

☐ Dredging using mechanized equipment

Estimated volume of dredging:

✅ Vegetation removal using mechanized equipment

Estimated acreage: 27-acres of combined mechanized and hand labor to remove invasive species and re-plant with native vegetation. Of the 27-acre project area 5-7 acres are on Malama Hulei's land the remaining are on the USFWS Refuge land and directly impact Alakoko fishpond. The following project description describes the project(s) as a whole however we are only applying for the permit for the Malama Huleia land portion of the project.

☐ Emergency repair

Required Signatures

Applicant

Name / Hui: Malama Huleia

Street Address: Hulemalu Road, Alakoko Fishpond or mailing address: PO Box 662092 Lihue, HI 96766

Contact Person & Title: Sara Bowen, Executive Director

Phone: 360-820-0979

Email: sara.ed@malamahuleia.org

Interest in Property:

Signature: Sara Bowen **Date:** 4/1/2024

Signed by an authorized officer if for a Corporation, Partnership, Agency or Organization

Landowner (if different than the applicant)

Name:

Title; Agency:

Mailing Address:

Phone:

Email:

Signature: **Date:**

For State-owned ponds, the government entity with management control over the parcel shall sign as landowner.

For DLNR Managed Lands

State of Hawai`i
Chairperson, Board of Land and Natural Resources
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809-0621

Signature: **Date:**

Description of the Loko I'a

Please discuss the current physical and environmental conditions of the loko i'a. Please also note if any endangered or threatened species are found in the pond.

Alakoko fishpond is a kuapā style loko i'a on the Hulē'ia River in Kaua'i, approximately 1,000 meters upstream from Nāwiliwili Small Boat Harbor in Līhu'e, Kaua'i. Permit KA-18-01 removed 26 acres of mangroves; currently, under permit KA-22-1, Malama Hulē'ia is working on repairing the wall and removing the sedimentation that resulted from years of mangrove invasion and no pond maintenance. Since the mangrove removal Alakaoko is now closer to its original size of approximately 40 acres.

The fishpond sits in a historic geomorphic bend in the Hulē'ia River with an ancient (more than 600 years old) Hawaiian rock wall creating the pond. There is a stone-faced dirt wall of over 2,700 lineal feet which cuts off a large bend in the river. The pond is surrounded by estuarine intertidal wetlands; the water level is tidally influenced and brackish. There are two known mākāhā: a smaller one at the downstream end of the pond that flows through a side channel into Hulē'ia River, and a larger one towards the center of the wall.

Mangrove removal has stopped further destruction of the rock wall; however, the wall is vulnerable to further damage by erosion and needs to be repaired and adapted to sea level rise along with elemental and human erosion.

The presence of such a large and important fishpond near the mouth of the Hulē'ia River correlates with the superlative marine resources of Nāwiliwili Bay, which has been noted as one of the most important fishing localities on Kaua'i (Handy et al. 1972:427). Large numbers of 'ama'ama (striped mullet), moi (Pacific threadfin), and akule (Big-eyed scad, or mackerel) once thrived in Nāwiliwili Bay, and the Hulē'ia River was the spawning ground of the 'ama'ama. The 'ama'ama of Nāwiliwili were so prized that, according to the Hawaiian overseer of Alakoko Fishpond in the early twentieth century, they "have been tabu [kapu] since ancient times" (Honolulu Star-Bulletin, 01 August 1936:45). The movements of the schools of fish were monitored from the high point of Kalanipu'u, a pu'u kāhea (calling hill) located on the south side of the entrance to the bay and the river (see Figure 3). Upon construction of the harbor breakwater, the large schools of fish stopped coming into the bay (Honolulu Star-Bulletin, 01 August 1936:45).

History of the Loko I'a

During the Mahele, most Land Commission Awards (LCAs) were awarded in the upper and middle portions of Hulē'ia River, especially in the alluvial floodplains along the major meanders of the river, which were ideal for wetland taro farming (Figure 9). In 1861, an LCA was awarded to Victoria Kamāmalu (Helu 7713, Apana 2, Part 3), which corresponded to the entire ahupua'a of Niumalu, excepting kuleana land claims (referring to lands applied for by native claimants) (Buke Mahele Volume 9:264, 269). This included 1,767 acres in total. The Mahele record associated with this claim (Figure 10) includes a reference to a large fishpond called Pepeawa, which is Kalalalehua's fishpond on the Kīpū/Niumalu boundary on the south side of the Hulē'ia River. Alakoko Fishpond is not mentioned in the record, possibly because it is situated in the center of the ahupua'a and does not correspond to a boundary of it.

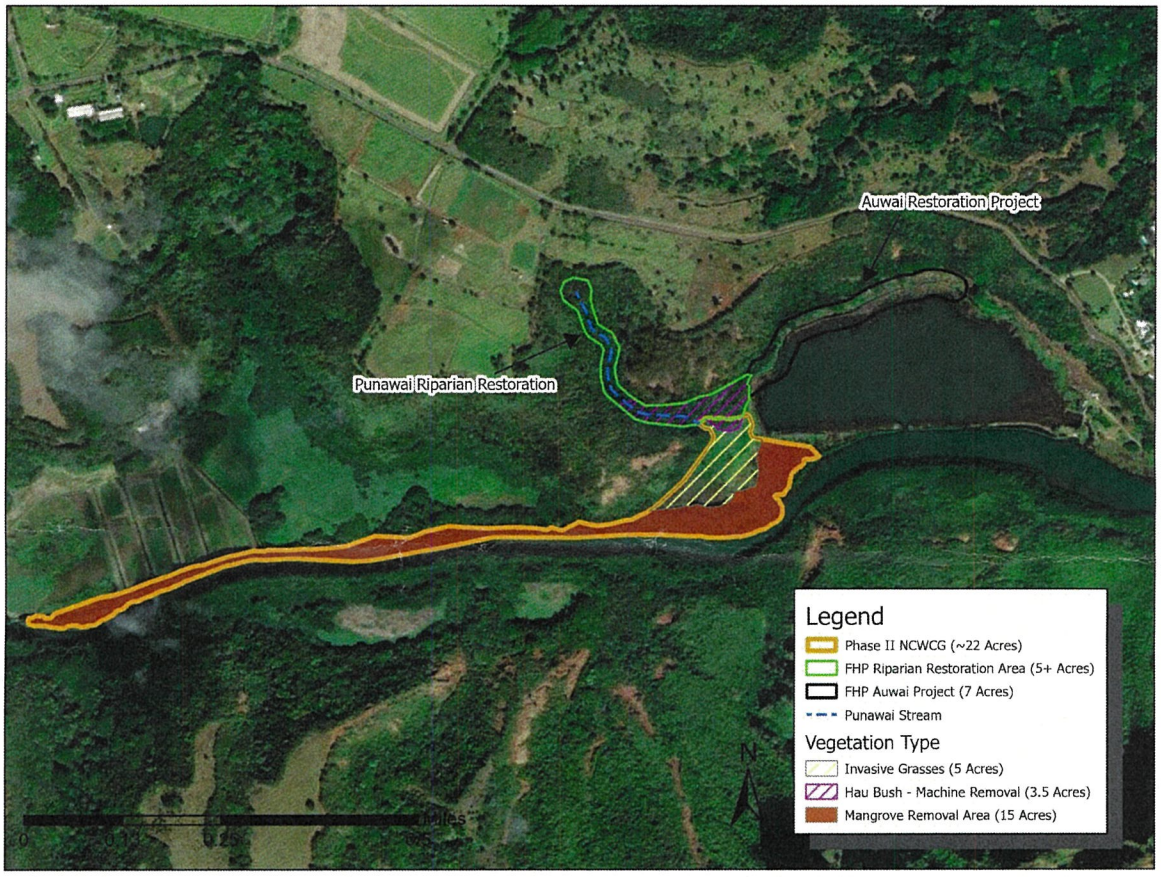
Summary of Alakoko History:
1300-1400: Two loko kuapā (kuapā-style fishponds) are constructed along Hulēʻia River in the Puna Moku. According to one story, the high-ranking siblings ʻAlekoko and Kalālālehua have the ponds built by Menehune (Thrum, Wichman). These ponds are among six or more fishponds in the river valley.
1420-1824: Fishponds on the island of Kauaʻi including Alakoko are under the control of the island aliʻi (chiefs), and operated by konohiki (land managers), makaʻāinana (commoners) and perhaps the servants or social outcasts known as kauwā or kauā.
1810: Kaumualiʻi cedes the island of Kauaʻi to Kamehameha I, but is left in place for his lifetime as the island's governor. Kamehameha the Great dies in 1819. His son Liholiho rules as Kamehameha II and continues to rule over Kaua'i.
1810-1850: Cattle, which had been presented to Kaumualiʻi as gifts, significantly disrupted kalo production along Hulēʻia River.
1824: Kaumualiʻi, who had been kidnapped and taken to Honolulu in 1821, passes away. After a failed attempt to rebel against the Kamehamehas by Kaumuali'i's son George Humehume, all lands on Kauaʻi are redistributed to members or supporters of the Kamehameha royal family - new aliʻi (chiefs) and konohiki (land managers) are put into place on the island of Kauaʻi.
1848: The ahupuaʻa of Kīpū, Haʻikū, and Niumalu, including Alakoko pond, are awarded to Victoria Kamāmalu in the Great Mahele of 1848. Kamāmalu is a grand-daughter of Kamehameha the Great and sister of Hawaiian kings Alexander Liholiho and Lot Kapuāiwa, who rule as Kamehameha IV and V.
1866: These lands passed on Kamāmalu's death in 1866 to her father, Mataio Kekūanaō'a
1868: On the death of Kekūanaō'a in 1868, the lands passed to Ruth Ke'elikōlani, a great-granddaughter of Kamehameha the great and a niece of Kamāmalu.
1883: Ruth Keʻelikōlani sells the ahupuaʻa of Niumalu, including Alakoko Fishpond, to Paul Puhiʻula Kanoa, the adopted son of Kauaʻi Governor Paulo Kanoa. Thus the fishpond passed out of the hands of the Kamehameha Dynasty.
1897: On her husband's death in 1895, Kaleipua Kanoa, the wife of Paul P. Kanoa, establishes the Kanoa Estate, leaving the properties on her own death in 1897 to her heirs.
1902 or 1903: Invasive red mangrove is introduced to the island of Molokaʻi by the American Sugar Company to combat soil erosion from the plantation's land use practices on the arid central portion of the island. Mangrove seedlings begin drifting across island channels, and are first noted in the Hulēʻia river in the early 1930s.
1908: Ah Lun & Company repairs wall, uses the fishpond as a commercial enterprise to grow and market mullet and other aquacultural products.
1924: Fishpond is operated by the Coney family. John Haalelea Coney leased the pond in the early 1900s. In 1936, Coney's son Malcolm Coney is operating the pond. They stock and raise mullet.
1946: Tidal wave significantly damages the integrity of the kuapā, at the same time mangroves are taking hold, and their roots are damaging the stone structure the forms the river side of the pond wall. The pond wall is no longer being actively maintained.
1986: Kanoa Estate sells the fishpond property to Okada Trucking.
2018: Mālama Hulēʻia entered a 20-year license/lease agreement with Okada Trucking
2019-2021: Mālama Hulēʻia removes 26-acres of invasive mangrove from the area surrounding the fishpond and along the river downstream from it.
2021: With generous donations from a private benefactor, Malama Huleia acquires the fishpond after the Okada family puts it up for sale. The Trust for Public Land facilitates the purchase, and the parties agree to several deed restrictions that protect the conservation use of the property.
2023: Mālama Hulēʻia holds a community workday to rebuild the kuapa with ~2,000 community members in attendance to celebrate the 5-year anniversary of workdays at Alakoko fishpond. The wall is still under repair.

Proposed Work Plan

Please provide a summary of the work that is being proposed under this permit. Please note any use of mechanized equipment.

Project actions described - 27-acre Restoration Project(s)

The purpose of this project is to restore a 22-acre coastal wetland area and a 5-acre riparian area of a spring fed stream, feeding into the coastal wetlands and Alakoko fishpond. The two project areas are described below.



The project area is just upstream from Alakoko fishpond and includes 17 acres on the Hulēʻia National Wildlife Refuge managed by the U.S. Fish and Wildlife Service and 5 acres managed by Mālama Hulēʻia (see map above). Descriptions of individual project components follow.

Project component 1: Invasive species control – 22 acres of vegetation including red mangrove (*Rhizophora mangle*), hau (*Hibiscus tiliaceus L.*), umbrella sedge (*Cyperus involucratus*), and California grass (*Urochloa mutica*)

a. Where this action will occur (location, size of action footprint): The project consists of clearing approximately 15 acres of invasive red mangrove (*Rhizophora mangle)* that covers the left bank of Hulēʻia Stream and 7 acres of invasive grasses and shrubs. The area of this project component is inclusive of the project area map above.

b. When this action will take place (timing, frequency, duration): ASAP through 2025 with the exclusion of the bat rearing window (June 1 – September 15). While many of our projects depend on working at the lowest of low tides during daylight hours, tidal fluctuations are not expected to impact the work associated with this project. We will carefully observe tidal impact and manage adaptively, if needed.

c. Who will do this action (type and number of personnel): BCI Contracting (Drew Porter – owner and Lance Taniguchi-Fu – operator) will be the primary personnel with occasional on-the-ground support from 1–3 Mālama Hulēʻia staff.

d. How the action will be accomplished (e.g., access; types of equipment, herbicides):
   i. Mangrove reduction process: A JD 160G amphibious excavator (54,000 lbs weight; 1.1 PSI ground pressure) with mulching/grinding head attached to the 52' arm will grind mangrove trees in place, leaving a mat of mulch to suppress seedling re-growth. The mulching/grinding head is a Denis Cimaf 74" wide unit that can reduce trees at any height and up to 24" in diameter. The process of reducing mangrove to a useful planting bed mulch is to reach up approximately 50' to clip the treetop off, then mulch the standing tree to ground. Mangroves have a stump that is above ground, so the process is efficient at reducing the vast majority of the tree into ground cover. These mulched chips are heavier by volume than water and well interlaced from the processing, which means they tend not to be mobile during tide cycles. From previous monitoring over the course of 1+ years at a test site, the chips stay in place and do not regrow. The combination of low ground pressure and reach of 52' would allow for safe operation throughout the site.
   ii. Invasive grass removal: The grasses, which have formed a ~4-ft mat of dead vegetative material with new growth on top and in between, will be removed by a curved brush rake with thumb attached to the amphibious excavator. A curved brush rake attachment will be used to lift and roll back the grass mat and the hydraulic thumb helps grip the rolled up material. Sections of this vegetative mat will be hauled to an upland area adjacent to the perimeter road and later used as mulch in upland restoration projects.
   iii. Hau bush clearing: Hau bush needs to be removed at the confluence of the stream/auwai/fishpond. The amphibious excavator will reduce standing hau bush to useable mulch material (1.5–3 inch) and be left in place to provide weed barrier prior to planting with native species. Silt fence will be used where appropriate to reduce impacts of sedimentation of waterways.
   iv. If monitoring one year after treatment indicates regrowth, then the above actions would be repeated to eradicate the regrowth.
   v. Access for the above actions would be primarily via the perimeter road around the fishpond. If access via the Refuge entrance road is necessary, Mālama Hulēʻia would coordinate and receive permission from Refuge management.

e. Measures to avoid, reduce, or eliminate adverse effects on the environment:
   i. Each contractor will become versed in the Animal Avoidance and Minimization Measures (USFWS 2023) and implement appropriate minimization measures as described in under section 9 in this document.
   ii. A Spill Prevention, Control, and Countermeasures Plan (SPCC) will be implemented to avoid and minimize impacts from spills or releases of oil or hazardous materials from equipment.

iii. Avoidance and minimization measures related to cultural and historic resources will be described in TBD.
iv. Bio-security protocol (i.e., invasive species spread prevention measures) will be described in the Refuge special use permit.

Project component 2: Planting/seeding in 20 acres including makaloa, ma'u 'aki'aki, 'akulikuli, 'ahu'awa, neke, makaloa and other native sedges and rushes

a. Where this action will occur (location, size of action footprint): This will take place within the 22-acre NCWCG mapped project area.

b. When will this action will take place (timing, frequency, duration): As soon as the invasive plant species have been cleared, seeding and planting plug/starts will begin and may take place through the end of the project period.

c. Who will do this action (type and number of personnel): Mālama Hulē'ia staff and occasional volunteers

d. How the action will be accomplished (e.g., access; types of equipment, herbicides): After clearing the invasive vegetation, Mālama Hulē'ia will replant with native wetland vegetation where suitable. Planting and seeding will be via hand labor by the Mālama Hulē'ia restoration crew and volunteers (as appropriate).

e. Measures to avoid, reduce, or eliminate adverse effects on the environment: See elements 1, 3, and 4, described under project component 1.

Project component 3: Control invasive mammalian species (feral cats and rodents), including through lethal methods.

a. Where this action will occur (location, size of action footprint): This will take place within the 22-acre NCWCG mapped project area. Monitoring of predator presence will be conducted using camera traps and/or tracking tunnels. Information from monitoring of listed species and predators will determine location and intensity of predator trapping design.

b. When this action will take place (timing, frequency, duration): This activity will take place post clearing. The trapping stations will be established. The initial frequency of trap sets and visits will be 3 consecutive nights once per month. Then, the frequency and/or timing will be increased or decreased based on capture rates. If predation pressure is elevated at any point, trapping efforts may be adjusted. The duration of this activity will be throughout the project period.

c. Who will do this action (type and number of personnel): Hallux and Mālama Hulē'ia staff. One to two staff members at a time will check traps.
Hallux: Kyle Pias, Alex Dutcher, Emory Griffin-Noyes, Spencer Barrett, Kim Shoback, Hunter Rice Hudson, Kara Winter, Katie Douglas, Kupono Haitsuka, Ailiana Ho, JB Goode, Leah Miller
Mālama Hulē'ia: Peleke, Punohu, Jason, Kaniho

d. How the action will be accomplished (e.g., access; types of equipment, herbicides): Predator trapping will be implemented for the reduction of feral cats and rodents. Rat

trapping will be conducted using a grid of approximately 20–40 (depending on site suitability) A24 Goodnature traps at least 15 meters from any known listed species nest or frequently visited area. Live trapping methods will be used for feral cats using tomahawk or similar trapping design and placed at least 30 meters from any known listed species nest or frequently visited area. Approximately 5–10 cat traps will be placed in corridors and trails, facing inward or towards a large object (e.g., tree, large rock) and with a ring barrier and/or bird exclusion materials will be utilized where there is potential overlap of non-target listed species so it is still accessible to cats but less easily accessible to birds.

Traps will be maintained in good working order with a check interval of <24 hours for live traps. Cats caught in live traps will be taken off Huleia National Wildlife Refuge, checked for identification chips and managed as appropriate. Injured or displaced endangered species will be rescued, professionally treated and released into secure habitats or taken to a rehabilitation facility if needed. If a non-target listed species is trapped, a health assessment will be conducted then released if no medical attention is needed. If the bird's health is in question it will be taken to Save Our Shearwaters for further evaluation. Then, the trap location will be evaluated and modified if necessary to reduce further risk to non-target species. Traps will be activated for nighttime use to avoid non-target listed species and checked and closed first thing in the morning. All personnel conducting predator control operations will be trained and have experience identifying avian species and will be properly permitted.

f. Measures to avoid, reduce, or eliminate adverse effects on the environment: See elements 1, 3, and 4, described under project component 1.

Project component 4: Fish and wildlife species (e.g., waterbird) and habitat (e.g., water quality) data collection and analysis.

a. Where this action will occur (location, size of action footprint): Avian surveys will occur at three to five survey locations within the project area. Water quality monitoring will occur at the downstream end of the wetland complex at the southeast corner of Alakoko Fishpond. If, after vegetation removal occurs and standing water is present, then additional water quality monitoring sites may be established.

b. When this action will take place (timing, frequency, duration): Avian surveys: In addition to pre-ground disturbance monitoring (see section 9), surveys would be conducted quarterly through the project period. Water quality monitoring will be conducted monthly.

c. Who will do this action (type and number of personnel): Archipelago Research & Conservation (Helen Raine, Mike McFarlin (Primary surveyor) and one additional ARC biologist; Jen Rothe, Bobby Brittingham, Adrian Burke, Keane Sammon, Kylie Smith, or Joey Leibrecht); MH (Jason)

d. How the action will be accomplished (e.g., access; types of equipment, herbicides): Access by foot via existing perimeter road; Access by foot via Refuge main entrance road; site walk, no ground disturbance; pre-clearing surveys will include site visit and walking survey to identify any potential nesting sites. Then, a post-clearing walking survey to select three to five survey points within project area and on the Refuge

managed wetland units. The selected survey points will be mapped and will follow same protocol as the Alakoko monitoring plan.

g. Measures to avoid, reduce, or eliminate adverse effects on the environment: See elements 1, 3, and 4, described under project component 1.

Project component 5: Archaeological survey and monitoring.

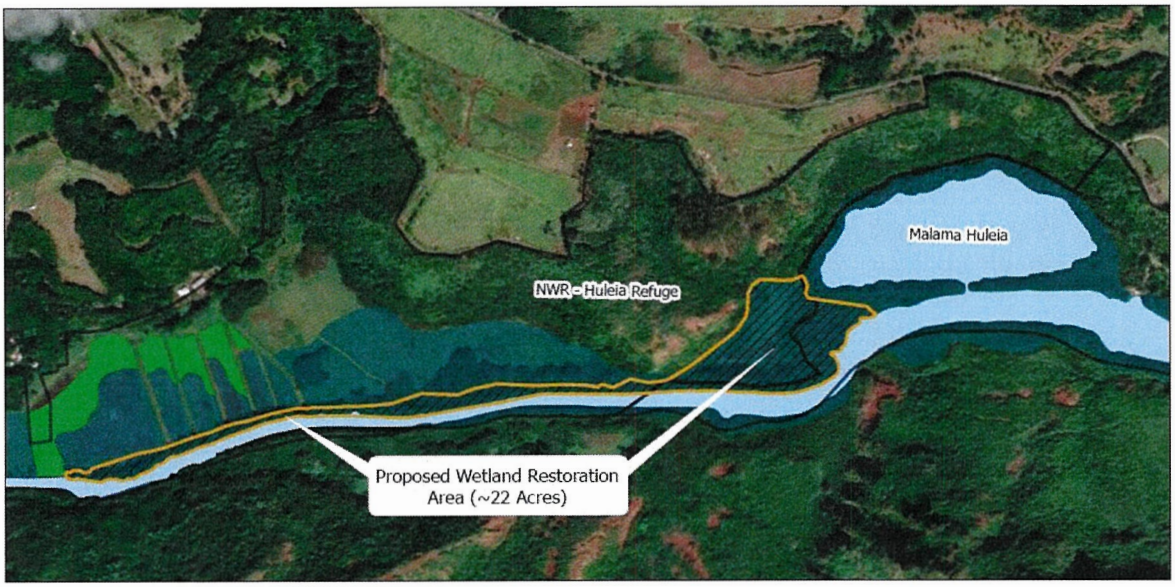
a. Where this action will occur (location, size of action footprint): Reconnaissance pre-clearance pedestrian survey: Focal areas are the accessible portions of the FY 2023 NCWCG project area that are currently covered in invasive grasses (approximately five acres) and the FY 2023 FHP-funded five-acre Punawai riparian restoration area.

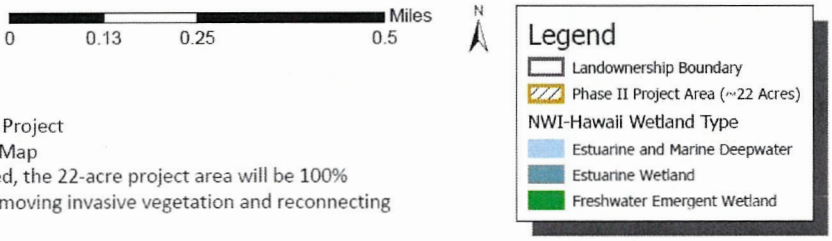
b. When this action will take place (timing, frequency, duration): Reconnaissance pre-clearance pedestrian survey: A period of four consecutive days, to be scheduled in coordination with Refuge staff. Throughout the project period (i.e., during clearing activities), field surveys and reports will be conducted (see additional details below).

c. Who will do this action (type and number of personnel): Caleb Fechner and James McIntosh from Pacific Legacy. Mālama Hulēʻia staff including Sara Bowen, Peleke Flores, Punohu Kekaualua, Kaniho Giminiz, and/or Jason Makaneole may accompany Pacific Legacy archaeologists.

d. How the action will be accomplished (e.g., access; types of equipment, herbicides): Archaeological monitoring by Pacific Legacy will be conducted during periodic site visits in order to document the findings of any newly identified historic properties and to ensure that clearing activities do not impact historic properties. Prior to the initiation of clearing activities, the archaeological monitor will conduct a pre-clearance orientation and briefing for the work crew. This briefing will focus on the type of archaeological sites and features that may be encountered, and what actions should be taken in the event that an archaeological site or feature is identified. Site visits will be conducted on a monthly basis during clearing activities, and will include pedestrian survey of areas that have been subjected to clearing and photographic documentation of those areas. Scaled plan maps and written descriptions of identified archaeological sites and/or features will be prepared.

Coastal Wetland Restoration (NCWCG funded)

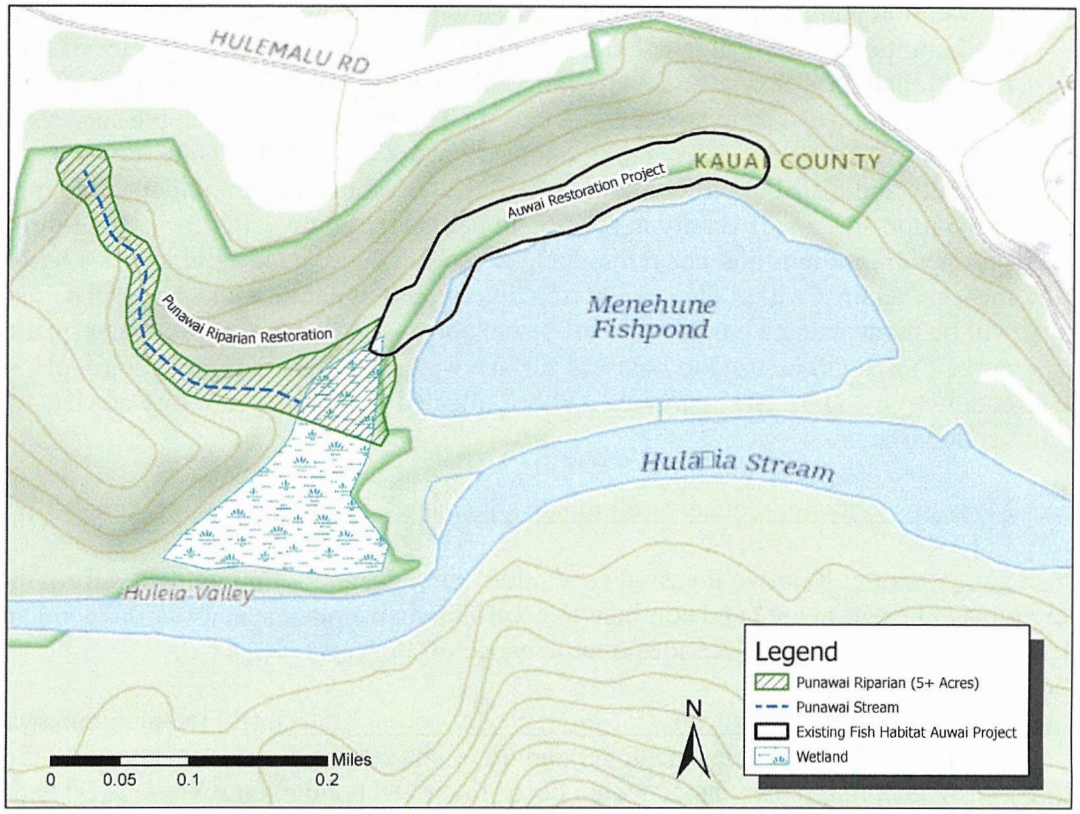




Hulē'ia Wetland Restoration Project
National Wetland Inventory Map
- Showing that once restored, the 22-acre project area will be 100% estuarine wetland after removing invasive vegetation and reconnecting the hydrology

The project consists of clearing approximately 15-acres of invasive red mangrove (*Rhizophora mangle)* that covers the left bank of Hulē'ia Stream, and 7-acres of invasive grasses and shrubs. The project area is just upstream from Alakoko fishpond on the Hulē'ia Wildlife Refuge (see map above). The amphibious excavator will use two techniques, one for each vegetation type. For the mangrove, a grinder head will be attached to the 60-ft arm and will grind the trees in place leaving a mat of mulch to suppress seedling re-growth. Next, the grasses, which have formed a ~4-ft mat of dead vegetative material with new growth on top and in between, will be removed by attaching a grapple with thumb to lift and roll back. sections of this vegetative mat will be hauled to an upland area and later used as mulch in upland restoration projects. After clearing the invasive vegetation, Malama Huelia will replant with native wetland vegetation where suitable. The invasive species removal will primarily be done with the amphibious excavator with support of the restoration crew and planting will be hand labor by the MH restoration crew and volunteers (as appropriate).

Riparian Restoration (FHP funded)



This project will dovetail, but not overlap, with the funded 2023–2025 NCWCG mangrove removal project on the Huleia Wildlife Refuge land and the previous year's fish habitat partnership project restoring the historic auwai adjacent to Alakoko fishpond. This punawai and riparian corridor are a significant freshwater source feeding into the complex of wetlands and historic auwai (with additional springs) contributing to the water chemistry balance needed to support a thriving native fish ecosystem. This project will enhance the hydrologic connectivity of the freshwater streams, Huleia River (tidally influenced) and the fishpond resulting in amplified positive impact to the native fish in the system. Descriptions of individual project components follow.

Project component 1: Inventory existing site conditions, identify any existing native vegetation, and develop a suitable planting plan including species and sequencing for staged restoration. Collect monthly water quality data and biannual fish surveys.

a. Where this action will occur (location, size of action footprint): Five-acre punawai riparian restoration area

b. When this action will take place (timing, frequency, duration): Existing site conditions and native vegetation will be documented prior to punawai riparian restoration. Water quality data will be collected monthly and fish surveys quarterly.

c. Who will do this action (type and number of personnel): Mālama Hulēʻia staff including Sara Bowen, Peleke Flores, Punohu Kekaualua, Kaniho Giminiz, and/or Jason Makaneole, Peleka Andrade, Puakea Mookini-Oliveira, Leinalu Enesa (intern)

d. How the action will be accomplished (e.g., access; types of equipment, herbicides): Existing plant species will be identified and mapped during site reconnaissance. Restoration plant community descriptions and planting plan will be developed based on site conditions. The Biological monitoring focuses on target native species of freshwater fish through habitat type and water movement conditions. There are 5 native oopu species, 2 prawn/shrimp species, and one snail species prioritized in the surveys but other native/non-native, depending on location, are cataloged to better understand diversity and distribution within the stream/river community. By understanding population size and diversity in relation to habitat based on water movement through seasonal migrations and behavior changes, we can better gauge and assess a baseline to measure against within the context of a diverse and dynamic ecosystem. Observations will be made using a combination of visual above water and snorkel. Water quality probe (YSI) will be used to measure surface water parameters (temperature, pH, salinity, conductivity, DO). Grab samples will be collected to measure turbidity at MH headquarters.

e. Measures to avoid, reduce, or eliminate adverse effects on the environment:

Project component 2: Remove invasive vegetation, garbage, and sediment/debris from the 5-acre punawai riparian area and continue to control invasive plant species in fishpond and historic auwai restoration project sites (maintenance of 26-acres).

a. Where this action will occur (location, size of action footprint): Five-acre punawai riparian restoration area. The upper and lower reaches have different approaches (see below). Habitat maintenance would occur in the fishpond mangrove removal and historic auwai restoration project sites.

b. When this action will take place (timing, frequency, duration): This action will begin once we have the notice to proceed and will occur throughout the project period.

c. Who will do this action (type and number of personnel): The amphibious machine operations will be conducted by our contractor BCI (Lance Taniguchi-Fu and Drew Porter) all other operations will be done by the MH crew (Punohu, Kaniho, Jason, Peleke) and some volunteer days (once the compatibility determination and SUP are in place).

d. How the action will be accomplished (e.g., access; types of equipment, herbicides): The lower reach of the riparian area (see purple hatching on map X) is primarily covered in Hau bush. It will be ground in place using the amphibious excavator. The non-native vegetation in the upstream reach will be selectively hand cut and cleared. In most cases the cut trees will be bucked onsite and used within the restoration area to protect native outplantings. Vegetation that is not used will be chipped into mulch. Ideally the chipper will be small enough to tow with the ATV and used onsite, alternatively the material will be hauled with the ATV to a suitable location (the closest location that the chipper can reach). Garbage removal will be hauled to a rented dumpster at Hulemalu Road using the ATV. Quarterly the 26-acre invasive species maintenance will be conducted using the best techniques for the areas identified (weed eater, hand pulling or machine mulching).

Sediment removal to clear stream flow blockages will be conducted by hand.

e. Measures to avoid, reduce, or eliminate adverse effects on the environment:

Project component 3: Propagate and plant native wetland and riparian vegetation, including in the 5-acre punawai riparian area.

a. Where this action will occur (location, size of action footprint): Five-acre punawai riparian restoration area. Plant propagation will occur at the MH plant nursery.

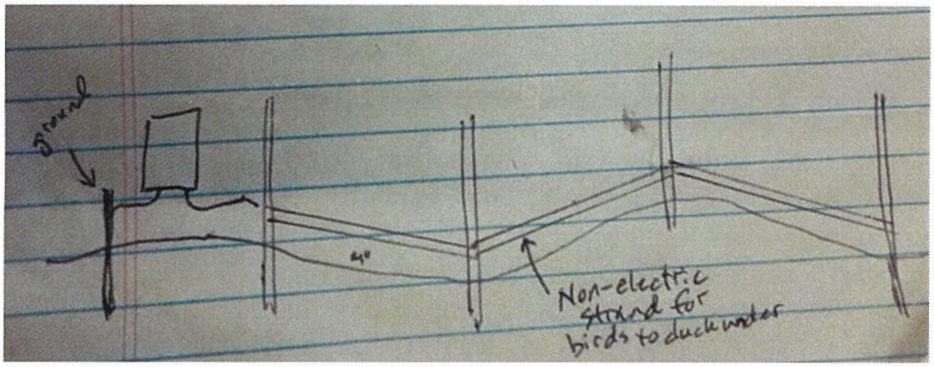
a. When this action will take place (timing, frequency, duration): Planting will follow selective tree cutting and clearing and will likely occur after 2024 bat rearing window (June 1 – September 15).

b. Who will do this action (type and number of personnel): MH staff and volunteer

c. How the action will be accomplished (e.g., access; types of equipment, herbicides): Planting and seeding will be via hand labor by the Mālama Hulē'ia restoration crew and volunteers (as appropriate).

d. Measures to avoid, reduce, or eliminate adverse effects on the environment:

Project component 4: Install fencing to reduce damage from feral pigs.



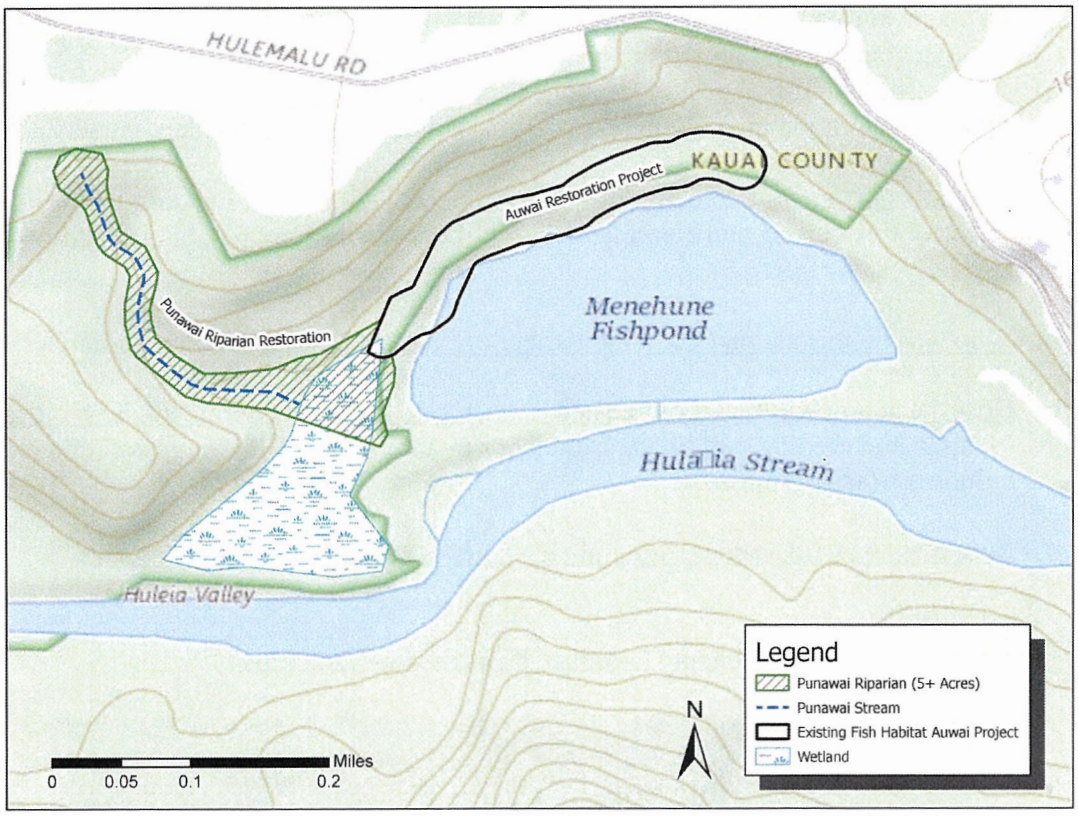
a. Where this action will occur (location, size of action footprint): The temporary electrical fencing will occur in small ~ 0.5-acres sections surrounding new native outplantings to reduce the potential impact of feral pigs within the 5-acre riparian restoration project area.

b. When this action will take place (timing, frequency, duration): This action will take place within year two of the project period (2025)

c. Who will do this action (type and number of personnel): Malama Huleia (Jason, Punohu, Kaniho)

How the action will be accomplished (e.g., access; types of equipment, herbicides): The diagram shows a non-electrified wire (4" above ground) below a single strand of electrified wire (~7" above ground). The electrified wire would also be set back behind the non-electrified wire by approximately 1.5". This design will reduce the chances of waterbirds getting shocked by either A) causing a bird not to touch the single strand of electrified HOT wire by "ducking" under a

non-electrified wire ~3 inches below it (see image above). A pig would push right up into both and get shocked.



In summary, this project will dovetail, but not overlap, with the funded 2023-2025 NCWCG mangrove removal project on the Huleia Wildlife Refuge land and the previous year's fish habitat partnership project
restoring the historic auwai adjacent to Alakoko fishpond. This punawai and riparian corridor are a significant freshwater source feeding into the complex of wetlands and historic auwai (with additional springs) contributing to the water chemistry balance needed to support a thriving native fish ecosystem. This project will enhance the hydrologic connectivity of the freshwater streams, Huleia River (tidally influenced) and the fishpond resulting in amplified positive impact to the native fish in the system.

1. Inventory existing site conditions and identify any existing native vegetation
2. Develop a suitable planting plan including species and sequencing for staged restoration
3. Plant native vegetation *prior to removing the invasive canopy in order to prevent conditions for additional invasive species to take over
4. Remove invasive vegetation, garbage and sediment/debris from the 5-acre punawai riparian area
5. Continue outplanting the 5-acre area with native wetland and riparian
vegetation
6. Install electric fencing to reduce damage from feral pigs in the area
7. Collect data to support the project monitoring and evaluation outcomes
8. Provide quarterly maintenance (removal of new invasive species growth) to the fishpond and historic auwai restoration project sites (26-acres)

Proposed Operations Plan

Please discuss what species you intend to raise in the pond, and your proposed methods of stocking, raising, and harvesting these species.

The work described in this application is to continue restoration of the loko i'a system and is not yet proposing operations.

Consistency with Ho'ala Loko I'a Program

Please discuss how this proposal is consistent with Conservation District Use Permit (CDUP) ST-3703 (available online at dlnr.hawaii.gov/special-projects) **and which tier-level the project falls under.**

The work proposed is part of Malama Huleia's overall goal of restoring the Alakoko fishpond system. The proposed projects are consistent with the CDUP ST-3703 activities of restoring the hydrologic connectivity and function of the fishpond by restoring the adjacent wetlands and punawai as well as removal of mangrove overgrowth using mechanized equipment.

Best Management Practices

Please discuss the BMPs that will be followed to protect both the environment and the integrity of the pond (users' guide forthcoming).

- An archaeological preservation plan has been developed for Alakoko. The proposed project areas will be amended into that plan with a pre-clearing survey and post project survey and report
- Work to be timed for optimum tidal conditions; when tide is low to avoid water quality impacts
- Silt curtains will be used where necessary to contain any potential sedimentation/woodchips in
  the water
- Turbidity will be monitored
- ESA, Section 7 guidelines developed for the first two phases of the fishpond restoration (mangrove removal, sediment management and wall restoration) project(s) will be followed. Including monitoring for waterbirds.

The following measures will be taken to avoid and minimize impact to Hawaiian waterbirds:

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of threatened and endangered species on-site. Contractor(s) will be provided with bird identification and protocol training prior to beginning work.
- A qualified biological monitor (Archipelago Research and Conservation and Mālama Hulē'ia staff) will conduct Hawaiian waterbird and nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Surveys would be repeated again within three days of initiation of project activities, and after any subsequent delay in activities of three or more days. If a nest or active brood is found:
  - Any documented nests or broods within the project vicinity will be reported to the US Fish and Wildlife Service (Service) within 48 hours.
  - A 100-foot buffer will be established and maintained around all active nests and/or broods until the chicks/ducklings have fledged. No potentially disruptive activities or habitat alteration should occur within this buffer.

    - If a listed Hawaiian waterbird is observed within the project site, or flies into the site while activities are occurring, the biological monitor (Mālama Hulē'ia staff) will halt all activities within 100 feet of the individual(s). Work will not resume until the Hawaiian waterbird(s) leave the area on their own accord.
    - A biological monitor familiar with the species' biology (Mālama Hulē'ia staff) will be present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.
- A report will be submitted to the Service within 30 days of project completion. The report will include the results of Hawaiian waterbird surveys, the location and outcome of documented nests, and any other relevant information.
- A24 Goodnature traps will be at least 15 meters from any known listed species nest or frequently visited area. Live traps will occur at least 30 meters from any known nest site. Live traps will have a shade to reduce heat stress and will be checked daily when open. A ring barrier and/or other bird exclusion materials (e.g., metal mesh barrier/hurdle or box) will be placed in front or over live traps to reduce any non-target species catch.

The following measures will be taken to avoid impacts to the Hawaiian geese:

- The qualified biological monitor will conduct a survey for the Hawaiian goose prior to the initiative of any work, or after any subsequent delay in work of three or more days. The same protocol for the Hawaiian waterbirds will be conducted for the Hawaiian goose.
- If a nest is discovered, work will cease and the Service will be contacted for further guidance.
- Predator trapping will occur at least 30 meters from any known nest site. Live traps will have a shade to reduce heat stress and will be checked daily when open. A metal mesh barrier/hurdle or box will be placed in front or over live traps to reduce any non-target species catch.

The following measures will be taken to avoid impacts to the Hawaiian Hoary Bat

- Woody plants greater than 15-feet tall will not be disturbed, removed, or trimmed during the bat birthing and pup rearing season, which is June 1 through September 15th.
- Site clearing will be timed to avoid disturbance to the Hawaiian Hoary Bat.
- Do not use barbed wire for fencing.

The following measures will be taken to avoid impacts to seabirds:

- Mangrove removal activities will only occur during daylight hours.

Certification

I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attachments and exhibits is complete and correct. I understand that the failure to provide any requested information or misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, or for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the Land Board.

I hereby authorize representatives of the Department of Land and Natural Resources to conduct site inspections on my property. Unless arranged otherwise, these site inspections shall take place between the hours of 8:00 a.m. and 4:30 p.m.

Signature of authorized agent(s) or if no agent, signature of applicant

Authorization of Agent

I hereby authorize _____ to act as my representative and to bind me in all matters concerning this application.

Signature of applicant(s)