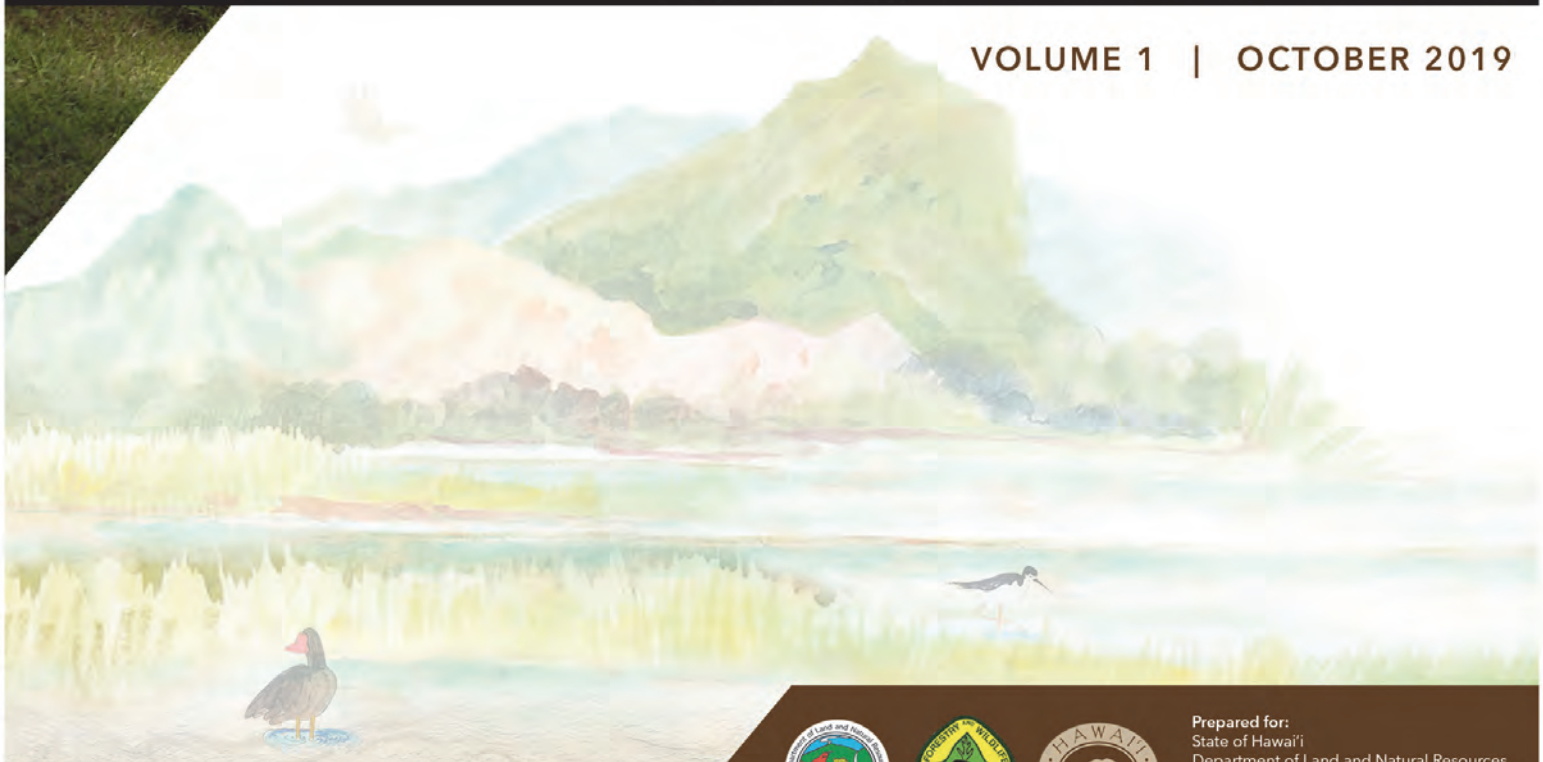
KAWAINUI-HĀMĀKUA MASTER PLAN PROJECT

FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME 1 | OCTOBER 2019



Prepared for:
State of Hawai'i
Department of Land and Natural Resources,
Division of Forestry and Wildlife
and
Division of State Parks

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FOR THE

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October 2019

This Final Environmental Impact Statement and all ancillary documents were prepared under the signatory's direction or supervision, and the information submitted, to the best of the signatory's knowledge, fully addresses document content requirements as set forth in Chapter 343, Hawai'i Revised Statues, and sections 11-200-17 and 11-200-18, Hawai'i Administrative Rules, as applicable.

Proposing Agency:
Division of Forestry and Wildlife
Department of Land and Natural Resources
State of Hawai'i

Suzanne D. Case, Chairperson **Date**
Board of Land and Natural Resources

Accepting Authority:
Governor
State of Hawai'i

PREFACE

This Final Environmental Impact Statement was prepared pursuant to Chapter 343, Hawai‘i Revised Statutes, and Title 11, Chapter 200, Administrative Rules, Department of Health, State of Hawai‘i.

The following notation has been used to depict substantive changes to this document from the previously published Draft Environmental Impact Statement based upon the comments received.

1. Insertions are shown in the color “orange” with an underline [new insertion].
2. Deletions are shown by two lines striking through it [~~double strike through deletion~~].

In order to maintain legibility, formatting changes and other non-substantive changes made to this document have not been depicted with an “orange” underline or double strike through. Non-substantive changes include, but are not limited to, items such as revisions to headers and footers, table of contents updates for page numbers, page and paragraph spacing, formatting refinements, grammatical corrections, and revisions reflecting this document as a “Final” EIS instead of a “Draft” EIS in the page header.

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Prepared by: AECOS, Inc. November 2017

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Prepared by: AECOS, Inc. October 2017

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Prepared by: Cultural Surveys Hawaiʻi, Inc. September 2017

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Prepared by: Julian Ng Incorporated, October 2017

ACRONYMS

AAQS	ambient air quality standards
AHD	Ameron HC&D
AIS	archaeological inventory survey
AML	ʻAhahui Mālama I Ka Lōkahi
AMSL	above mean sea level
BMP	Best Management Practices
BLNR	Board of Land and Natural Resources
BWS	Board of Water Supply
CAD	computer aided design
CCRT	Center for Conservation, Research and Training
CDP	census designated place
CDUP	Conservation District Use Permit
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CIA	Cultural Impact Assessment
CMC	Castle Medical Center
COE	U.S. Department of Army, Corps of Engineers
CSH	Cultural Surveys Hawaiʻi
CWA	Clean Water Act
CWB	Clean Water Branch
CWRM	Commission on Water Resource Management
CZMA	Coastal Zone Management Act
CZM	Coastal Zone Management
DA	Department of the Army
dB	decibels
dBA	A-weighted sound level
DEIS	Draft Environmental Impact Statement
DES	Department of Environmental Services
DLNR	Department of Land & Natural Resources
DNL	Day-Night Equivalent Sound Level
DOCARE	Division of Conservation and Resources Enforcement
DOE	Department of Education
DOFAW	Division of Forestry and Wildlife
DOH	Department of Health
DP	Development Plan
DPP	Department of Planning and Permitting
DSP	Division of State Parks
DTS	Department of Transportation Services
EA	Environmental Assessment
EAL	Environmental Action Level
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
EMS	Emergency Medical Services
EO	Executive Order
ERNS	Emergency Response Notification System

ESA	Endangered Species Act
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FRP	facility response plan
H-POWER	Honolulu Program of Waste Energy Recovery
HAR	Hawai‘i Administrative Rules
HBG	Ho‘omaluhia Botanical Garden
HECO	Hawaiian Electric Company
HEP	Hawaiian Earth Products
HEPA	Hawai‘i Environmental Policy Act
HHF	Helber Hastert & Fee, Planners
HPD	Honolulu Police Department
HRS	Hawai‘i Revised Statutes
HTA	Hawai‘i Tourism Authority
IPCC	Intergovernmental Panel on Climate Change (IPCC)
ITT	International Telephone and Telegraph
JD	jurisdictional determination
KHCC	Kailua Hawaiian Civic Club
KKAH	Kailua Kau a Ho‘oilo
KPWMP	Ko‘olau Poko Watershed Management Plan
KSLF	Kapa‘a Sanitary Landfill
LCA	Land Commission Awards
LEED	Leadership in Energy and Environmental Design
Leq	Equivalent Sound Level
Ldn	Day-Night Equivalent Sound Level
LID	low impact design
LOS	Level of Service
LUC	Land Use Commission
LUO	Land Use Ordinance
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund
mgd	million gallons per day
MHHW	Mean higher high water
MLLW	Mean lower low water
MOA	Memorandum of Agreement
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NHO	Native Hawaiian Organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
NPDES	National Pollutant Discharge Elimination System

NPL	National Priorities List
OEQC	Office of Environmental Quality Control
OHA	Office of Hawaiian Affairs
OIBC	O‘ahu Island Burial Council
OISC	Oahu Invasive Species Committee
OP	Office of Planning
OWMP	O‘ahu Water Management Plan
PISA	Percentage of impermeable surface area
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental conditions
RFP	request for proposal
RLA	Recovery Land Acquisition
ROE	right of entry
ROH	revised ordinances of Honolulu
SCORP	State Comprehensive Outdoor Recreational Plan
SCP	Sustainable Communities Plan
SEL	sound energy level
SHP	State Historic Park
SHPD	State Historic Preservation Division
SHWS	State Hazardous Waste Site
SIHP	State Inventory of Historic Places
SLH	Session Laws of Hawai‘i
SMA	Special Management Area
SMP	Special Management Area Use Permit
SPCC	spill prevention, control and countermeasure
SPR	State Park Reserve
SUP	special use permit
TCLP	toxicity characteristic leaching procedure
TIAR	traffic impact assessment report
TMDL	Total Maximum Daily Load
TMK	tax map key
TSS	total suspended solids
UH	University of Hawai‘i
UIC	underground injection control
US	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USGCRP	U.S. Global Change Research Program
UST	underground storage tank
VOC	volatile organic compounds
WQC	water quality certification
WQLS	water quality limited segments
XTEZ	Extreme Tsunami Evacuation Zone

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EXECUTIVE SUMMARY

1 KAWAINUI HĀMĀKUA COMPLEX MASTER PLAN

The State of Hawai‘i (State), Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW), in partnership with the Division of State Parks (DSP), is proposing the Kawainui-Hāmākua Master Plan Project (“Project”). The Kawainui-Hāmākua project area encompasses 986.02-acres of State-owned property in the ahupua‘a of Kailua on the Island of O‘ahu. This project area generally includes; 1) the Kawainui Marsh State Wildlife Sanctuary along with other wetland and surrounding upland areas not within this sanctuary (collectively referred to as Kawainui); 2) Ulupō Heiau State Historical Park (SHP); 3) Kawainui State Park Reserve (SPR); 4) Hāmākua Marsh State Wildlife Sanctuary (referred to as Hāmākua); and 5) Pu‘uoehu hillside.

~~The~~ ~~p~~Project improvements stem from a Draft ~~is guided by the~~ Kawainui-Hāmākua Complex Master Plan, which was developed to provide the State DLNR, DOFAW, and DSP with a master plan to guide programming and implementation of future improvements needed in the project area. Master plan components ~~that guide this project~~ were developed to address need in the project area for natural resource restoration and habitat enhancement; cultural practices and stewardship; public access for outdoor recreation and educational opportunities; and resource management. Project initiatives include: 1) natural resource management; 2) cultural resource management; and 3) educational and recreational programs. A summary of project initiatives is provided below. Structures and trails are proposed in the project area that support and further these initiatives. A detailed discussion of these improvements by project subarea can be found in Section 2.2.4.

Natural Resource Management Activities

Wetland Restoration

Wetland restoration within Kawainui would involve the gradual removal of invasive vegetation covering most of the wetland and restoring the area improve with native wetland vegetation. This would allow marsh streams to naturalize, open up surface water flows, establish seasonal mud flats, and improve stream water chemistry. Unimpeded surface water flowing into the area from marsh streams would be allowed to resume its natural course through the area. During the wet season, increased water flow should establish seasonal mud flats along the stream’s natural course. Additional open water and vegetated areas would create additional habitat for endangered waterbirds. Wetland pollutant retention functions would be enhanced by improved streamflow resulting from vegetation removal, benefitting water quality in the marsh and in downstream areas. Restoration work at the Hāmākua includes creating additional wetland areas (up to about 3 to 4 acres) along the mauka end of the wetland by lowering the elevation (cutting)

of adjacent upland areas. Other work planned within this wetland would consist of maintenance activities and improving waterbird habitat.

Upland Reforestation

Upland reforestation would consist of gradual replacement of invasive trees and vegetation with native vegetation. A hybrid ecosystem model for forest restoration is planned to allow native and existing non-native species to mix in a transitional period. This hybrid ecosystem model benefits native biodiversity and aids the process of re-establishing a robust native forest. Since project area uplands have been compromised by non-native invasive species, a process using a direct approach of clearing non-native plants and replacing them with native species is not cost effective or practical. By allowing select non-native plants to remain, particularly those with high canopies, other aggressive invasive species can be contained while understory native species plantings can grow and mature. Once an appropriate density of native vegetation has been restored, remaining non-native species (high canopies) can be removed without allowing invasive species to return.

Storm Water Runoff Improvements

Existing drainage culverts and low lying flood prone areas along Kapa‘a Quarry Road outside the project area discharge stormwater into Kawainui. Existing culverts are generally in poor condition or in complete disrepair. These culverts and flood prone areas would be repaired or improved to mitigate stormwater runoff. One drainage culvert has already been repaired and repairs for three additional culverts along Kapa‘a Quarry Road have been identified. Other existing drainage culverts or flood prone areas along Kapa‘a Quarry Road would be identified and evaluated to determine the appropriate repair or improvement needed. A variety of culvert repair or site improvement options may be implemented. For example, culvert repair would ~~could~~ involve replacement or reconstruction with connection to new piping with headwall along with a grouted rip rap apron to mitigate discharge and erosion of upland areas. At Hāmākua, existing culverts along Hāmākua Drive are generally in good condition and do not appear to cause erosion. However repairs or improvements addressing this area would be implemented as appropriate. Storm water runoff from the Pu‘uoehu hillside would be evaluated to determine if improvements (e.g. detention basins) to minimize erosion are needed to address discharge into Hāmākua. Storm water improvements are necessary along residences near DOFAW’s gated Hāmākua entrance due to occasional flooding when runoff discharges from the hillside during heavy rains. Drainage improvements could include ~~creating~~ structural or site modifications ~~improvements~~ to mitigate stormwater runoff in this area.

Improvements Supporting DOFAW Operations and Resource Management Activities

Maintenance Roads and Bridges

The construction of upland area maintenance roads is proposed to support DOFAW’s project area management and maintenance operations. Existing maintenance roads consist of dirt trails located within some upland areas of Kahanaiki, Mokulana, and the DOFAW management and research station. Existing access roads would be improved to better support DOFAW operational

activities, and ~~while~~ access roads along the southern and eastern ends of Kawainui would also be created to support these operations. Maintenance roads would generally be located well inland with vegetation buffers provided near wetland areas as appropriate. The roads could be constructed of compacted gravel, soil, or reinforced grass. Only DOFAW vehicles or other authorized users would be allowed to use the roads. A bridge~~Bridges~~ would be needed to cross Maunawili Stream ~~and Kahanaiki Streams~~ to connect access roads serving DOFAW's management station and the Mokulana peninsula. The bridge would support DOFAW management activities~~through these areas~~. Specific bridge design would be developed during the design phase when the project is implemented. The proposed bridge would ~~Bridges are proposed to~~ span the stream~~s~~ to not impact its~~their~~ bed or banks. Some maintenance road segments could serve as pedestrian trails during periods determined by DOFAW. A maintenance trail is also proposed at Pu'uoehu hillside to support future reforestation and management efforts.

Predator Control Program
An existing predator control program would continue and be expanded throughout the project area as areas are restored. Traps would continue to be the primary predator control method used to control mongoose and feral cats. Traps would generally be established around the perimeter of the upper reaches of the wetland and extend into the upland areas.

Fencing
Perimeter fencing with signage is proposed around project area boundaries to deter unauthorized entrance, and physically identify areas under DOFAW or DSP jurisdiction. Fencing would typically consist of about 4-foot-tall wire and vehicle driveway accesses would be gated. Perimeter fencing is already permitted for Kawainui as part of prior approvals and as part of their regular management activities. DOFAW is currently fencing some sections. Protective fencing using similar fencing methods may also be implemented around wetland boundaries to minimize mammalian predator intrusion. Another wetland boundary fencing option would involve usage of wire fencing with interpretive signage. This fencing would also assist in managing ~~human~~ public access outside of restricted or wetland areas, and provide additional protection to environmentally sensitive areas.

Vegetative Buffers
Vegetative buffers are planned between the wetland perimeter and upland areas, serving as a natural buffer. The buffers would aid management of public access by providing a separation from the wetland and complement fencing and appropriate informational signage. This signage would be installed primarily to inform visitors about the site's importance, the legal status of protected waterbirds, and restrictions on public use and behavior.

DOFAW Facility Improvements
Provision of permanent and improved facilities at DOFAW's Kawainui Management and Research Station would support the operation and management of Kawainui, as well as the agency's mission and goals. Specific improvements planned at this management and research station are discussed in Section 2.2.4.4.

Adaptive Management and Monitoring

Long-term project area management will require adaptive management and monitoring of vegetation growth, water flow into wetlands from streams and upland areas, and waterbird nesting and activities. Project area wetlands are natural resources influenced by various environmental conditions changing over time, resulting in the need for adaptive management by DOFAW. Therefore, DOFAW will retain flexibility in their decisions knowing uncertainties exist and management actions could change. This would result in modifications to methods implemented for wetland restoration and upland reforestation efforts. This will improve DOFAW's understanding of the wetland ecological system and guide future decision-making to improve the effectiveness of restoration and reforestation.

DOFAW plans to develop a management plan for Kawainui in coordination with the U.S. Fish and Wildlife Service (USFWS) and U.S. Army Corps of Engineers (USACE) as part of construction requirements of the restoration ponds. Components developed under the management plan will provide a framework applicable to the management and monitoring of both the restoration ponds and other wetland restoration efforts initiated at Kawainui. DOFAW may also prepare a management plan for Hāmākua.

Cultural Resource Management Activities

Cultural resource management activities are intended to meet project objectives to promote cultural practices, education, and stewardship. Proposed improvements seek to create opportunities for non-profit organizations to establish a broader native Hawaiian presence in the project area. The project would allow activities at Kawainui for native Hawaiian traditional cultural practices consisting of: 1) education; 2) environmental stewardship; 3) performing and language arts; and 4) agriculture~~; and 5) sports (canoe)~~. Two areas within Kawainui, Nā Pōhaku and Ulupō Heiau SHP, are already active with restoration activities and cultural practices. Proposed improvements supporting efforts at these locations consist of implementing cultural landscape improvements and providing support facilities (e.g. improved parking, restrooms, and hālau structures). Three new areas within Kawainui have been identified (Kapa'a Cultural Center, and Wai'auia Cultural Center, Kauhale Complex at Pōhakea) for providing additional opportunity to non-profit organizations supporting increased native Hawaiian cultural practices, educational programs, and stewardship opportunities. These areas would allow the establishment of cultural centers or facilities to support these activities. Areas are intended to be developed and operated by non-profit organizations selected though the State procurement process (e.g. Request for Qualifications / Proposals Solicitation). ~~A fourth area would be the Kalāheo Section of Kawainui SPR, where canoe activities and educational programs are proposed.~~

Educational and Recreational Programs

Recreational Improvements

Pedestrian Trails

Trails would consist of: 1) pedestrian trails consisting of unpaved or improved trails in natural areas; and 2) foot trails consisting of unimproved trails similar to hiking trails only accessible by walking. Improved trail sections would be permeably surfaced using materials such as gravel or Grass Crete. Pedestrian trails encompass the majority of trails planned in upland areas. Improved trails using permeable material would be provided at select locations, such as the education center, where Americans with Disabilities Act (ADA) accessibility is provided. ~~Boardwalks are another type of improved trail that would be provided within specific areas to cross low-lying drainage areas or wetland where no suitable upland area is available.~~ ADA regulations require that some new trails designed for pedestrian be made accessible. Trail paving is not required, as long as the surface is firm and stable. Departure from specific accessibility guidelines is permitted where terrain or the prevailing construction practices make ADA compliance infeasible, or if there is potential harm to cultural, historic, religious, or significant natural features or characteristics. The actual alignment and trail design would be determined during the design phase as sections are implemented, and may involve route refinements to avoid sensitive areas, historic sites, or due to terrain and topography of the specific location.

Accessory Facilities

Accessory facilities are proposed along the pedestrian trails. Facilities include observation decks, shelters (e.g. open pavilion), restrooms, interpretive devices, and directional signage. Observation decks and shelters would provide public opportunity to view Kawainui and its resources and also support educational program activities. Students would use the trails to access areas where hands-on learning could occur, and observation decks and open pavilions would provide locations for instruction along with shelter ~~form~~ from the elements.

Comfort Stations

Comfort stations, separate from cultural and educational centers, would consist of modular prefabricated structures with either two or four toilets. These small single-story structures would vary in size depending on the number of toilets they contain and would be designed similar to other facilities used in other park sites. Wastewaters could be processed using a leach field or newer green technology (e.g. self-contained restroom with or without utilities). Wastewater in these facilities is stored in a sealed sewage vault that would be pumped by a disposal service similar to other individual treatment systems. Solar power and rainwater collection could also be used as an alternative to utility connections.

Parking Lot and Site Improvements
Parking lots would be designed using pervious surfaces, such as gravel, to encourage compatibility with the surrounding environment. Use of pervious pavers allows for continued stormwater infiltration and pollutant removal. Filter strips and bioswales would also be incorporated in parking lot design, slowing stormwater runoff, reducing sediment transport, and increasing infiltration. Other site improvements would incorporate low impact design (LID) elements that aim to maintain the area's natural, pre-development hydrology. LID elements would reduce impervious cover and provide source control for stormwater management.

Education Center
An educational center for visitors is proposed at Pōhakea in the Nā Pōhaku Section of the Kawainui SPR. This facility would function as both an educational and interpretive center, and is envisioned to include space for informational and educational materials, interpretive exhibits and displays, restrooms, administrative offices, vehicle parking, and other accessory support facilities. The educational center would serve as a starting point for visitors to Kawainui and serve as a base location for accessing pedestrian trails in surrounding areas along Kahanaiki and at Nā Pōhaku. Programs would educate visitors about the importance of wetlands and the area's cultural resources, creating more engaged and knowledgeable community stewards. DSP plans to first provide an off-street parking lot, restroom facility, and open pavilion to support programs either as an interim or potentially a permanent basis before proceeding with the education center. These improvements would be sited in generally the same location where the education center is.

Educational Programming and Stewardship

DOFAW and DSP propose to create opportunities to allow specific venues at the project area to support an integrated program of education, scientific research, service learning and community stewardship. The program would be based on three themes common to managing wildlife sanctuaries, historical parks, and passive recreation areas: 1) natural and cultural resources; 2) community stewardship; and 3) education. The curriculum and activities would target elementary through graduate level students in partnership with non-profit organizations, schools, and universities. Service learning projects would involve a teaching strategy, involving both students and adults, which integrate meaningful community service with instruction and reflection to enrich experience, teach civic responsibility, and strengthen communities.

Education and Scientific Research Activities
School groups can participate in scientific data collection at project area marshes. Students would learn to analyze data collected and help create long-term data sets that could be used by DOFAW in existing or planned resource management projects. To support consistency and long-term availability, data collected and projects initiated would be developed using criteria and techniques established by DOFAW. Educational programs could also include research regarding avifauna and mammals, water quality sampling, and other topics increasing public knowledge of area resources and habitat. A DSP interpretive program would improve understanding and appreciation of Hawai'i's natural and cultural resources. The education center at Pōhakea ~~and~~

~~interpretive elements at Kawainui SPR, Kalāheo are~~ is an example~~s~~ of ~~areas with~~ improvements supporting DSP's program. Signage specifications based upon DSP's standards would be used for the design and installation, as appropriate, of interpretive material. DSP would continue to work with non-profit organization partners to provide additional interpretive and educational opportunities.

Service Learning Projects

DOFAW currently sponsors service learning projects to provide students and adults with "hands-on" knowledge about basic wetland functions, native/invasive species, and management techniques for restoring wetland functions. DOFAW would continue to work with established partners to expand educational and service learning programming. The expanded program will allow school groups and community organizations participating to collect and share data, and learn important scientific information-gathering techniques in the process. The pedestrian trail, accessory facilities, education center, and several educational and cultural resource areas previously discussed all provide many opportunities to support and expand participation in service learning projects. Examples of service learning activities could include repairing and maintaining predator fencing, removing invasive plants and replanting areas with new native plants, and/or conducting bird/plant surveys.

Community Stewardship

DOFAW and DSP will work with current and future non-profit organizations to support project area maintenance as part of community stewardship opportunities. Some areas are already proposed for possible use by a non-profit organization for cultural use and practices (e.g. Waiʻauia and Kapaʻa Cultural Centers) that will include stewardship of surrounding areas in partnership with DOFAW and DSP. The DSP already has curatorship agreements with several Hawaiian organizations to perform cultural landscape restoration and cultural practices, and additional partners will be sought for other areas (e.g. Kawainui SPR, Kalāheo).

DOFAW has been conducting volunteer days at Kawainui's restoration ponds since 2013. DOFAW has partnered with several community organizations for restoration pond maintenance through their "adoption" of a particular pond. DOFAW will continue to partner with more community organizations to either adopt or support restoration pond maintenance by participating in DOFAW community service projects.

2 SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES

The following is a summary of significant impacts and proposed mitigation measures discussed in Chapters 3, 4, and 5 of the DEIS.

Geology. The project is not expected to adversely impact project area geology. Wetland restoration and upland reforestation initiatives would not involve extensive cut or fill activities. Additional drainage improvements along Kapa‘a Quarry Road (north of Kahanaiki) would further reduce discharge of sediment, plant material, and other debris into the wetland. These efforts would have a positive impact by slowing or reversing the process of terrestrialization and the loss of wetland habitat due to human-influence from urbanization, infilling, and other land modification activities. Specific project initiatives such as education programs and community service projects would increase public awareness of the area’s geologic history and Kawainui’s long term terrestrialization. Community participation in these programs and activities would further support DOFAW’s efforts to slow or reverse the process of terrestrialization and the loss of wetland habitat.

Construction of proposed facilities should have minimal, if any, effects on project area geology and the terrestrialization of Kawainui’s wetland. Some grading in specific areas may be required to level site conditions for proposed facilities, but such activities should have minimal effect on area geology. Sustainability components and BMPs would be incorporated into such facility design to minimize geologic impacts. Stewardship responsibilities undertaken by non-profit organizations as requirements for managing their areas would support DOFAW’s efforts in maintaining wetland areas and support reversal of terrestrialization.

Topography. Project wetland restoration activities should not adversely impact site topography because removal of invasive vegetation occurs within the upper foot of the ground surface. BMPs would be incorporated in excavation plans to prevent discharge of material into the wetland and to minimize sediment discharges during heavy rains. Large scale grading is not proposed as part of upland reforestation, although minor reshaping of certain areas may occur to accommodate a DOFAW vehicle maintenance trail. Impacts associated with reforestation efforts would primarily involve short-term construction-related effects. There should not be long-term impacts on the topography of upland area because activities would consist of management and maintenance activities (e.g. cutting grass, trimming trees, etc.). BMPs would be incorporated in design plans to address short-term impacts. Drainage repairs and improvements occurring along Kapa‘a Quarry Road and within upland areas would have a positive impact by reducing ongoing erosion in those areas.

Construction of path segments around Kawainui would not significantly impact project area topography. Several path segments along with boardwalks have been eliminated from the project, further reducing impacts on topography. ~~Except for the boardwalk sections, the~~ The path

would be cleared of vegetation only, and would follow the existing topography. Some leveling activities may be required for improved pedestrian trails and sections meeting ADA requirements (e.g. trails to the education center), but such changes should not significantly impact topographic conditions. Grubbing and grading activities required for proposed structures are anticipated to be minimal. In particular, structures constructed for the education center would require grubbing and grading of the sites to accommodate building footprints. Given the sloped topography of the education center site, the building would be designed using post and pier construction to minimize the need for grading. BMPs would also be incorporated in design plans to address short-term impacts, such as erosion, during construction activities. Final site conditions, siting of building footprints, and BMPs implemented would be developed during the design phase of improvements.

Soils. No adverse impact to soils are anticipated as a result of wetland restoration and upland reforestation activities. Wetland restoration improvements would not impact wetland soil characteristics because associated activities predominantly involve cutting vegetation and removing the peat mat within a few inches from the surface. This would not disturb sediment below the vegetation. Restoration activities within Hāmākua will include excavating adjacent lowland areas that are predominantly comprised of fill material. Excavated material would likely be dispersed within the Hāmākua area, and thus should not significantly alter overall soil conditions of the site. Upland reforestation efforts would essentially consist of landscaping activities that would not involve extensive cutting or filling of the existing terrain. Therefore, activities should have minimal impact on the area soil conditions. Additional drainage improvements implemented along Kapa‘a Quarry Road (north of Kahanaiki) would have a positive effect on area topography by further reducing erosion and discharges of sediment, plant material, and other debris into the wetland. Associated impacts would primarily involve short-term construction-related effects. Long-term impacts on soil conditions are not anticipated because activities would consist of management and maintenance activities. Therefore, BMPs would be incorporated in plans for additional upland areas to address short-term impacts. Actual BMPs implemented will be developed during the final design phase for areas.

Proposed buildings, driveways and parking areas have been sited to minimize grading and potential impacts on soils from erosion. Design features can be incorporated to minimize site disturbance and reduce erosion potential (e.g. post and pier design of buildings). BMPs would also be incorporated in design plans to address short-term impacts during construction activities. In particular, the education center is proposed on a sloped area and is envisioned to be built with post-and-pier construction to minimize~~ing~~ ground modification. The structure’s parking area and associated entry road has been sited to minimize grading. Construction of the trail segments around Kawainui would have no significant impact on soils (HHF, 2003). Additionally, several trail segments have been eliminated from the proposed project, further reducing potential impacts to soils. Some leveling of site conditions may be required for improved pedestrian trails and sections meeting ADA requirements ~~(e.g. trails to the education center)~~, but such changes should not significantly impact soils. During construction, BMPs would be utilized to manage stormwater and potential erosion during larger storm events. Once the structures and trail

segments are completed, there would be no long-term impacts on soils. Actual BMPs implemented will be developed during the final design phase for improvements.

Biological Resources.

- **Botanical Resources.** Proposed improvements would not have an impact on Federal or State-listed threatened or endangered, or candidate threatened or endangered botanical species because none were observed during current and prior botanical surveys. Wetland restoration and upland reforestation initiatives would have a positive impact on area botanical resources primarily by replacing invasive vegetation with native vegetation. The construction of the proposed pedestrian trails~~, boardwalks,~~ and structures would not have an adverse impact on botanical resources. Sites proposed for facilities such as the education center consist mainly of non-native invasive vegetation. Improvements would support clearing these alien vegetation and replacing them with native vegetation. The education center would enhance environmental education for visitors and residents by emphasizing the importance of controlling invasive species and restoring native vegetation. Permanent facilities proposed at DOFAW's management and research station would support DOFAW restoration and management activities at Kawainui. Improving these management capabilities would have a positive effect in organization restoration abilities resulting in a beneficial influence on botanical resources.
- **Avifaunal Resources.** Project wetland restoration improvements would have a beneficial effect by expanding nesting and foraging habitat for native waterbirds. The primary impact from wetland restoration and upland reforestation improvements would involve disturbance of nesting birds during the nesting season. Minimization measures to address these impacts would involve specific restoration activities being conducted in periods when waterbirds are not nesting. DOFAW's ongoing management and predator control activities would continue. Activities include fencing and trapping to reduce threats to nesting birds from mongoose, feral cats, and humans. DOFAW project area biologists have not had issues with adverse impacts to non-target protected avian species (i.e. Hawaiian Moorhen). If needed, the appropriate entities (e.g. the U.S. Fish and Wildlife Service) would be consulted to practicably modify trapping techniques to minimize potential impacts to non-target protected avian species. Short-term construction of structures is not expected to have a significant impact on endangered waterbirds because important nesting habitat are not located near proposed sites. To minimize and avoid adverse construction effects, management measures such as having an experienced biologist survey the area for suitable nesting habitat would occur to ensure nests are not impacted. Once constructed, the main potential impact improvements pose to endangered waterbirds continue to be disturbance of nesting birds by visitors. To minimize these impacts, DOFAW may enact mitigation measures including imposition of additional restrictions on public access within certain areas or times of year, e.g., during bird nesting season. Primary potential impact to endangered seabirds are from outdoor building and site lighting that may disorient these birds. Although endangered seabirds were not detected in the project area, appropriate design requirements, such as shielding of bulbs,

would be implemented to mitigate impacts on seabirds that may overfly facilities constructed within upland areas.

- **Mammalian Resources.** All terrestrial mammals within the project area identified in the project's biological survey are alien species and are deleterious to native ecosystems. No mammalian species currently proposed for listing or listed under either the federal or State of Hawai'i endangered species statutes was identified. Wetland restoration and upland reforestation efforts should not adversely impact mammalian species present. Existing invasive mammalian species would continue to be present, threatening endangered waterbirds. DOFAW will continue and expand this trapping program to control invasive mammals present as they monitor the progress of wetland restoration and waterbird activity. Short-term construction impacts for proposed improvements should not impact project area mammalian species. Measures would be implemented to avoid impacting Hawaiian hoary bats that may be present. These measures include avoidance of clearing large trees and shrubs (taller than 15 feet) during birthing and rearing season (June 1 through September 15). Construction of recreational trails will allow greater public access to the project area and may increase the presence of domesticated dogs, which are often walked illegally within portions of the project area designated as State Wildlife Sanctuaries. DOFAW would continue to enforce rules prohibiting pets in these wildlife sanctuary areas under their jurisdiction, and visitors to the education center and associated upland areas would similarly be prohibited from bringing pets.

Water Resources.

- **Streams.** Wetland restoration and upland reforestation activities would reduce adverse impacts of invasive vegetation expansion on project area streams. Removal of invasive vegetation would occasionally require the use of herbicides. DOFAW has obtained State NPDES general permit coverage for application of herbicide and pesticide within wetland and wildlife sanctuaries statewide. Compliance with permit conditions and application practices would ensure negative impacts on streams and their water quality do not occur. Proposed structures or trails would not impact streams or stream flows. In particular, proposed trails supporting access for DOFAW maintenance vehicles ~~and pedestrian recreational activities~~ would include a bridge spanning ~~span~~ Maunawili Stream near DOFAW's management station. ~~select areas of specific project area streams. Bridges may be utilized so stream flow is not altered, minimizing environmental impacts. Boardwalks would be used to cross drainageways, and would minimize effects on them by not altering or preventing discharges when they occur.~~ Proposed facilities and parking structures would incorporate LID elements such as permeable pavers that would minimize stormwater runoff produced by additional impermeable surfaces created. Site design for improvements would incorporate measures to detain increased runoff generated. As a result, the net increase in site stormwater runoff should generally equal existing conditions and not significantly impact existing drainageways or streams. Actual LID elements incorporated would be determined in the design phase of improvements.

- **Wetlands.** Wetland restoration and upland reforestation would have beneficial impacts to wetland health and function. These efforts would replace non-native invasive vegetation with native vegetation and reduce terrestrialization of Kawainui and expand wetland area at Hāmākua. Specifically, most facilities proposed are intended to support DOFAW and community partners who are involved in wetland restoration efforts. These facilities would provide additional parking, restrooms, and equipment storage for volunteers which would facilitate more effective restoration efforts. These improvements would be designed using LID elements when feasible to minimize their impact to project area natural resources. Proposals for cultural activities and facilities are consistent with Ramsar guidance applicable to the project area's designation as a Ramsar Wetland of International Importance. In particular, the project is consistent with Ramsar guidance to consider indigenous populations and ensure their active participation in wetland management and is also consistent with the Ramsar wise use principle.
- **Water Quality.** Wetland restoration activities would have positive impacts on the water quality of project area water bodies. A State DOH NPDES permit for construction activities was obtained by DOFAW for Kahanaiki restoration and reforestation improvements. The permit includes several conditions and requires implementation of proposed BMPs to minimize discharges into the wetland, further mitigating stormwater discharge impacts on wetlands and streams resulting from these activities. DOFAW also has General Permit Coverage under this NPDES for the use of approved herbicide within Kawainui. Compliance with permitting requirements would also ensure there are no negative water quality impacts from herbicide usage. Best management practices would be employed during the implementation of these restoration activities. Construction of proposed structures and trails may increase runoff and transported sediments due to grubbing and grading activities implemented. Best management practices will be utilized to minimize these impacts such as usage of silt fencing. Design strategies including design of structures to conform to existing topography to minimize the amount of required grading would also reduce runoff impacts. Specific best management practices and strategies used would be determined during the design phase of improvements. Anticipated runoff generated from proposed improvements would likely have an insignificant and unmeasurable impact to project area water quality. Adverse impacts are not anticipated because improvements would occur in specific areas around the perimeter of both wetlands that are smaller than undeveloped areas. Kawainui and Hāmākua's wetland cleansing functions would continue to protect downstream waters and ~~may~~ have the capacity to cleanse additional runoff attributable to project improvements.
- **Aquatic Biota.** Wetland restoration would benefit project area aquatic biota. These efforts would involve clearing of invasive vegetation and the floating peat mat from the wetland, creating more open water areas and allowing existing streams to flow through the area. Creating additional open water area and increasing stream flow would allow sunlight to penetrate into stream waters, allowing algae to~~can~~ generate oxygen. This would improve the suitability of marsh waters as habitat for aquatic biota that travel through or inhabit project area waterways. Reforestation and associated upland improvements, such as drainage enhancement, would also have beneficial long-term

effects for aquatic biota. These efforts reduce erosion and detain stormwater runoff, reducing rates of sedimentation into project area waters. This improves water quality, reduces peat mat and invasive vegetation growth within the wetland, and creates more open water which benefits aquatic biota. Construction of proposed improvements would not adversely impact aquatic biota. ~~Construction within the wetland would be limited to the installation of posts for boardwalk structures. No other structures or modifications are proposed. BMPs would be implemented to mitigate impacts for any ground disturbing activities that may occur. Appropriate permits for this work would be obtained, and associated requirements for water quality monitoring during and after construction would be followed.~~ Recreational fishing will not be allowed within the project area. The gathering of aquatic organisms within the project area, other than in conjunction with DOFAW-approved educational activities, would be prohibited.

Historic, Archaeological, and Cultural Resources

- **Historic and Archaeological Resources.** Project improvements are not expected to adversely impact existing historic or archaeological resources in the project area. Wetland restoration and upland reforestation improvements require minimal ground disturbance to implement and should not impact existing or unidentified resources. Adverse impacts are not anticipated from the implementation of structure and trail improvements. Improvements are either not proposed for location at the site of existing resources~~improvements~~ or can be resited if impacts to existing resources are anticipated. Minimization measures have either been established through SHPD consultation or are proposed to mitigate impacts to undiscovered archaeological resources. Additional details regarding project improvements relative to existing historic and archaeological resources and mitigative measures identified or proposed are discussed in Section 4.1.1.
- **Cultural Resources.** Consultation for the project Cultural Impact Assessment (CIA) determined conservation of water resources and restoration of archaeological and agricultural sites were concerns of individuals consulted. Among other recommendations, the individuals stated that invasive species should be removed from the project area and that native plants and loʻi kalo should be reestablished in the project area vicinity. Overall, the individuals supported preservation and restoration of the project area and recommended the project area remain as a resource for educators and native Hawaiian cultural practitioners. The project and proposed improvements align with the concerns, recommendations, and sentiments of individuals consulted in the project CIA. Section 4.1.2 provides additional details on project area cultural resources and concerns; the impact of project improvements relative to these resources and concerns; and adverse cultural impact minimization measures proposed.

Social and Economic Factors. The project should not adversely impact social and economic characteristics of the project area and the surrounding region. Additional details regarding the impact of the project relative to these characteristics is discussed in Section 4.2. Impacts evaluated include changes to Kailua demographics; effects on business and economic conditions;

influences on community issues (e.g. the potential to attract more tourists to Kailua); and fiscal and economic effects.

Noise. Noise generated by wetland restoration and upland reforestation activities should have minimal impact to existing uses surrounding areas these activities are proposed for. This is anticipated because most adjacent areas are undeveloped or developed with industrial uses. Restoration and reforestation improvements would generate minor short-term noise during the day and would not be scheduled at night. Such activities would temporarily increase ambient noise levels within the vicinity of the work area. To minimize impacts, activities would be limited to regular workday hours. Measures to control construction noise could be used such as mufflers on power equipment and vehicles. If necessary, a community noise permit for construction activities would be obtained from the State DOH. Short term noise impacts would occur during the construction of structures and trails. These impacts are associated with the use of heavy machinery for earthmoving activities and use of equipment by skilled laborers. Construction of trails~~, boardwalks~~ and structures will generate temporary, short-term noise. Adverse impacts to noise conditions from these improvements are not anticipated. Measures to minimize any construction noise impacts that result include the use of mufflers on power equipment and vehicles. Other best management practices would be developed as part of the design plans for these various project improvements. If necessary, a community noise permit for construction activities would be obtained from the State DOH to allow these activities. The permit would include restrictions to help mitigate the potential noise impacts. Once completed, the use of structures and trails would allow increased public access to areas. Activities conducted would generate additional noise primarily in the form of human voices as part of conversations and vehicles entering and exiting sites. Adverse noise impacts should not result on proximate sensitive noise receptors.

Air Quality. Some fugitive dust emissions may arise from dirt moving activities associated with vegetation clearing, replanting of upland areas, and drainage improvements. If required, a dust control plan for upland areas would be prepared and implemented by the contractor in compliance with State air pollution regulations. Dust control measures could involve implementation of a watering program and other best management practices would be implemented at the job site (i.e. tire washing program). Wetland expansion at Hāmākua would require excavating some upland area along the mauka edge of the wetland, generating some fugitive dust emissions. Adverse impacts are not anticipated because there are no existing uses on the mauka side of the wetland where excavation activities would occur. Air quality impacts from project structures and trails are not anticipated. In particular, construction of the education center and cultural centers would involve earthmoving activities generating some fugitive dust. Operation of diesel construction vehicles and machinery would also generate some emissions. Existing residences and other land uses in the immediate area could be affected by short-term nuisance effects primarily from these short-term site preparation activities. State air pollution controls prohibiting visible emissions of fugitive dust from construction activities at the property line would be followed by the contractor. Other BMPs would also be incorporated into design plans for implementation by the contractor, such as a dust control plan. Operation of the

education center and cultural centers and implementation of other activities under the project would generate a relatively small increase in vehicular traffic during the weekday afternoon peak hour. However, this increase would not contribute to excessive congestion at major signalized intersections and would not result in CO emissions from cars waiting at these intersections exceeding the State's one hour AAQS (9 ppm). Federal air pollution control regulations also require new motor vehicles to be equipped with emission control devices that reduce emissions. This would further reduce the potential for incidences of carbon monoxide concentrations in Kailua exceeding state standards.

Transportation Facilities. Wetland restoration and upland reforestation activities should not result in adverse impacts to project site traffic infrastructure. Movement of heavy construction vehicles and equipment may temporarily disrupt traffic on roadways surrounding the project area. However, movement of large equipment would typically be conducted during off peak traffic hours and a permit would be obtained if any oversized and overweight loads need to be transported on State highways. Short term impacts from construction activities related to the development of proposed facilities are not anticipated. Primary adverse impacts may result from the transportation of large cargo and equipment to construction sites. Adverse impacts would be mitigated by avoiding transport of cargo and equipment during peak traffic periods. Other agency requirements and best management practices would be determined during the design phase of improvements implemented. Once project improvements have been implemented, increases to vehicle activities are anticipated to be minimal and should not adversely impact the level of service at study intersections analyzed. The project is not anticipated to result in adverse traffic related impacts in the surrounding area during the peak afternoon hour. Intermittent events at cultural centers may be accessible to the public and may attract a significant number of guests. Bus transportation may be retained by non-profit stewards implementing these events, minimizing the number of vehicle trips required. This would mitigate adverse impacts to project area traffic infrastructure. Adverse impacts to existing bus operations in the project area are not anticipated. Section 5.6.2 provides additional detail on anticipated impacts of the project to surrounding transportation facilities.

Recreational Facilities. Wetland restoration and upland reforestation improvements should not adversely impact recreational facilities within the project area and in the immediate surrounding areas. Permitted recreational activities do not occur within wetland areas that would be impacted by restoration activities. Upland reforestation activities would occur in areas where improvements are proposed. Reforestation activities should not adversely impact recreational usage of proposed facilities because activities can be managed to ensure public access is maintained. Restoration and reforestation activities may generate short-term construction noise and air quality impacts. However, these impacts should not be severe and can be mitigated through compliance with applicable regulations and usage of BMPs. A primary project purpose is to increase public access, educational opportunities, and passive outdoor recreation use within Kawainui, in compliance with Section 6(f) of the LWCF. LWCF grants were used by the State to purchase 173 acres of land within the Kawainui area. Section 6(f) requires these lands be maintained for public recreational use in perpetuity. The creation of pedestrian trails and viewing

platforms to enhance public access supports State compliance with LWCF recreational access requirements. The education center at Pōhakea would support passive outdoor recreation and increased public access. Other project improvements support both public access and outdoor recreation. These facilities and trails with accessory structures would therefore have a beneficial effect on recreational facilities and activities by providing new areas that can be used for passive outdoor recreational activities, increasing public access, and creating viewing opportunities for Kawainui's resources and wildlife. Recreational improvements proposed and their effects is discussed in detail by subarea in Section 5.7.2.

Educational Facilities. Wetland restoration and upland reforestation improvements should not impact existing educational facilities. These activities may generate some short-term construction noise and dust impacts. In particular, dust emissions generated should not impact operations of nearby schools given the distance from the school and contractor compliance with State DOH regulations and permitting conditions. Wetland restoration and upland reforestation also should not negatively impact existing educational programs and service projects occurring in the project area. No programs are occurring within the wetlands. Educational programs or service learning projects can be scheduled for different upland areas that are being used for restoration activities (e.g. contractor staging areas) or reforestation. Restoration and reforestation improvements would have a long-term beneficial effect by providing additional area for educational and community service learning projects. This supports DOFAW opportunities to partner with schools and non-profit organizations to expand educational activities and service learning projects, having a beneficial effect on education. Proposed trails and accessory improvements would have a beneficial effect on educational programs and community service learning projects by improving access within upland areas and allowing students to see and experience the natural environment. Proposed structures such as the education center would support educational programs and community service learning projects in the project area by providing additional facilities where programs can occur or by supplementing the content of program materials with other resources such as cultural practices. In the long-term, facilities supporting environmental and cultural education would increase the public's understanding and appreciation of project area resources. Section 5.9.2 includes a detailed discussion by subarea of educational facilities proposed and their effects.

3 RELATIONSHIP TO LAND USE PLANS AND POLICIES

Non-Governmental

- **Ramsar Convention.** The project supports objectives of Ramsar criterion related to the project area's designation as a Ramsar Wetland of International Importance. The project is also compatible with the Ramsar Convention mission and philosophy; 2016-2024 Strategic Plan; and ~~and aligns with Ramsar~~ culture and sustainable tourism objectives. Project alignment with applicable Ramsar objectives is discussed in Section 6.1.1.

Federal

- **Land and Water Conservation Fund.** Five project area parcels totaling about 173 acres in Kawainui were acquired by the State using federal Land and Water Conservation Funds (LWCF). Once LWCF funds are used, the property must comply with LWCF Act Section 6(f) requirements. In particular, lands purchased with LWCF funds must be protected for public outdoor recreational use in perpetuity. Proposed improvements for lands purchased with LWCF funds will enhance public access and promote outdoor recreational use in accordance with these requirements. Section 6.2.1 discusses project compliance with LWCF requirements.
- **U.S. Fish and Wildlife Service Recovery Land Acquisition Program.** Federal Recovery Land Acquisition (RLA) Program grants support the acquisition of habitat for the management of listed species in support of approved species recovery plans. RLA grant funding was used to acquire the Puʻuoehu Hillside property. The acquisition was intended to support ongoing endangered species recovery actions in Hāmākua Marsh and mitigate marsh water quality issues. Properties purchased with RLA funds must be managed for purposes stated for its acquisition. The project supports and enhances Puʻuoehu's function as a watershed for Hāmākua, consistent with the RLA objectives. Project compliance with RLA acquisition related requirements is discussed in Section 6.2.2.
- **Clean Water Act.** The Clean Water Act (CWA) prohibits the unauthorized discharge of "any pollutant" into U.S. waters from a point source. The CWA also regulates nonpoint source discharge, referred to as runoff or stormwater. The project must comply with CWA Sections 401, 402, and 404. In particular, CWA Section 404 regulates pollutant discharge into U.S. waters through the Department of the Army (DA) permit process. Almost all proposed wetland restoration activities will occur in wetland areas, requiring Section 404 compliance. However, activities may not require a DA permit depending on methods used. Proposed methods involve vegetation cutting using specific equipment, and would not involve grading that would trigger need for a DA permit. ~~In particular,~~ This was established through ~~2012~~ consultation with the USACE for the 2012 Kawainui Marsh wetland Restoration and Habitat Enhancement Project, which proposed wetland restoration and habitat enhancement for about 80 acres of wetland and upland area. The USACE determined project activities and methodology did not trigger need for a Section 404 permit as activities and methodology were considered maintenance in managing wildlife habitat. Wetland restoration activities of the proposed project should be similar to those of the 2012 project. Therefore, issuance of a DA permit should not be required for proposed wetland restoration activities with further USACE consultation occurring as these activities are designed and implemented. ~~determined wetland restoration activities are not regulated under the Clean Water Act and Section 404 compliance was not required.~~ ~~However, portions of trail related improvements may be subject to Section 404 compliance because they may be in jurisdictional wetlands.~~ Trail sections and boardwalks routed across wetland areas previously proposed in the Draft EIS have now been eliminated. Remaining trail sections are located in upland areas and should not trigger need for compliance with the DA permit process. However, drainageways that may be

crossed would be evaluated to determine if improvements are needed or if existing conditions are sufficient. Further consultation~~Consultation~~ with the USACE will occur during the design of ~~these~~ trail improvements to confirm DA permitting requirements. If the USACE determines improvements are located within jurisdictional waters, "fill" activities ~~such as the construction of posts or piles~~ may be subject to Section 404 compliance, requiring issuance of a ~~Department of Army (~~DA~~)~~ permit. Project compliance with these regulations is discussed in greater detail in Section 6.2.3.

- **Section 10, Rivers and Harbors Act of 1899.** The Rivers and Harbors Act of 1899 gives the USACE regulatory authority over virtually any construction, excavation, or fill activities that may impact U.S. navigable waters. Section 10 requirements necessitate a DA permit be obtained from the USACE prior to undertaking any construction, dredging, or other activity occurring in, over, or under or affecting navigable waters of the U.S. No project improvements are proposed across navigable waters.
- **Section 106 National Historic Preservation Act (NHPA).** The National Historic Preservation Act (NHPA) of 1966 provides for the protection and use of historic properties for the benefit of the public. Section 106 of the NHPA requires that federal agencies undergo a review process for all federally funded and permitted projects impacting sites listed on or eligible for the National Register of Historic Places. Project initiatives do not involve use of federal lands or funds. However, a DA permit from the USACE may be required for ~~stream crossings and/or boardwalk segments in wetland areas~~ specific trail improvements crossing drainageways under USACE jurisdiction. As a federal agency, the USACE must consider the effect of authorizing the undertaking (i.e., issuing a permit) in accordance with Section 106 of the NHPA. Therefore, the specific project improvement must comply with Section 106 if a DA permit is required.
- **Section 7, Endangered Species Act (ESA).** The Endangered Species Act of 1973 (ESA) was enacted to protect endangered species and associated ecosystems. Section 7 of the ESA requires all federal agencies to consult with the USFWS and/or the National Marine Fisheries Service (NMFS) if they propose an action that may affect listed species or their designated habitat. Although federal funding is not proposed for project improvements, a federal action is defined broadly to include funding, permitting, and other regulatory actions. Therefore, issuance of a DA permit by the USACE will require consultation with the USFWS and/or NMFS in accordance with Section 7.
- **Coastal Zone Management Act.** The Coastal Zone Management Act (CZMA) of 1972 established a national policy to preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone. It also encourages and assists states to exercise their coastal zone responsibilities through the development and implementation of management programs to achieve wise use of coastal zone resources. Section 307 of the CZMA requires federal agency activities affecting any coastal use or resource to be undertaken in a manner consistent to the maximum extent practicable with the state's CZM program. Project compliance with CZM requirements is discussed relative to the State's CZM program in Section 6.3.6.

State of Hawai‘i

- **Hawaii State Plan (Chapter 226, HRS).** The Hawai‘i State Plan (Chapter 226, HRS) sets forth the goals, objectives, polices, and priority guidelines for growth, development, and allocation of limited resources throughout the State. It contains diverse policies and objectives on topics of state interest including but not limited to, the economy, agriculture, the visitor industry, federal expenditure, the physical environment, facility systems, socio-cultural advancement, and sustainability. Project alignment with applicable provisions of the State Plan is discussed in Section 6.3.1.
- **State Environmental Policy (Chapter 343, HRS).** This Draft EIS is prepared in compliance with Chapter 343, HRS and Chapter 11-200, HAR for the proposed project.
- **State Land Use Districts.** The State Land Use Law (Chapter 205, HRS), establishes the State Land Use Commission (LUC) and authorizes this body to designate all State lands into the State Urban, Rural, Agricultural, or Conservation district. The project area is located within the State Conservation District with upland areas around the perimeter of the marsh in the State Urban District. Section 6.3.3. discusses the project's relationship to State Land Use Districts. The applicability of existing Conservation District Use Permits to the project is also discussed in this section.
- **State of Hawai‘i Wildlife Sanctuaries (Chapter 195D, HRS).** The Board of Land and Natural Resources (BLNR) may issue permits for activities within wildlife sanctuaries for purposes outlined in HAR §13-126-9. All project improvements are consistent with the rules and regulations for a wildlife sanctuary as well as with the intent of the Chapter 195D HRS. Project alignment with State Wildlife Sanctuary requirements is discussed in detail in Section 6.3.4.
- **State Comprehensive Outdoor Recreational Plan (SCORP).** The SCORP provides technical guidance to various Hawai‘i State governmental agencies and private entities in the planning, development, and management of Hawai‘i's outdoor recreation resources. Project alignment with applicable components of the SCORP is discussed in detail in Section 6.3.5.
- **Coastal Zone Management Federal Consistency.** Hawai‘i's CZM program was enacted in 1977, following the passage of the federal CZM Act of 1972. Section 307 of the CZM Act requires that federal agency activities and development projects affecting any coastal use or resource be undertaken in a manner consistent to the maximum extent practicable with the State's CZM objectives and policies. Although the project area is not located on the coast, in Hawai‘i, the entire state has been designated as the CZM area. Activities requiring a federal permit or license (e.g., DA permit) must also be conducted in a manner consistent with the State's CZM program. If a (federal) DA permit is required for project improvements (e.g., drainageways altered for trail improvements~~construction of boardwalk in wetland areas~~), the project must be reviewed for consistency with the Hawai‘i CZM program. Project consistency with State CZM requirements is discussed in Section 6.3.6.
- **Watershed Management Plan.** The State water code (HRS Chapter 174C) mandates that counties prepare and adopt water use and development plans. The City and County of Honolulu's water use and development plan is called the O‘ahu Water Management

Plan (OWMP), and it calls for the preparation and adoption of regional watershed management plans for each of the City's Development Plan (DP) areas. The Kawainui-Hāmākua project area is within the area covered by the Koʻolau Poko Watershed Management Plan (KPWMP). Project consistency with applicable KPWMP objectives is discussed in Section 6.3.7.1.

- **Statewide Greenways System.** In 2011, Hawaiʻi Governor Neil Abercrombie signed into law Act 233, Session Laws of Hawaii 2011, recognizing the benefits greenways and trails can have on Hawaiʻi communities. Act 233 directed the State Office of Planning (OP) to develop a plan to establish a statewide system of greenways and trails. The resulting report to the legislature was entitled "Establishment of Statewide Greenways System for Hawaiʻi". The project's consistency with applicable elements of this report is discussed in Section 6.3.7.2.
- **Aloha+ Challenge.** The State's Aloha+ Challenge is a statewide commitment to building a more secure, sustainable, and resilient future for Hawaiʻi. The Challenge is comprised of six sustainability targets to be achieved by 2030 in the areas of clean energy transformation, local food production, natural resource management, solid waste reduction, smart sustainable communities, and green workforce and education development. The project's consistency with applicable elements of the Aloha+ Challenge is discussed in Section 6.3.7.3.

City and County of Honolulu

- **General Plan.** The General Plan of the City and County of Honolulu is a comprehensive statement of objectives and policies which sets forth the long-range social, economic, environmental, and design objectives for Oʻahu. The 1992 Oʻahu General Plan is currently undergoing an update. A final updated plan has not been adopted. Until the new plan is adopted, the 1992 General Plan remains the guiding document, and project General Plan consistency is evaluated relative to this iteration. Project consistency with the General Plan is discussed in Section 6.4.1.
- **Koʻolau Poko Sustainable Communities Plan (SCP).** The City and County of Honolulu's Development & Sustainable Communities Plan program provides a regional level framework to implement the City's General Plan objectives. The project area is located within the Koʻolaupoko Sustainable Communities Plan (SCP) area, one of eight geographic regions of Oʻahu that are part of the SCP program. The updated Koʻolau Poko SCP was adopted in August 2017 as Ordinance No. 17-42, Revised Ordinances of Honolulu (ROH). The project area is designated as Preservation Areas by the SCP and a major wetland of the Koʻolau Poko region. Project consistency with applicable components of the Koʻolau Poko SCP is discussed in Section 6.4.2.
- **Honolulu Land Use Ordinance (LUO).** The City and County of Honolulu Land Use Ordinance (LUO) regulates land use in accordance with adopted land use policies. Permitted land uses and activities are prescribed under Chapter 21 LUO of the City's Revised Ordinances of Honolulu, as amended. Portions of the project area are in the P-1, P-2, and R-5 districts. P-1 lands correspond to the areas within the State Conservation District and are under the jurisdiction of the State BLNR. Permitted land uses are regulated under Section 13-5-23, HAR, and they are not subject to City zoning

regulations. Only the lands in the Urban District are subject to City zoning regulations. These project area lands include areas zoned P-2 and a small area zoned R-5 Residential. Project consistency with applicable City zoning regulations is discussed in Section 6.4.3.

- **Special Management Area (SMA).** The SMA permit is part of a regulatory system that is the cornerstone of the Hawaii CZM program. The City and County of Honolulu's SMA permitting system is a management tool to assure that uses, activities, or operations on land within the SMA comply with the CZM objectives, policies, and guidelines. The project area is located within Honolulu's SMA and is subject to the requirements of Chapter 25, ROH. Project conformance with SMA policies and objectives is discussed in Section 6.4.4. The applicability of existing SMA to the project is also discussed in this section.
- **Climate Change.** In 2012, the Hawai'i legislature passed Act 286, Hawai'i Revised Statutes §226-109 amending the Hawai'i State Planning Act to incorporate climate adaptation into county and state actions. Act 286 included ten climate change adaption priority guidelines. The project supports and advances many of these guidelines. Project consistency with applicable climate change adaption guidelines is discussed in Section 6.4.5.
- **Complete Streets Policy.** A complete streets policy and associated principles have been established for the City and County of Honolulu under Ordinance 12-15. Every transportation facility or project, whether new construction, reconstruction, or maintenance, provides the opportunity to implement the policy and principles. City complete streets principles include objectives intended to improve safety; protect and promote accessibility and mobility for all; and balance the needs and comfort of all modes and users. The project is not a City initiated transportation project involving the new construction, reconstruction, or maintenance of the City's transportation facilities. No improvements proposed involve City transportation facilities. Therefore, complete streets principles would not directly apply to this project. However, the project does include improvements supporting certain complete streets objectives. Project support of these objectives is discussed in Section 6.4.6.

4 REQUIRED PERMITS AND APPROVALS

Table 1 highlights anticipated required permits and approvals as a result of project implementation and their status.

Table 1 Permits and Approvals	
FEDERAL PERMITS AND APPROVALS	
Department of Army, Corps of Engineers	***STATUS***
Department of Army, Nationwide Permit	*Required if USACE consultation determines permit needed to implement improvements ~~(i.e. boardwalks)~~*
Section 106, National Historic Preservation Act consultation	*Compliance required if Department of Army, Nationwide Permit needed*
Section 7, Endangered Species Act consultation	
Coastal Zone Management federal consistency determination	
National Park Service	***STATUS***
Land and Water Conservation Fund Program	*Continued compliance with program requirements.*
Federal Emergency Management Agency	***STATUS***
Letter of Map Revision	*Required for implementation*
STATE OF HAWAI'I PERMITS AND APPROVALS	
Department of Health	***STATUS***
Construction Noise Permit	*Required for implementation*
National Pollutant Discharge Elimination System (NPDES) Individual Permit - Construction Activities	*Required for implementation*
Board of Land and Natural Resources	***STATUS***
Conservation District Use Permit	*Need for permit to be confirmed by DLNR OCCL during implementation of specific improvements*
Department of Land and Natural Resources	***STATUS***
HRS, Chapter 6E, Historic Preservation Review	*Required for implementation*
CITY AND COUNTY OF HONOLULU PERMITS AND APPROVALS	
Honolulu City Council	***STATUS***
Special Management Area Use Permit (Major)	*Required for improvements not covered under previously approved SMA permits.*
Department of Planning and Permitting	***STATUS***
Building Permits	*Required for implementation*
Grading, Grubbing, and Trenching Permits	*Required for implementation*
Approval of Sewer Connection Application	*Required for implementation*

5 ALTERNATIVES

The following alternatives to the project were vetted during the planning process and were discussed in Chapter 2.

- No Action Alternative
- Resource Management Activities
- Variations in Public Access
    - Public Access Without Education Center
    - Variations in Accessory Support Facilities
    - Variations in Hawaiian Cultural Presence
- Other Alternatives Considered
    - ~~Kailua Neighborhood Board Recommendations~~ Kawainui Marsh Restoration Plan, Priorities, Protocols, and Participation Plan
    - Hoʻolaulima Recommendations
    - Lani-Kailua Outdoor Circle Alternative Plan

6 CUMULATIVE IMPACTS

Cumulative impacts result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions. Assessment of reasonably foreseeable impacts requires analysis based on reliable information (e.g. approved development plans). While insignificant by themselves, cumulative impacts accumulate over time, and can result in the degradation of important resources. Project recommendations have the potential to contribute to cumulative impacts—both positive and negative--on the natural and human made environment. ~~Potential cumulative impacts throughout the life of the project are summarized below.~~ The only known development in the immediate area anticipated to occur during the project's 2037 study year that could result in cumulative impacts is the Kapa'a Light Industrial Park expansion project (industrial expansion). This privately-owned property is situated west of the Kapa'a subarea and completed a Final EIS (SD&C, 2011), and entitlements were obtained in 2014. This project would expand the existing industrial park site by developing new warehouse facilities with various LID improvements implemented. Areas of the property where industrial improvements are not proposed would function as a buffer zone, remaining undeveloped with some landscaping.

Cumulative effects from the project would mainly be associated with direct short- and long-term effects resulting from construction activities for restoration and facility improvements occurring concurrently with light industrial expansion construction. Relevant past actions associated with the Kawainui-Hāmākua project area were discussed in Sections 1.3 to 1.5 and Section 4.1 discussed the history and prior usage of the area. All of this provides a background from past activities. Present conditions are addressed in the various sections covering environmental factors and such existing conditions reflect the effects from past actions. Therefore, information on the past coupled with information on present conditions provide a basis to address cumulative

effects. The entire build-out of the project was included in the assessments of impacts for the study year. A summary of cumulative impacts associated with the project is provided.

Wetland Restoration and Upland Reforestation

Project reforestation and restoration initiatives and the industrial expansion would not have ~~improvements enhancing DOFAW operational and resource management capabilities will have positive~~ significant cumulative impacts on two major resource areas—1) water resources; and 2) biological resources from short-term construction activities or long-term project operation.

The majority of these activities involve minor accessory improvements (e.g. maintenance roads, fencing) or management activities (e.g. predator control) normally conducted as part of DOFAW's regular operations. Most of these activities would also occur in other areas of Kawainui that are too far away from the light industrial park expansion to result in cumulative effects on the environment. Furthermore, these minor accessory improvements and management activities generally have a beneficial effect on Kawainui's wetland and resources. The Kapa'a industrial expansion proposed several improvements that support and complement the project's wetland restoration and upland reforestation activities, which include design improvements to achieve Leadership in Energy and Environmental Design (LEED) Silver certification.

Water Resources. Proposed expansion of wetland restoration and upland reforestation and the expansion project would not result in significant adverse cumulative impacts to water resources as discussed in Section 7.3.1. Water resources not significantly impacted include wetlands, streams, and water quality. The project involves minor accessory improvements or management activities that would occur in portions of the project area that are too far from the expansion project to result in significant cumulative environmental impacts. The industrial expansion project's green landscaping buffer proposed around developed portions of that site that would support project restoration and reforestation improvements.

The project is expected to result in a positive cumulative impacts to water resources as it will build upon past, present and future restoration efforts in the project area. Recently, initiatives by DOFAW and the USACE successfully improved a neglected and degraded wetland, enhancing its ability to provide flood control, wildlife habitat, and water pollution reduction. These efforts contribute cumulatively to other watershed management efforts within windward O'ahu and island-wide. The project area is located in the Ko'olau Poko watershed area, which was the subject of the Ko'olau Poko Watershed Management Plan (KPWMP) (Townscape, Inc., 2012). The KPWMP is part of a comprehensive O'ahu-wide watershed management effort. KPWMP recommendations include promoting watershed sustainability, protecting water quality, and protecting native Hawaiian rights and customary practices. The KPWMP specifically endorses ongoing watershed management efforts at the project area. Other KPWMP recommendations include controlling native plant propagation and restoration of forested area, which are included in project initiatives. The project supports the island-wide watershed management objectives

promoting sustainable watersheds, protecting and enhancing water quality and quantity, and protecting native Hawaiian rights and traditional and customary practice.

Water quality samples show that the Kawainui wetland is naturally functioning as a trap for particulates, assimilation and recycling of nutrients, and sequestering of pollutants. Even with the existing industrial uses mauka of this area of Kawainui, there were no significant water quality issues arising from the sampling. Drainage improvements from the industrial expansion would minimize development effects and reduce pollutants by 80% to meet LEED Silver certification. Thus, there should be no significant cumulative effects from the proposed wetland restoration and upland reforestation activities coupled with the light industrial expansion.

Biological Resources. Proposed restoration and reforestation improvements and the industrial expansion would not lead to significant cumulative impacts to area biological resources that include avian, mammalian, and aquatic biota associated with the project area. Additional details related to this determination are discussed in Section 7.3.1. In particular, the proposed project is expected to result in positive cumulative impacts to project area biological resources. The cumulative impact of wetland and upland improvements; the upgraded DOFAW management station; and current and future efforts of community partners, volunteers and cultural practitioners will enhance the long-term survival of area biological resources. The proposed removal of invasive vegetation, creation of mud flat habitat, and improved stream water quality~~, and more robust predator control~~ will have long-term benefits to native flora and fauna. Improvements in water quality will provide long-term benefits that ~~to~~ support stream and nearshore biota. Strengthening established community partnerships will ensure that these efforts continue.

Structures and Trails

The only facilities sited by the proposed project near the expansion project site would be Kapa'a Cultural Center and vegetation processing site facilities. Other proposed facilities and trails are located considerable distances from the industrial expansion site, and associated activities would not significantly affect or influence the environment near the industrial expansion. Therefore, relevant cumulative impacts would primarily be associated with the industrial expansion site in conjunction with Kapa'a Cultural Center and vegetation processing site. The following sections discuss the cumulative impacts of pertinent environmental factors.

Natural Resources. Facilities proposed for the Kapa'a Cultural Center and vegetation processing site would not significantly impact project site topographic, geologic, soil, and botanical resources. The project area is relatively flat, comprised of fill, does not contain unique geologic features, and is generally overgrown with invasive vegetation. Additional information supporting this determination is discussed in Chapter 3 of the Final EIS. The industrial expansion site has been heavily disturbed by landfill and quarry operations. Therefore, significant impacts to the resources previously discussed from implementation of both projects are not anticipated. Significant adverse cumulative impacts also are not expected to project area natural resources

including avian and mammalian species, wetlands, and streams. In particular, Kapa‘a Stream is the only stream in the vicinity of the expansion project site that could be affected by this project. The industrial expansion’s Final EIS discussed several measures to minimize and mitigate effects from site stormwater. The Kawainui-Hāmākua project does not propose improvements that could negatively impact Kapa‘a Stream. Therefore, significant adverse cumulative impacts to this specific natural resource are not anticipated.

Historic and Cultural Resources. Proposed structures ~~and trails~~ below the expansion area are expected to have positive cumulative impacts on historic resources, contributing to the sustained cultural significance of the project area. Historic sites will not be adversely affected by physical structures proposed by the industrial expansion, Kapa‘a Cultural Center, and vegetation processing site. Provision of limited pedestrian trails will make historic and cultural resources within Kawainui publicly accessible, facilitating access for ongoing maintenance and restoration activity. Creation of new cultural and educational areas will build upon efforts at Ulupō and Nā Pōhaku, efforts by existing community partners, and larger cultural endeavors such as the Hōkūle‘a Mālama Honua, whose crew visited the project area. Project initiatives create new spaces for native Hawaiians to gather and perpetuate their culture. The combination of cultural practices and resource stewardship is consistent with DOFAW and DSP objectives and with Ramsar guidance. The proposals are expected to have positive cumulative impacts on historic resources, and contribute to the enhancement and sustainment of native Hawaiian culture.

Social and Economic Factors. Implementation of the proposed project and the expansion project should have minimal cumulative impact to the demographic characteristics of Kailua as residential housing developments or visitor units are not proposed, except for a care-taker unit supporting management of the Kapa‘a Cultural Center. This includes Kailua demographic characteristics; economic and fiscal characteristics; and community issues associated with the neighborhood. Additional details supporting this determination are discussed in Section 7.3.2.

Air, Noise, and View Factors. Significant adverse cumulative impacts on air quality, noise, and visual resources would not result from implementation of the proposed project and industrial expansion. Impacts on air and noise would primarily relate to short-term construction of both projects. Sensitive noise receptors (e.g. residences) are not located near the industrial expansion site or the adjacent portion of the project area. Sufficient measures (e.g. applicable BMPs) are identified in Chapter 4 of the Final EIS to address short-term impacts to air and noise. Section 4.6 of this chapter identifies visual resources associated with the proposed project. The industrial expansion would not impact significant visual resources identified. As indicated in Section 4.6, the project would not have a significant impact on the scenic character of Kawainui or the visual resources identified. Most improvements at Kawainui would not be visible from Kapa‘a Quarry Road or other areas given existing vegetation along the marsh perimeter.

Infrastructure Facilities. Implementation of both projects would not result in significant adverse cumulative impacts to existing infrastructure facilities associated with the project area. These facilities include water, wastewater, drainage, and transportation facilities. Information

supporting this determination for both projects is discussed in Chapter 5 of the expansion project's Final EIS (SD&C, 2011) and Chapter 5 of the Final EIS for the proposed project.

Education. The construction of improvements like the education center and pedestrian trails and viewing areas support ongoing environmental education. The initiatives will support educational programs making possible further partnerships between DOFAW and DSP with community partners. The industrial expansion would not impact schools or school operations. Public educational facilities will not experience adverse cumulative impacts from both projects ~~be adversely impacted by the project~~. Project area educational programs are likely to expand in the future given demand for hands-on learning opportunities and interest in the project area,

Recreation. The industrial expansion would not impact existing recreational facilities or activities. The only existing recreational facility in the vicinity of the industrial expansion is the City's model airplane park. Operation of the expanded industrial park would not significantly disrupt activities occurring at the site. A project objective is to increase public access and passive recreational use at the project area. Enhanced public access to DSP lands is mandated by Section 6(f) of the federal Land and Water Conservation Act. In addition, provision of trails and viewing areas are consistent with Act 233, Establishment of a Statewide Greenways System for Hawai'i, which was enacted in 2011. This State initiative recognized the benefits greenways and trails can have on Hawai'i communities. The proposed trails within the project area will have a positive cumulative impact on the State's greenway effort. Activities occurring at the Kapa'a Cultural Center and vegetation processing site would not negatively impact activities at the model airplane park as discussed in this document. Therefore, the proposed project and the industrial expansion project not result in adverse cumulative impacts on existing recreational facilities.

7 SECONDARY IMPACTS

Secondary impacts, also referred to as indirect effects, are caused by the project and occur later in time or farther removed in distance but are still reasonably foreseeable. They may include growth inducing effects and other effects related to induced changes in land use patterns, population density, or growth rates, ~~, regardless of who initiates the action.~~ The proposed project would not cause secondary impacts with significant or adverse long-term impacts on the environment, socio-economic conditions, infrastructure, or public facilities. The proposed project would not contribute to growth inducing effects or increase resident population and density. Growth inducing impacts are typically associated with more intensive developments such as new residential subdivisions that increase resident populations.

Wetland restoration and upland reforestation proposals will have minimal likelihood of causing secondary impacts. These improvements do not involve or contribute to urban growth inducing effects or changes to resident population and density. Conversely, proposed structures and trails are more likely to cause secondary impacts or indirect effects. Likely secondary impacts include: 1) expansion of educational or cultural activities and facilities within the project area; 2)

expansion of commercial activities within the project area; and 3) pressure to develop other sites within the project area or surrounding areas. All were stakeholder concerns raised during the master planning process and early stages of the project's environmental review.

Expansion of Educational or Cultural Activities. Successful implementation of educational and cultural programs and partnerships with schools and community organizations may lead to greater demand for these types of opportunities. Section 2.2.5 includes information on existing and projected participants for monthly educational and cultural programs throughout the project area. Projections reflect a reasonable level. It is reasonable to expect participation levels would increase gradually over time. This increase would be subject to DOFAW and DSP obtaining additional staff to accommodate program requests from interested parties (e.g. schools). Therefore, agency staffing would limit the number of programs and participants that could be accommodated.

Increased participants will require adequate support facilities.~~,~~ Proposed facilities, including the education center, would accommodate higher participation levels. Overall, support facilities are generally minimal (e.g. restrooms, parking and staging areas). Therefore, accommodation of more participants than projected should not adversely impact accessory facilities or the education center. However, increase in program demand beyond those projected ~~which~~ may lead to desire to expand existing structures or to provide additional amenities. Requests to diversify and increase ~~the~~ programmatic offerings may occur, such as cultural or environmental programs with Hawaii schools, or offering opportunities to non-residents such as volunteer/service tourism for students from other parts of the U.S. Expansion of proposed facilities beyond the scope proposed by this project would require separate environmental review to determine the merit and effect of the expansion. Necessary land use entitlements would also be need to be obtained.

Similarly, cultural center facilities would be limited to those proposed by the project and are expected to accommodate higher participation levels. Activity levels projected for the cultural centers are reasonable. Facilities would be developed in phases, subject to the finances of stewarding organizations. As a result, it is reasonable to expect that the increase in program participants would occur gradually over time. Therefore, it is unlikely that facility expansion beyond the scope proposed by this project would be needed with minimal secondary impacts on the environment anticipated.

Demand for and participation in programs held at proposed facilities beyond levels projected would be a beneficial secondary effect. This secondary effect would result in more students and residents learning and benefitting from the programs. Increased participation is not expected to cause significant adverse secondary impacts to the environment, infrastructure, or public facilities. Additional details supporting this determination are discussed in Section 7.2.

Expansion of Commercial Activities. Opening of new scenic and recreational areas ~~will inevitably~~ could attract attention from individuals and organizations seeking to use the area for private commercial activities—such as bicycle or Segway tours or as a stop on an eco or cultural

tour. Although there is a prohibition on commercial activity on State lands, unless allowed by permit, individuals may seek "creative ways" to bypass restrictions. The project should not result in significant adverse impacts to the environment from secondary effects related to unauthorized commercial activities at Kawainui. Sufficient management practices are proposed to address the unauthorized commercial activities discussed. These management practices include phasing the expansion of public access to the project area, restricting areas available for public access, and enforcing prohibitions on unauthorized commercial activities. In particular, enforcement activities would be conducted by DOCARE with additional officers needed. DOFAW and DSP would not expand access to the project area if staffing capacity to conduct enforcement is unavailable. These management practices would alleviate concerns voiced by some community members regarding the expansion of commercial activities in the project area. ~~Initiation or expansion of commercial activities could come from DOFAW and/or its authorized lessees. DOFAW will require a continuous revenue source for adequate long-term maintenance of the project area. Sustainment of educational and cultural programs also requires financial resources, and cannot rely on volunteers alone. In the face of declining public revenue for parks nationwide, states are exploring new finance methods, including the imposition of user fees, privatization of park operations, or concessionaire agreements to operate gift shops, restaurants or programs. The need to generate adequate public revenue for ongoing maintenance activities clearly exists. A variety of financing options, including increased commercial activities, may be explored. To the extent project area parks generate revenue, these earnings should remain in the park system rather than being returned to a parent agency or to the state's general fund. Funds raised by community partners should be used to support their project area programs.~~

Other Development Pressures. Development pressure on adjacent project area land is a potential secondary impact. The periphery of Kawainui Marsh is already occupied by many existing institutional and residential uses. Numerous commercial establishments also line Hāmākua Drive adjacent to Hāmākua Marsh. There have been previous proposals to expand urban uses around the marsh. Some proposals encountered public opposition and were halted. Others, such as the relatively recent Kawainui Vista subdivision adjacent to St. John Lutheran Church, were completed. Beneficial impacts to the project area from the project may result in adjacent lands becoming coveted for urban development. Proposed development adjacent to the project area would require an extensive land use approval process at both the State and County levels, and is likely to encounter strong community and governmental opposition. Project improvements would not affect the core factors (e.g. neighborhood beach town character, access to popular beaches) contributing to the desirability of living in Kailua. Therefore, the project would not support secondary effects related to the expansion of residential or commercial developments in the area. The decision of Kailua landowners to pursue development expansion would be based on other relevant economic driven factors. ~~Project initiatives are clearly defined and are limited in scope. They are intended to further environmental, recreational and cultural objectives. That said, there are existing social, economic, and market conditions at work that can contribute to pressures to expand project initiatives beyond those currently proposed.~~

~~7~~8 RATIONALE FOR PROCEEDING WITH THE PROJECT NOTWITHSTANDING UNAVOIDABLE EFFECTS

The project would not cause short- or long-term adverse effects that cannot be avoided or minimized. Section 7.5 discusses mitigation measures and best management practices that would be implemented to minimize anticipated adverse impacts. Despite anticipated adverse impacts requiring mitigation, the primary reasons for proceeding with the project includes the need to restore project area wetland and upland regions; improve habitat for endangered waterbird recovery; integrate a stronger native Hawaiian presence at Kawainui Marsh; integrate cultural practices, educational programing, and resource stewardship in the project area; create opportunities for public enjoyment of project area natural and cultural resources; enact initiatives that facilitating improved land management and public access responsibilities for DOFAW and DSP.

~~1.8~~9 UNRESOLVED ISSUES

The only potential unresolved issue identified at this time concerns general opposition to visitors to Kailua as a whole by some organizations and members of the community, and any project improvements that would support accommodating visitors to Kawainui. Aspects of these unresolved issues related to Kailua visitors are discussed in Section 7.~~7~~6.

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The State of Hawai‘i (State), Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW), in partnership with the Division of State Parks (DSP), is proposing the Kawainui-Hāmākua Master Plan Project (“Project” or “Proposed Action”). The Kawainui-Hāmākua project area encompasses 986.02-acres of State-owned property located in the ahupua‘a of Kailua on the Island of O‘ahu. This project area generally includes; 1) the Kawainui Marsh State Wildlife Sanctuary along with other wetland and surrounding upland areas not within this sanctuary (collectively referred to as Kawainui); 2) Ulupō Heiau State Historical Park (SHP); 3) Kawainui State Park Reserve (SPR); 4) Hāmākua Marsh State Wildlife Sanctuary (referred to as Hāmākua); and 5) Pu‘uoehu hillside.

An Environmental Impact Statement Preparation Notice (EISPN) (HHF, 2016) was published for this project in the State Office of Environmental Quality Control’s (OEQC) September 23, 2016 issue of their *The Environmental Notice*. Subsequently, a Draft Environmental Impact Statement (Draft EIS) was published in OEQC’s December 8, 2017 issue of *The Environmental Notice.* Chapter 8 discusses the publication of these documents in greater detail, and copies of written comments received and responses to them are included in Appendix A. The legal deadline for written comments received or postmarked during the Draft EIS 45-day comment period was January 22, 2018. However, DOFAW issued notification that they would accept “late” written comments under a two week grace period that ended on February 6, 2018.

Project improvements generally consist of wetland restoration and habitat enhancement, upland reforestation, establishment of areas designated to support native Hawaiian cultural practices, pedestrian trails, an education center, and facilities (e.g. restrooms, shelters) supporting educational programs and passive outdoor recreation use of upland areas. This ~~Draft~~ Final Environmental Impact Statement (~~Draft~~ Final EIS) was prepared to address the probable impacts from the project, which included reviewing and responding to comments received on the published Draft EIS. Table 1.1 includes a summary of project information.

Table 1.1
Summary of Project Information

Project Name:	State of Hawai'i, Department of Land and Natural Resources Kawainui-Hāmākua Master Plan Project
Applicant:	Division of Forestry and Wildlife (DOFAW) Department of Land and Natural Resources (DLNR) State of Hawai'i 2135 Makiki Heights Drive Honolulu, Hawai'i 96822 Telephone: (808) 973-9787 Contact: Ms. Marigold Zoll, O'ahu Forestry and Wildlife Manager
Accepting Authority:	Governor Executive Chambers, State Capitol 415 South Beretania Street Honolulu, Hawai'i 96813 Contact: The Honorable David Y. Ige
Authorized Agent:	HHF Planners 733 Bishop Street, Suite 2590 Honolulu, Hawai'i 96813 Telephone: (808) 457-3172 Contact: Mr. Ronald Sato, AICP, Senior Associate
Project Location:	The Kawainui-Hāmākua project area is located in the Kailua ahupua'a on the windward side of O'ahu. The project area is comprised of three areas; Kawainui, Hāmākua, and the Pu'uoehu hillside. These areas are generally bounded by Mōkapu Saddle Road and Mōkapu Boulevard to the north, the Kawainui flood control levee and Hāmākua Drive to the east, Kailua Road and Kalaniana'ole Highway to the south, and Kapa'a Quarry Road to the west.
Project Area:	The project area is 986.02 acres
Tax Map Key:	Project area includes 12 State-owned parcels listed below. 4-2-003: 017 and 030 4-2-013: 005, 010, 022 and 038 4-2-016: 002 and 015 4-2-017: 020 4-2-103: 018 and 035 4-4-034: 025
Existing Use:	The majority of the project area consists of wetland (Kawainui and Hāmākua), while remaining areas consist of upland riparian and forest area that is overgrown with invasive and other non-native vegetation. Wetlands include restoration ponds constructed by U.S. Army Corps of Engineers that will eventually be officially turned over to DOFAW to manage and maintain. The Kawainui Management and Research Station supports DOFAW management and maintenance activities at Kawainui. Existing cultural sites include the Ulupō Heiau SHP and Nā Pōhaku o Hauwahine where community groups are restoring taro lo'i and native lowland forests. Periodic educational programs and cultural activities occur within the project area in coordination with DLNR. The flood control levee protects flooding in Kailua and is also being used as an outdoor recreational trail.

Table 1.1 (continued)
Summary of Project Information

State Land Use District:	Conservation District, Urban District
City Zoning District:	P-1 Preservation (Restricted), P-2 Preservation (General), and R-5 Residential.
Koʻolaupoko Sustainable Communities Plan:	Open Space/Preservation Areas.
Special Management Area:	Project site is within City's SMA boundary.

1.1.1 Need for Environmental Review

This project is subject to the State environmental review process prescribed under Chapter 343, (Environmental Impact Statements), Hawai'i Revised Statutes (HRS), as amended (State of Hawai'i, 2007), also known as the Hawai'i Environmental Policy Act (HEPA), and Title 11, Chapter 200 (Environmental Impact Statement Rules), Hawai'i Administrative Rules (HAR) (State of Hawai'i, 2008). Under these regulations, nine specific types of action are identified that "trigger" environmental review. The proposed project includes agency actions involving three of these triggers:

1. Improvements using State lands and State funds;
2. Wetland restoration activities not already permitted and establishing a permanent presence at Kawainui to conduct native Hawaiian cultural practices within the State's Conservation District; and
3. Cultural landscape restoration activities and improvements supporting restoration and education initiatives at Ulupō Heiau, a site on the National and State the Registers of Historic Places.

Most of the project area includes wetlands and some upland areas situated within the State's "Conservation District" of which permitted uses fall under the jurisdiction of the State Board of Land and Natural Resources (BLNR). Several existing Conservation District Use Permits (CDUP) have already been issued at Kawainui for resource management-related work and outdoor recreational improvements. Any project improvements beyond that already permitted (e.g. facilities supporting cultural practices) would require an amendment or a new CDUP triggering the environmental review process.

The project area is also situated within the City and County of Honolulu's (City) Special Management Area (SMA). Existing SMA use permits authorized various pond and habitat restoration activities (Resolution 01-58) and improvements at the former Gateway Park's Mōkapu site (Resolution 02-339) across of Kalaheo High School. Project improvements beyond what is already permitted would require a SMA Use Permit (Major) from the City. Under Chapter 25 (SMA), Revised Ordinances of Honolulu (ROH), compliance with the State's environmental review process is required, and this EIS is intended to fulfill this requirement.

This ~~Draft~~ Final EIS has been prepared to address the environmental impacts of the proposed project planned for implementation over the next 20 years (2037 study year). Project improvements addressed under this document include those identified in the published EISPN (HHF, 2016), the published Draft EIS (HHF, 2017), along with refinements to those project conceptual details based upon public comments received on the EISPN and Draft EIS. This ~~Draft~~ Final EIS has been prepared in compliance with the HEPA and Title 11, Chapter 200, HAR.

Accepting Authority

The Governor would serve as the responsible "Accepting Authority" for the acceptability of the Final EIS document, in accordance with Chapter 343, HRS, and Title 11, Chapter 200, HAR. The Governor could assign an authorized representative to serve in determining the acceptability of the Final EIS document, which would be the Board of Land and Natural Resources.

1.1.2 Applicant Background

The Applicant for this project is the State DLNR, DOFAW. DOFAW is one of 11 divisions under DLNR responsible for the management of public natural resources in the State of Hawai'i. Its stated mission is to effectively manage Hawai'i's natural, cultural, and historic resources for current and future generations. DOFAW has jurisdiction over the majority of land within the project area, 889.38 acres.

Effectively, DOFAW representatives are natural resource managers who play a pivotal role in protecting the State's watersheds, unique forest resources, and threatened and endangered species. DOFAW has created and continues to manage several programs geared to these ends, some of which include the Na Ala Hele Hawaii Trails & Access System, the Hawaii Conservation and Resource Enforcement Program, the Hawaii Forest Stewardship Program, the Hawaii Endangered Bird Conservation Program, the Plant Extinction Prevention Program, the Invasive Species Programs, and the Hawaii Youth Conservation Corps and Hunting Programs.

DOFAW has been working with various agencies along with community groups to devise strategies, plans, and funding sources for the protection and management of the natural and cultural resources of Kawainui and Hāmākua. DOFAW's responsibilities within their jurisdiction of the project area include:

- Natural Heritage Responsibilities: Manage wildlife sanctuaries, protect endangered species, and protect and develop water resources;
- Flood Control Responsibilities: Protect and enhance the marsh's flood control capabilities by maintaining and monitoring flood control structures and water quality, and removing vegetation;
- Cultural Resources Responsibilities: Manage and protect cultural resources, and increase stewardship opportunities; and

- Education and Recreation Responsibilities: Create outdoor recreation and educational programs to improve understanding of native wildlife and cultural resources.

Partnership with Division of State Parks

The remaining 96.60 acres of land within the Kawainui-Hāmākua project area are managed by the State DLNR, DSP, who works as a partner with DOFAW. DSP's mission is to manage and administer state parks and land that have high natural, cultural, and scenic value. DSP oversees passive outdoor recreation and heritage programs to allow the public to appreciate and understand these statewide resources. Outdoor recreation activities managed include picnicking, camping, ocean swimming, snorkeling, surfing, fishing, sightseeing, and hiking. DSP's responsibilities within their jurisdictional areas of Kawainui include:

- Resource Management Responsibilities: Manage and maintain natural and cultural resources.
- Education and Recreation Responsibilities: Create and maintain passive outdoor recreational facilities and features, and implement interpretive programs to improve the understanding and appreciation of Hawai‘i's unique and significant natural and cultural resources.

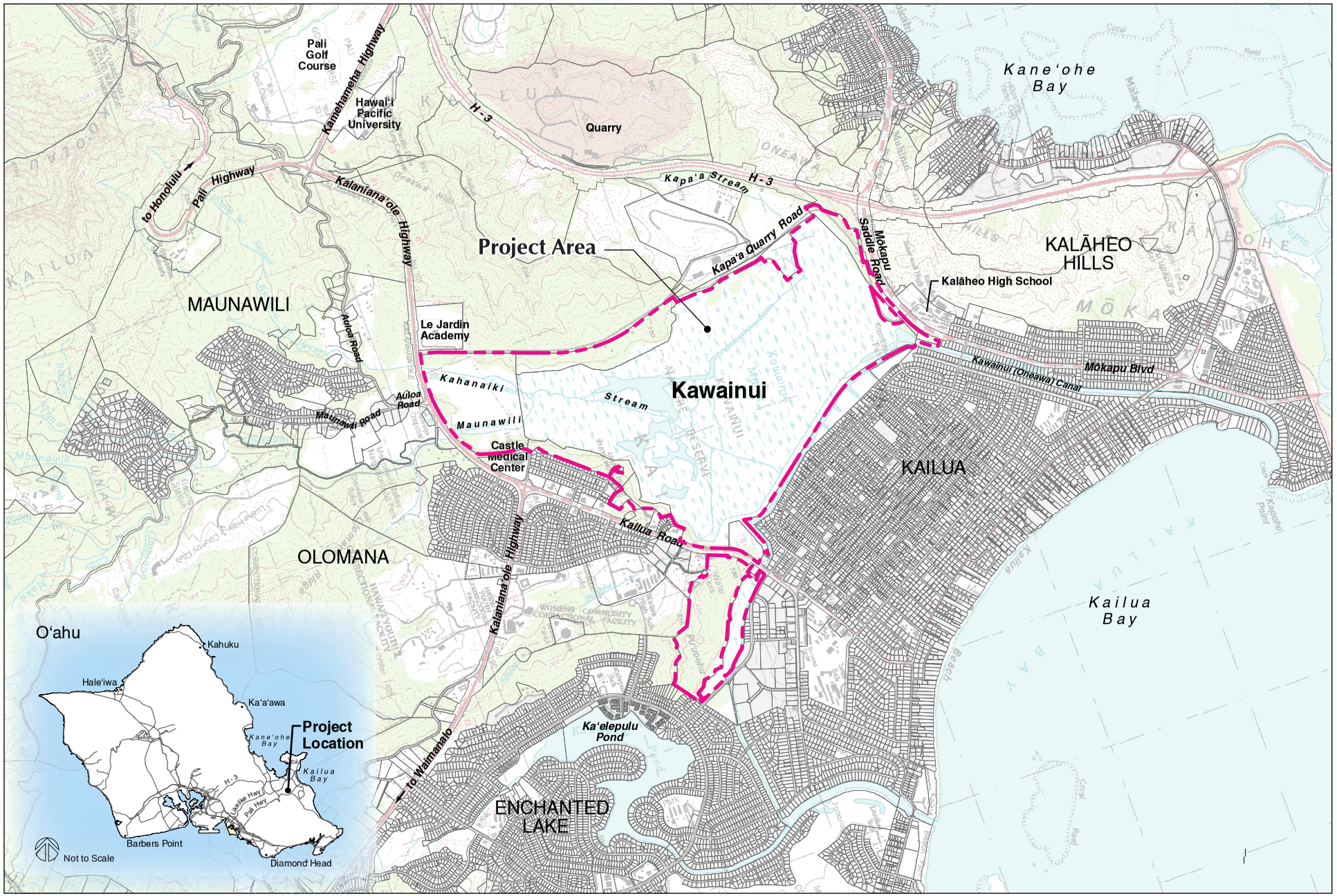
Authorized Agent

HHF Planners is serving as the "Authorized Agent" on behalf of the Applicant in the preparation of this ~~Draft~~ Final EIS. The project is considered an "Agency Action" under the State's environmental review regulations because DOFAW is the proposing agency initiating the proposed project.

1.2 PROJECT LOCATION

The Kawainui-Hāmākua project area is located in the Kailua community on the windward side of the Island of O‘ahu. The project area totals 986.02 acres, and consists of three distinct geographic areas: 1) Kawainui wetlands and upland areas; 2) Hāmākua; and 3) the Pu‘uoehu hillside overlooking Hāmākua. These three areas are shown in a project location map on Figure 1.1 and an aerial vicinity map in Figure 1.2.

Kawainui is generally located west (mauka) of the large residential area of Kailua and east (makai) of the Maunawili subdivision area as shown on Figure 1.1 and the oblique aerial photo in Exhibit 1.1. Kawainui is bounded by Mōkapu Saddle Road and Mōkapu Boulevard to the north, Kapa‘a Quarry Road to the west, Kalaniana‘ole Highway and Kailua Road to the south, and the flood control levee to the east. Hāmākua is bounded by the Pu‘uoehu hillside to the west, Hāmākua Drive to the east, Kailua Road to the north, and residences to the south.



Source: State of Hawai'i GIS Data

Kawainui - Hāmākua Master Plan Project

Figure 1.1 - Project Location

Kailua, O'ahu

0 1,500 3,000 FEET

HHF PLANNERS places for people

Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 1.2 - Vicinity Map

Kailua, O'ahu

0 800 1,600 FEET

HHF PLANNERS places for people

Exhibit 1.1 Mauka Aerial View of Kawainui, with Kailua in foreground

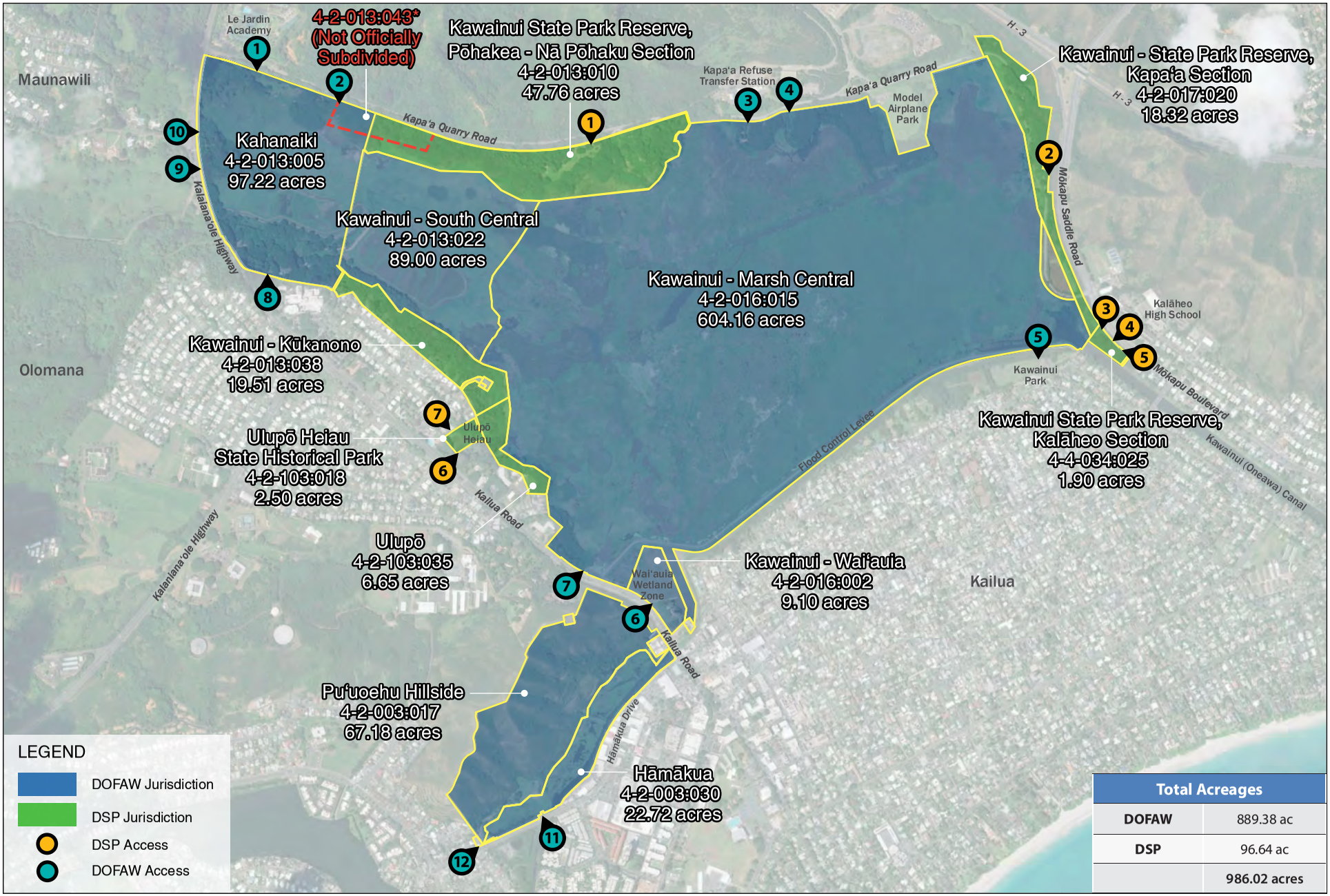
1.3 PROPERTY INFORMATION

1.3.1 State Property Ownership

The project area consists of 12 Tax Map Key (TMK) parcels owned by the State of Hawai‘i. DOFAW manages 889.38 acres (6 parcels), which includes the Kawainui Marsh State Wildlife Sanctuary and the Hāmākua Marsh State Wildlife Sanctuary. The remaining 96.64 acres (6 parcels) are managed by DSP, and include the Ulupō Heiau SHP and areas within the Kawainui SPR. Figure 1.3 identifies these parcels by their TMK numbers and identifies them by names. Parcels under DOFAW jurisdiction are shown in blue, and those under DSP jurisdiction are shown in green. Table 1.2 provides information on these parcels, acreage, and jurisdiction.

TMK 4-2-013: 043 (Parcel 43), delineated with a red dashed line on Figure 1.3, was at one time created for the issuance of a revocable permit, but the lot was never officially subdivided. That revocable permit is no longer applicable and subdivision of that parcel is not required. Therefore, the correct boundary separating TMK 4-2-013; parcels 05 and 10 follows the line shown up to Kapa‘a Quarry Road based upon a State survey map, dated July 2, 2007, prepared for Governor’s Executive Orders (E.O.) 4102 and 4201. Parcel 05 therefore consists of 97.224 acres based upon the State’s survey map. The Tax Map incorrectly identifies this parcel as being 80.0 acres. Parcel 10 consists of 47.76 acres based upon another 2005 State survey map for E.O. 4102.

City-owned property in the vicinity, such as the Model Airplane Park on Kapa‘a Quarry Road, Kawainui Neighborhood Park, and the remnant parcel between the Kapa‘a Quarry Road and Mōkapu Saddle Road, are not part of the Kawainui-Hāmākua project area.



Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 1.3 - TMK Map

Kailua, O'ahu

0 800 1,600 FEET

HHF PLANNERS places for people

Table 1.2
TMK Identification of Parcels and Jurisdiction

TMK Parcel	Description of Parcel	Acreage	Jurisdiction
4-2-003: 017	Pu'uoehu Hillside	67.18	DOFAW
4-2-003: 030	Hāmākua Marsh State Wildlife Sanctuary	22.72	DOFAW
4-2-013: 005	Kawainui – Kahanaiki	97.22	DOFAW
4-2-013: 010	Pōhakea-Nā Pōhaku Section	47.76	DSP
4-2-013: 022	Kawainui – Marsh Central	89.00	DOFAW
4-2-013: 038	Kawainui – Kūkanono – Ulupō Heiau SHP*	19.51	DSP
4-2-016: 002	Kawainui – Wai'auia	9.10	DOFAW
4-2-016: 015	Kawainui – Marsh Central	604.16	DOFAW
4-2-017: 020	Kawainui SPR, Kapa'a Section	18.32	DSP
4-2-103: 018	Ulupō Heiau SHP*	2.50	DSP
4-2-103: 035	Ulupō Heiau SHP*	6.65	DSP
4-4-034: 025	Kawainui SPR, Kalāheo Section	1.90	DSP
	Total Acreage	**986.02**	

*Ulupō Heiau SHP totals over 28 acres.

1.3.2 Kapa'a Quarry Road

Kapa'a Quarry Road is a two laned (one lane in each direction) roadway generally running in a northern direction along Kawainui from its intersection with Kalaniana'ole Highway toward Mōkapu Saddle Road. At the entrance to Le Jardin Academy, Kapa'a Quarry Road is improved with a separate left-turn storage lane, a right-turn storage lane, and a northbound merge lane (Exhibit 1.2). The posted speed limit along this road is 25 mph. About 1.5 miles north, Kapa'a Quarry Place connects to this road providing access into the Kapa'a Light Industrial Park. Kapa'a Quarry Road later turns toward an eastern direction before connecting to its signalized intersection with Mōkapu Boulevard on the north end of Kawainui.

Exhibit 1.2 Kapa'a Quarry Road Near Le Jardin Academy

Kapa'a Quarry Road consists of an access (road) and utility (water) easement about 80 feet wide that runs through portions of privately-owned, State, and City properties. This easement is to the City which is responsible for its maintenance, and has occasionally trimmed trees to remove branches hanging over the roadway, filled potholes, and restriped roadway markings. This road was recently (2017) resurfaced and restriped by the City. There are currently no restrictions

preventing vehicle parking along Kapa‘a Quarry Road, and people already park on this street near Nā Pōhaku o Hauwahine. The only limitation to on-street parking would be having available shoulder space for vehicles to park on. A summary of the property ownership of this road by sections is provided.

1. Kalaniana‘ole Highway to Na Pōhaku.
   a. TMK No.: 4-2-014: 002.
   b. Ownership: Privately-owned (Kapa‘a II LLC).
   c. Description: Roadway proceeds north from intersection with Kalaniana‘ole Highway, past Le Jardin Academy, and up to Na Pōhaku o Hauwahine (Nā Pōhaku).
2. Na Pōhaku Area.
   a. TMK No.: 4-2-013: 010.
   b. Ownership: State of Hawai‘i (DSP Jurisdiction).
   c. Description: Roadway proceeds north generally from Na Pōhaku for about 300 feet within this property.
3. Na Pōhaku to Model Airplane Park.
   a. TMK No.: 4-2-016: 012.
   b. Ownership: City and County of Honolulu.
   c. Description: Roadway proceeds north from just past Na Pōhaku, past the City’s Kapa‘a Transfer Station, and up to the Model Airplane Park.
4. Model Airplane Park to East Bend.
   a. TMK No.: 4-2-015: 006.
   b. Ownership: Privately-owned (Kapa‘a I LLC).
   c. Description: Roadway proceeds north past the City’s Model Airplane Park for about 800 feet until it turns to an eastbound direction (Exhibit 1.3).

Exhibit 1.3 Kapa‘a Quarry Road Past Model Airplane Park

5. East Bend to City Remnant Parcel.
   a. TMK No.: 4-2-017: 020.
   b. Ownership: State of Hawai‘i (DSP Jurisdiction).
   c. Description: Roadway proceeds in eastern direction along the northern end of Kawainui's wetland area up to a remnant parcel owned by the City.
6. City Remnant Parcel to Mōkapu Saddle Road.
   a. TMK No.: 4-2-016: 010.
   b. Ownership: City and County of Honolulu.
   c. Description: Roadway proceeds through a remnant parcel owned by the City as it approaches the Mōkapu Saddle Road intersection (Exhibit 1.4).

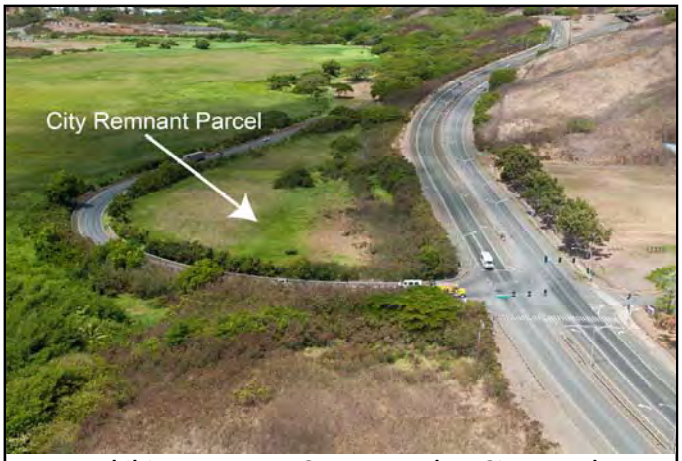


Exhibit 1.4 Kapa'a Quarry Road By City Parcel

7. Mōkapu Saddle Road Intersection.
   a. TMK No.: 4-2-017: 020.
   b. Ownership: State of Hawai‘i (DSP Jurisdiction).
   c. Description: Roadway re-enters a State parcel about 100 feet in length which then connects to its intersection with Mōkapu Saddle Road.

1.3.3 Existing Access Locations

There are a total of 19 existing access locations for vehicles serving DOFAW or DSP areas as shown on Figure 1.3. DOFAW has 12 access locations within their jurisdictional areas (only two accesses at Hāmākua). DSP has seven (7) access locations serving their areas, which include three permitted accesses available at the Kawainui SPR, Kalaheo park site.

DOFAW Access Locations

Access to areas under DOFAW's jurisdiction is restricted to DOFAW employees for management and maintenance operations, contractors hired by DOFAW, other authorized personnel, or non-profit organizations with right-of-entry or special use permits. Most of DOFAW's jurisdictional areas within Kawainui are a State regulated wildlife sanctuary under Title 13, Chapter 126, HAR. As a result, public access under these regulations is restricted to perimeter or other marked trails and roads, and no motorized vehicles are allowed. There are currently no marked trails or roads designated for such public access. Hāmākua is also a State regulated wildlife sanctuary, and public access is prohibited.

A summary of DOFAW's 12 existing access locations is provided below. These correspond to the locations shown in "blue" on Figure 1.3, and are numbered from 1 to 12.

1. Kapa'a Quarry Road Access A. This gated access is generally located before (south) Le Jardin Academy's driveway entrance about 650 feet north from Kapa'a Quarry Road's intersection with Kalaniana'ole Highway.
2. Kapa'a Quarry Road Access B. This gated access is generally located about 700 feet further north from Access A.
3. Kapa'a Quarry Road Access C. This access is generally located about 350 feet south of the entrance to the City's Kapa'a Transfer Station. The access served a former City road maintenance baseyard site (Exhibit 1.5).

Exhibit 1.5 Kapa'a Quarry Road Access C (Serving Former City Maintenance Baseyard)

4. Kapa'a Quarry Road Access D. This access is located across of the entrance to the City's Kapa'a Transfer Station. The access is overgrown with vegetation, and formerly served as the entrance to the vegetation processing area previously used by the City.
5. Levee Access A (Kawainui Park). This chained access is located within the City's Kawainui Neighborhood Park's parking lot, and provides restricted vehicle access to the levee.
6. Wai'auia Access. A chained access off of Kailua Road is provided at the Wai'auia site (Exhibit 1.6). This access is situated about 100 feet mauka (northwest) of the driveway entrance to the City's sewage pump station site.
7. Levee Access B (Wai'auia). A chained access off of Kailua Road is provided for access to the levee from the Wai'auia side.

Exhibit 1.6 Wai'auia Access Off Kailua Road

8. Research and Management Station Access. A gated access at the end of Ulukahiki Street behind Castle Medical Center provides access to DOFAW's Kawainui Management and Research Station site.

9. Mokulana Access A. A gated access off of Kalaniana‘ole Highway about 300 feet makai of the Auloa Road intersection provides access to the makai area of the Mokulana peninsula along with the restoration ponds (Exhibit 1.7).
10. Mokulana Access B. A gated access off of Kalaniana‘ole Highway across of Auloa Road provides access to the mauka area of Mokulana peninsula.

Exhibit 1.7 Mokulana Gated Access Off Kalaniana‘ole Highway (Source: Google Earth)

11. Hāmākua Access A. A gated access off of Hāmākua Drive provides access to the Hāmākua Marsh State Wildlife Sanctuary. This access location is located about 500 feet south of Aoloa Street.
12. Hāmākua Access B. This is the primary gated access used to access the Hāmākua Marsh State Wildlife Sanctuary, and is located off Hāmākua Drive and about 700 feet after the first access location.

DSP Access Locations

Access to areas under DSP’s jurisdiction varies, and includes gated access restricted to non-profit organizations with right-of-entry or stewardship permits, public access open during daylight hours, and unimproved access areas not accessible to the public. At Nā Pōhaku, there is no vehicular access, but public access is available to utilize existing foot trails serving that site. Cars park along Kapa‘a Quarry Road, and visitors walk to visit Nā Pōhaku (Exhibit 1.8).

Exhibit 1.8 Parking for Na Pōhaku o Hauwahine Along Kapa‘a Quarry Road Shoulder

A summary of DSP’s seven existing access locations is provided, and corresponds to the locations shown in “orange” on Figure 1.3.

1. Pōhakea Access. This gated access is located just south (250 feet) of Nā Pōhaku, and provides restricted vehicular access to Pōhakea, which was formerly an area used for ranch operations, and to open space area used for management activities at Nā Pōhaku (Exhibit 1.9 - Pōhakea).

Exhibit 1.9 Gated Access to Pōhākea Area

2. Kawainui SPR, Kapa‘a Access. This access is generally located off of Kapa‘a Quarry Road on the northern end, and leads onto open upland area that has been used for unauthorized recreational off-road motor vehicle activities. Boulders have been used to try to restrict unauthorized access.
3. Kawainui SPR, Kalāheo Access A. This is the first of three 40-foot-wide access locations off of Mōkapu Saddle Road provided at this site across of Kalāheo High School. This access on the northern end of the site.
4. Kawainui SPR, Kalāheo Access B. This is the second of three access locations off of Mōkapu Saddle Road provided in the center of this site (Exhibit 1.10).
5. Kawainui SPR, Kalāheo Access C. This is the third of three access locations off of Mōkapu Saddle Road provided at the southern end of the site.
6. Ulupō Heiau SHP Access A. This is the first of two access locations provided for this park site. This fenced access located off of Kailua Road just past the Kailua United Methodist Church is closed to public vehicle use.
7. Ulupō Heiau SHP Access B. This second access location provided for this park site consists of a fenced driveway within the Windward YMCA property from Manu ‘Ō‘ō Street.

Exhibit 1.10 Access Area Along Kawainui SPR, Kalāheo Section Site

1.3.4 Levee and Jurisdictional Boundary

Kawainui is an important component of the Kawainui Marsh Flood Control Project, which was designed by the U.S. Department of Army, Corps of Engineers (COE) and redesigned after the levee was topped during a January 1988 storm.

Levee Background

Construction of the original Kawainui Marsh Flood Control Project was completed in 1966, and featured a trapezoidal channel (Kawainui Canal); a 6,850-foot-long earth levee with a maximum crest elevation of 9.5 feet; drainage outlets and other improvements. Over the years, floating vegetation within Kawainui created a dense mat that affected the wetland’s hydraulics by impeding the movement of water. During the New Year’s flood of 1988, the water level in Kawainui exceeded the crest of the existing levee due to these changed conditions, and the residential community of Coconut Grove sustained severe flood damages (USAED, 1992).

A reassessment of the flood control capacities of Kawainui was conducted by the COE and the City's Department of Public Works. In response to flooding concerns, the City began dredging an open water channel through the west central portion of the wetland to open waterways in the interior, and increase the wetland's ability to distribute and store stormwater runoff. Vegetation and sediment were removed from prior detention basins, and a vegetation processing facility was created for materials and to facilitate long-term maintenance (M&E Pacific, Inc., 1990).

The COE determined that a 4-foot raise of the existing levee and construction of a 4-foot floodwall atop the levee raise about 6,300 feet long would best achieve the required flood control. The project was completed in 1997, and included a flood warning system along with filling 1.8 acres of wetland to raise the levee.

This levee improvement resulted in the need for compensatory wetland mitigation that involved the restoration of fastland near the Kawainui Canal. Mitigation islets were thus created at the upper end of Kawainui Canal (Oneawa Channel). It also resulted in the COE constructing the environmental restoration ponds located near DOFAW's Kawainui Research and Management Station that was completed in 2013. This restoration project occurred under Section 1135 of the Water Resources Development Act.

Levee Jurisdiction

The flood control levee is within State property (TMK parcel 4-2-016: 015) that was transferred from the City in 2008, and later added to DOFAW's Kawainui Marsh State Wildlife Sanctuary in 2009. The levee borders the makai side of the State's Kawainui property, and is adjacent to City property consisting of Kawainui Stream. The residences of the Coconut Grove subdivision are located makai of the City-owned parcel serving the stream. Kawainui Stream receives discharges from the Coconut Grove subdivision, and generally flows in a southeast direction toward Hāmākua (opposite of Kawainui flowing to Kawainui Canal).

The State's property boundary for the levee and jurisdiction is defined as extending 5 feet makai (Coconut Grove side) from the toe of the levee under Act 47, Session Laws of Hawai‘i (SLH) 1998 (see graphic on Exhibit 1.11). Therefore, the area beyond 5 feet makai from the toe of the levee and associated with Kawainui Stream consists of the City's property and jurisdiction. DOFAW has taken over the management and maintenance of this levee, and coordinates their efforts with both the COE and City.

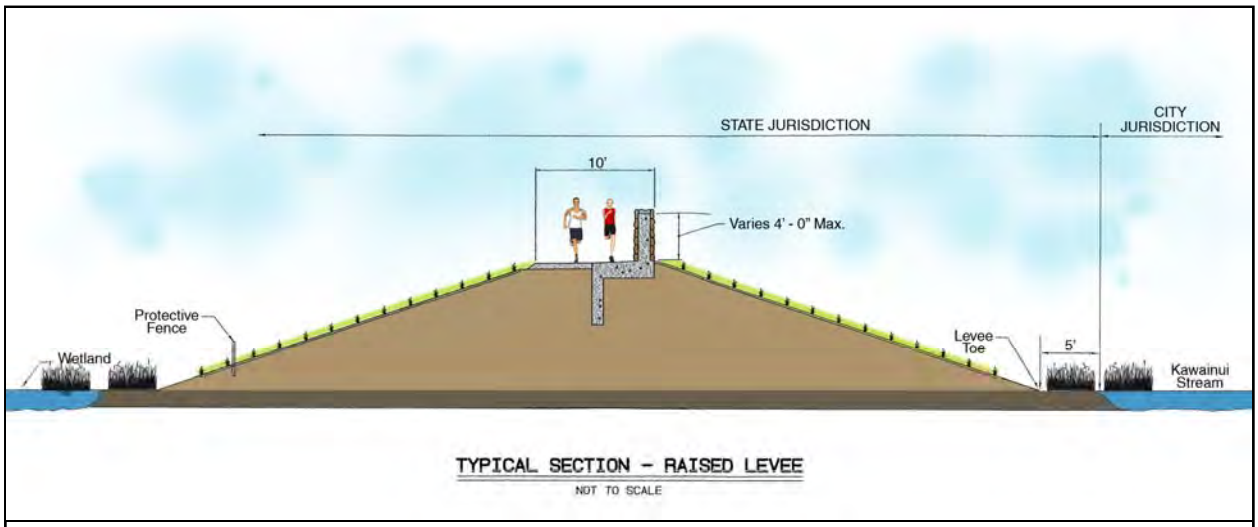


Exhibit 1.11 State DOFAW Jurisdictional Boundary Associated With Flood Control Levee

Kawainui Canal

Kawainui Canal, also referred to as Oneawa Channel, begins from the northern end of Kawainui and was initially constructed in 1966 to provide drainage from Kawainui into Kailua Bay. This canal is tidally influenced from its direct connection with Kailua Bay located almost two miles away from Kawainui. However, the canal's tidal influence is effectively blocked from intruding into Kawainui by a weir of wetland vegetation. Water in Kawainui normally remains higher than high tide levels in the canal, thereby maintaining a head against saltwater intrusion from the canal (USGS, 1971). Thus, it is unlikely that Kawainui Canal exercises any tidal influence over water height in Kawainui or that salinity intrusion is very great.

Kawainui Canal has been set aside to the City from the State under Executive Order 2130 in 1964 for flood control purposes. Therefore, the City has control and management of this canal for the purpose of constructing, maintaining, and repairing it. The City also has easements about 10 feet wide on the banks of both sides of the canal for maintenance purposes.

1.4 GENERAL SITE CONDITIONS AND SURROUNDING USES

Kawainui is the State's largest remaining freshwater wetland, and serves as an important flood control basin protecting the low-lying Coconut Grove residential area and adjacent commercial properties of Kailua. The Kawainui-Hāmākua area has been recognized as a Ramsar wetland of international importance due to its historical, biological and cultural significance. The wetland areas are featured in many native Hawaiian chants for the Kailua ahupuaʻa. The Kawainui Marsh Archaeological-Cultural-Historical Complex, which encompasses a part of Kawainui's wetlands, was deemed eligible for listing on the National Register of Historic Places in 1979. The majority of wetland areas of Kawainui and Hāmākua are also designated as state wildlife sanctuaries that serve as habitats for wildlife (primarily endangered waterbirds and migratory waterfowl), and for research, education, conservation and management, and traditional and customary native Hawaiian practices.

Kawainui's wetland and surrounding upland areas encompass over 90 percent of the total Kawainui-Hāmākua project area. Kawainui extends from Kalanianaʻole Highway and Kailua Road on the south end up to Mōkapu Saddle Road to the north, and between Kapaʻa Quarry Road on the west up to the flood control levee to the east (makai). The Maunawili, Kūkanono and Olomana communities are present on this southern end and Kalāheo High School is to the north as previously shown on Figure 1.2. The Coconut Grove subdivision and Kailua community are located makai of the flood control levee. The area mauka (west) of Kawainui is predominantly undeveloped with the exception of Le Jardin Academy to the south, and the City's Kapaʻa Refuse Transfer Station, Kapaʻa light industrial area, and City's Kawainui Model Airplane Park on the northern half.

Hāmākua extends mauka from Hāmākua Drive that is lined with several commercial and light industrial businesses, and the Kailua commercial and business center is located across. A boating business and Kailua Road are on the northern end, and residences associated with the Enchanted Lake community are to the south. Puʻuoehu encompasses a large hillside area of open space above (mauka of) Hāmākua and the Kailua commercial center. The Puʻuoehu project area extends up to the ridge, and mauka half of this ridge is undeveloped and owned by the State and private landowners.

Because of the size of the project area, the following discussion of general site conditions is divided into five geographic subareas. Figure 1.4 shows the general location of these subareas.

Subarea A: Kawainui Wetlands
Subarea B: Kahanaiki-Nā Pōhaku-Kapaʻa
Subarea C: Kapaʻa-Kalāheo-Levee
Subarea D: Waiʻauia-Mokulana
Subarea E: Hāmākua-Puʻuoehu

Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 1.4 - Project Subarea Map

Kailua, O'ahu

0 800 1,600 FEET

HHF PLANNERS places for people

1.4.1 Subarea A: Kawainui Wetlands

The Kawainui Wetland subarea includes the wetlands situated between the upland areas along Kapa‘a Quarry Road makai to the levee, and includes the wetlands of Wai‘auia in the southeast corner of this subarea (Exhibit 1.12). Kahanaiki and Maunawili Streams both flow into Kawainui from the southwest direction (Maunawili community), and Kapa‘a Stream flows makai into the wetland from the west (H-3 Freeway area). Water from this wetland generally drains in a northern direction into Kawainui Canal (Oneawa Channel), which eventually discharges into Kailua Bay.

Exhibit 1.12 Southern Aerial View of Kawainui in 2012 (Prior to Ponds Completion)

Kawainui’s wetland has been significantly disturbed, and is now dominated by an abundant growth of introduced and invasive plant species that has formed a very thick layer of peat (partially decomposed plant matter that is saturated with anoxic water). This vegetation mat has filled most of Kawainui’s wetland, reducing open water, threatening remaining native plant assemblages, and diminishing its ability to provide suitable waterbird habitat along with floodwater retardation (Exhibit 1.13).

Exhibit 1.13 Invasive Vegetation Affecting Kawainui Wetland

The wetlands of Kawainui serve as habitat for four endangered Hawaiian waterbird species along with migratory bird species. In 2013, the COE finished constructing the Kawainui Marsh Environmental Restoration Ponds Project (restoration ponds) intended to improve waterbird habitat. This consists of two pond sets with 11 terraced cells, encompassing about 40 acres, situated at the southwestern end of Kawainui (Exhibit 1.14). The COE is in the process of formally transferring maintenance responsibility of these ponds to DOFAW, but DOFAW has already been managing and maintaining the ponds, along with conducting educational programs utilizing them.

Exhibit 1.14 Kawainui Restoration Ponds (2015)

DOFAW is planning to initiate phased wetland restoration improvements over an approximately 60-acre area near Kahanaiki as part of their already approved Kawainui Marsh Wetland Restoration and Habitat Enhancement Project (Kahanaiki restoration project). These restoration efforts would consist of cutting invasive plants, monitoring water flows, and replanting areas using native wetland vegetation. Other improvements planned consist of constructing perimeter fencing around Kawainui, and clearing the existing vegetation processing site to prepare it for use with restoration activities.

1.4.2 Subarea B: Kahanaiki-Nā Pōhaku-Kapa‘a

The Kahanaiki-Nā Pōhaku-Kapa‘a subarea generally encompasses the upland areas along Kapa‘a Quarry Road from its intersection with Kalaniana‘ole Highway north past Nā Pōhaku o Hauwahine (Nā Pōhaku) to just beyond the City’s Kawainui Model Airplane Park, as shown in Figure 1.4. This subarea is comprised of three sections referred to as: 1) Kahanaiki; 2) Nā Pōhaku; and 3) Kapa‘a. The City-owned model airplane park is not part of the project area.

Kahanaiki Section

The Kahanaiki section generally includes the southern upland area from Kalaniana‘ole Highway up to the area near (south of) Pōhakea and Nā Pōhaku. Land areas include those under both DOFAW and DSP jurisdiction. This upland area above the wetland is heavily vegetated, and dominated by invasive species of non-native vegetation that are gradually eliminating former native vegetation present in the area (Exhibit 1.15). DOFAW has been working on the southern end of this subarea to slowly trim trees and remove non-native vegetation, and some open grassed areas have been cleared.

DOFAW has completed some phased upland restoration improvements in this section in implementing their Kawainui Marsh Wetland Restoration and Habitat Enhancement Project (HHF, 2012). Upland improvements included replacing a damaged drainage culvert along Kapa‘a Quarry Road and completing reforestation improvements with native plants on a one-acre site.

Exhibit 1.15 North View of Heavily Vegetated Upland Area of Kahanaiki

Nā Pōhaku Section

The Nā Pōhaku section includes the middle portion of this subarea that’s under DSP jurisdiction. This section includes two upland areas identified as Pōhakea and Nā Pōhaku. The Pōhakea area was formerly used for ranching-related activities that have since ended, and the area has been cleared of structures. A portion of this former ranch site, approximately 14 acres, is currently being used under a short-term (5-year) curatorship agreement from DSP (December 2016) by the non-profit organization Ke Kahua O Kūali‘i ~~(Ke Kahua)~~ for traditional native Hawaiian cultural practices. A pole and thatch hālau structure with stacked rock wall was constructed by this organization, and a taro lo‘i for cultural practices and cultural landscape restoration is being created. ~~Ke Kahua’s~~ The organization’s responsibilities under this DSP permit include: 1) maintaining the site by removing select vegetation to be replanted with native vegetation; 2) delineating parking areas and trails for public visitation; and 3) installing passive park facilities and providing educational and interpretive programs with approval from DSP.

Nā Pōhaku o Hauwahine is a culturally significant site of approximately 12 acres located adjacently north of Pōhakea (Exhibit 1.16). Nā Pōhaku is a unique setting of volcanic rock formations where native plants are being planted to replace the non-native vegetation. A foot trail is also provided within this area.

Exhibit 1.16 Nā Pōhaku o Hauwahine Area

The non-profit organization ‘Ahahui Mālama I Ka Lōkahi (AML) has been conducting lowland forest restoration work for many years at Nā Pōhaku, which include the removal of alien vegetation, planting native plants, installation of a water catchment

system, and trail construction. AML also conducts educational programs at Nā Pōhaku along with other areas throughout Kawainui-Hāmākua under a March 2010 Memorandum of Agreement and 2012 Right-of-Entry Permit with DOFAW from the BLNR. AML has also been conducting community service days across Kawainui with a focus on removing invasive plants and planting endemic vegetation to help maintain and restore native wetland habitat. Recently, AML obtained a short-term (5-year) curatorship agreement from DSP (November 2016) allowing the organization to continue landscape restoration activities within a 15-acre area, install passive park facilities, and conduct educational programs at Nā Pōhaku with DSP approval.

Kapa‘a Section

The Kapa‘a section extends from Nā Pōhaku north past the model airplane park, and includes land under DOFAW's jurisdiction. An upland site across the City's transfer station was formerly used by the City as a road maintenance base yard (Exhibit 1.17), and remnants of this use are still present (paved areas, fence). Adjacent land to the north of this site is an area that was approved for and previously used by the City for vegetation processing as part of their project removing vegetation to improve Kawainui's flood control function. Both of these sites are not being used, and are overgrown with vegetation. However, DOFAW is planning to clear vegetation from this processing site to prepare it for use with restoration activities.

Exhibit 1.17 Kapa‘a Section of Subarea

The City's model airplane park is located north of this vegetation processing site, and is not part of the project area. It is a passive recreational park used for model aviation activities, and was improved in 2011 to include restroom facilities.

1.4.3 Subarea C: Kapa‘a-Kalāheo-Levee

This subarea generally encompasses the upland areas along Kapa‘a Quarry Road within the northern boundary of the project area, and includes the flood control levee. This subarea is comprised of three sections referred to as: 1) Kapa‘a; 2) Kalāheo; and 3) Levee. A City-owned remnant parcel along Kapa‘a Quarry Road in this area is not part of the project area.

Kapa‘a Section

The Kapa‘a section within this subarea extends from the City model airplane park along Kapa‘a Quarry Road traveling in a makai (east) direction generally parallel to Mōkapu Saddle Road up to their intersection (Exhibit 1.18). This open space upland area along Kapa‘a Quarry Road is under DSP jurisdiction as part of their Kawainui SPR, Kapa‘a Section. This section includes undeveloped upland area above (north) Kapa‘a Quarry Road extending up towards Mōkapu Saddle Road that is overgrown with predominantly non-native invasive vegetation.

Exhibit 1.18 Upland Area of the Kawainui SPR Kapa‘a to Kalāheo Sections

Upland area between Kawainui’s wetland and Kapa‘a Quarry Road in this section generally consists of relatively flat open space area lined by trees (Exhibit 1.19). This area continues to be used periodically for unauthorized activities by off-road recreational vehicles, even with posted signage. Boulders and berms have been placed or constructed along the roadside to try to restrict unauthorized activities from occurring.

Exhibit 1.19 Open Area Along Kapa‘a Quarry Road

Kalāheo Section

The Kalāheo section of DSP's Kawainui SPR includes a 1.9-acre undeveloped parcel located across of Kalāheo High School along Mōkapu Boulevard, and extends up to the start of existing residences (Exhibit 1.20). This area also includes a portion of DOFAW's Kawainui Marsh State Wildlife Sanctuary on the western end. Mōkapu Saddle Road turns into Mōkapu Boulevard at the signalized intersection with Kapa'a Quarry Road across of the high school. Kawainui Canal generally begins in this area and borders the eastern side of this area. The levee and residences of Coconut Grove are located further east of the canal.

Exhibit 1.20 Kawainui SPR – Kalāheo Park Site

This site was planned for park use by the City in 2002 as the Kawainui Gateway Park Project, and both a CDUP permit (OA-3126B) and Special Management Area Use Permit (Resolution 02-339) were obtained for it. Consequently, park improvements under this plan are permitted. DSP has issued short-term special use permits (SUP) to Le Jardin Academy and the Lanikai Canoe Club in 2013 and 2014, respectively, to allow canoe and kayak launches from this site for practices. Another short-term SUP was issued to the Lanikai Canoe Club in June 2016 to allow launching one-man canoes from this site. On a few occasions, DLNR staff, with the assistance of volunteers from local canoe clubs and other organizations, have cleared overgrown vegetation at the site.

Levee Section

The levee section of this subarea encompasses the existing flood control levee that was initially built in 1966 as the Kawainui Marsh Flood Control Project (Exhibit 1.21). The levee separates Kawainui and Hāmākua for flood control purposes, channeling waters from Kawainui toward the Kawainui Canal (northeast direction) that eventually discharges into the ocean.

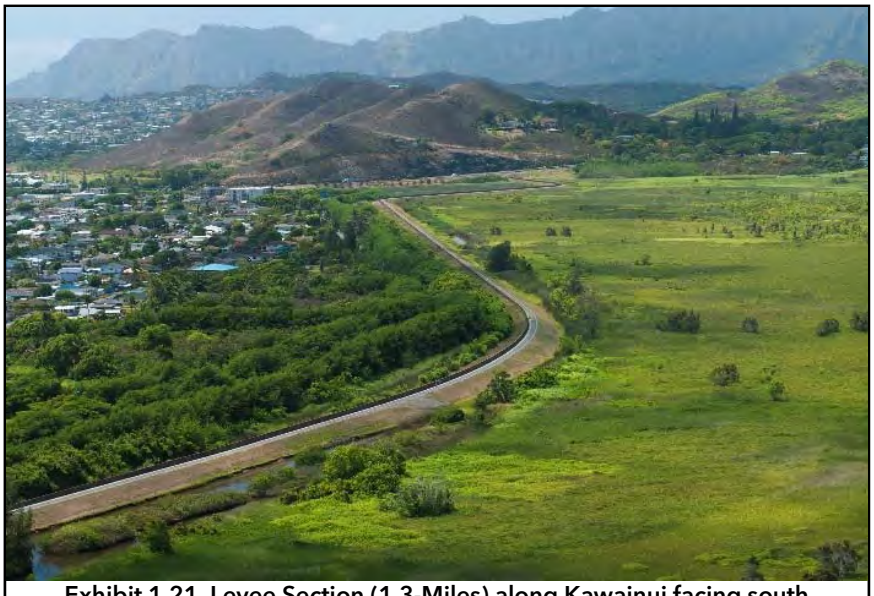


Exhibit 1.21 Levee Section (1.3-Miles) along Kawainui facing south

Kawainui Stream flows in the opposite direction (southeast direction) along the makai side of the levee (City-owned property), and conveys runoff from the Coconut Grove residential area toward Hāmākua and eventually flowing into Kaʻelepulu Stream.

Exhibit 1.22 Levee Floodwall and Trail

In 1997, the levee's height was raised 4 feet, and a 4-foot high concrete floodwall was added on the levee (Exhibit 1.22). This was done to prevent overtopping, which occurred during a January 1988 storm, causing flooding in the lower lying residential area of Coconut Grove on the makai side of the levee. The approximately 1.3-mile levee is used daily as a pedestrian trail by the public, although it wasn't specifically designed to serve this function. The levee is part of the Kawainui Marsh State Wildlife Sanctuary and subject to rules governing State Wildlife Sanctuaries. As a result, DOFAW enforces rules prohibiting motorized vehicles on the levee, and will be implementing action to prohibit people from walking pets (e.g. dogs).

1.4.4 Subarea D: Waiʻauia-Ulupō-Mokulana

The Waiʻauia-Ulupō-Mokulana subarea (Subarea D) generally encompasses the upland areas along the southern and eastern boundaries of Kawainui. It extends from Waiʻauia southwest, past Ulupō Heiau SHP along Kailua Road, past DOFAW's management research station (behind Castle Medical Center), and up to the Mokulana peninsula along Kalanianaʻole Highway. This subarea is comprised of three sections referred to as: 1) Waiʻauia; 2) Ulupō; and 3) Mokulana.

Waiʻauia Section

Exhibit 1.23 Waiʻauia Site on Kailua Road Near the Levee

Waiʻauia is under DOFAW jurisdiction and situated at the eastern end of Kawainui. This area is bordered by the levee to the northwest, the Kawainui Stream and a City sewage pump station site to the north, and Kailua Road to the southeast as shown on Exhibit 1.23. The majority of Waiʻauia

consists of wetland that is not part of DOFAW's wildlife sanctuary. There is an open area on the makai (eastern) end along with a strip of upland area running along Kailua Road (about 3.5 acres total upland area).

This upland area consists of open space that is used by DOFAW for vehicular access and parking as part of wetland maintenance activities in this area. A reinterment site for the remains of individuals disinterred from various areas of the Kailua ahupua'a is also being established in this area, and will be managed and maintained by the Hika'alani non-profit organization with maintenance support by the Kailua Kau a Ho'oilo non-profit organization. From this area, a strip of land runs mauka toward the levee along Kailua Road (Exhibit 1.24). At Wai'auia, surrounding land uses to the north include residences and low-rise condominiums across Kawainui Stream, and some commercial uses along Kainehe Street.

Exhibit 1.24 Strip of Upland Area Along Wai'auia

At the levee, this section includes a DOFAW access road connection between Kailua Road and directly to the levee that is used for maintenance vehicles and activities. Further mauka from there, the upland area is heavily vegetated with hau bush and other non-native vegetation on a sloped hillside leading up to Kailua Road. This vegetated area along the hillside extends up to the St. John Lutheran Church situated above the wetland at about 35 feet elevation (above mean sea level [AMSL]). DOFAW recently cleared some of the vegetation in the area within the lower hillside up to the church. Mauka of the church is the Kawainui Vista subdivision that was constructed about 2000 and is on a slightly lower hillside (about 10 to 15 feet AMSL) above the sanctuary's wetland areas which extend up to the property boundary.

Ulupō Section

The Ulupō section includes the upland area under the jurisdiction of the DSP, and generally extends from the Kawainui Vista subdivision (makai) toward the Ulupō Heiau, and the slopes adjacent to the Kūkanono subdivision (Exhibit 1.25). Upland areas past the Kawainui Vista subdivision consist of heavily vegetated slopes extending from the wetland up the relatively steep hillside to the Kailua Baptist Church and Kailua United Methodist Church properties that are situated on the top of the hillside at about 35 to 50 feet AMSL. The Ulupō Heiau SHP is situated next to the Kailua United Methodist Church, and includes upland areas on the hillside extending in a southwest direction along the Kukānono subdivision and toward the Castle Medical Center as shown on Exhibit 1.25. The City's sewer pump station is also located on the western boundary of Ulupō Heiau off of Manu 'Ō'ō Street.

Exhibit 1.25 Upland Area of Ulupō Section

The Windward YMCA is situated within the Kūkanono Subdivision next to the Ulupō Heiau SHP, and their property surrounds the northeast and southern areas of the heiau. Residences border the western side of the Ulupō Heiau SHP. The Windward YMCA's rear parking lot adjacent to the heiau has five visitor parking stalls dedicated for visitation of Ulupō Heiau SHP. Visitor access to the heiau is currently provided via a YMCA-gated roadway leading to their rear parking lot from their main parking lot and the Kūkanono subdivision (Exhibit 1.26). A former residential driveway with access from Kailua Road leads to the YMCA's rear parking lot, but is currently fenced closed. This driveway is the State's legal access and roadway easement through the YMCA property.

Exhibit 1.26 YMCA Driveway Access to Ulupō Heiau

Visitors to the heiau use the YMCA's roadway to access the rear parking lot or walk in after parking in the residential area. Commercial tour groups are not permitted at this park site unless they have a permit from the DSP. The YMCA manages their parking lots and coordinates with the DSP to address unauthorized commercial tours. Commercial tour buses at times illegally park along Kailua Road to allow visitors to enter the park site using the driveway leading to the rear parking. A "No Parking" sign has been posted at this location along Kailua Road, and DSP continues to work with the YMCA to address visitation by commercial tours.

Ulupō Heiau is a culturally significant site believed to be an ancient agricultural temple (māpele), although the function and size of the heiau may have changed over time. The heiau structure consists of a massive, raised platform constructed of dry-stacked basalt rocks with underlying springs that feed the surrounding agricultural terraces. Ulupō Heiau was listed on the National Register of Historic Places in 1972 and the Hawai'i Register of Historic Places in 1981.

Ulupō Heiau is part of the larger 28-acre Ulupō Heiau State Historical Park that is an important resource perpetuating native Hawaiian cultural practices. Ulupō Heiau SHP ~~was~~ is under a ~~co-~~ curatorship agreement between DSP and Hikaʻalani initiated in December 2017. ~~t~~The Kailua Hawaiian Civic Club (KHCC) and ʻAhahui Mālama I Ka Lōkahi (AML) are working together with Hikaʻalani ~~until 2016. These cultural organizations, along with the non-profit organization Hikaʻakala, have been~~ assisting with the care, restoration, and interpretation of the site which includes conducting educational programs. They have initiated restoration of the cultural landscape around the heiau by re-establishing loʻi kalo, removing invasive plants and replanting the area with native plants, and restoring wetland habitat (Exhibit 1.27).

Exhibit 1.27 Loʻi Restoration at Ulupō Heiau SHP

Mokulana Section

The Mokulana section includes upland area under the jurisdiction of the DOFAW, and generally extends from the Ulupō Heiau SHP area (below the Kūkanono subdivision) in a southwest direction towards the Adventist Health Castle medical center (former Castle Medical Center), DOFAW's Kawainui Management and Research Station, and to the Mokulana peninsula (Exhibit 1.28).

DOFAW's Kawainui Management and Research Station is located behind Castle Medical Center at the end of Ulukahiki Street. This site was previously used for ranching operations, and formerly had a general store in the 1930's (Matsuda Store). This area serves as DOFAW's operational headquarters for management, restoration and maintenance activities occurring at Kawainui. This includes management and maintenance of the environmental restoration

Exhibit 1.28 DOFAW Management and Research Station, Mokulana Peninsula, and Restoration Ponds (2012 Construction)

ponds recently completed by the COE. This DOFAW site encompasses about 14.5 acres, however, existing facilities are only clustered within about an acre area of this site.

Existing facilities consist predominantly of temporary structures such as office trailers and metal shipping containers converted to storage structures. Other facilities include shipping containers converted to accommodate rest room facilities and a laundry room with septic system and leach field, and pole-framed carports with tarp roofing to protect vehicles and equipment from the weather. The growth of this research station over the years has been gradual in nature and reactionary to meet DOFAW's growing programmatic and functional needs for managing the restoration ponds and larger Kawainui area (wetland restoration and upland reforestation), daily maintenance operations, and educational programs.

The majority of this larger research station area is undeveloped and either moderately to heavily vegetated or comprised of grassed open space. Open areas are used for pond maintenance operations or educational programs staging areas, and DOFAW has been slowly clearing vegetation to create more operational space. In addition to DOFAW personnel, some staff from the O'ahu Invasive Species Committee (OISC) and Division of Conservation and Resources Enforcement (DOCARE) utilize space at this station for conducting research activities or operations. DOFAW is working with DSP to determine alternative locations for OISC and DOCARE. Another organization has also setup shipping containers to serve as office trailers on a temporary basis to conduct insect research under a research grant.

The Mokulana peninsula is located west of DOFAW's management station, and consists of undeveloped upland area overlooking the restoration ponds and Kawainui wetland (Exhibit 1.29). As shown in the oblique aerial photo, this site is a densely vegetated promontory that is located across of the Auloa Road intersection with Kalaniana'ole Highway. DOFAW uses a driveway entrance off of the highway located on the eastern end of the peninsula to access a staging area near the restoration pond. This access and staging area is used for maintenance and programs because Maunawili Stream prevents direct access to these ponds from DOFAW's management station.

Exhibit 1.29 North View of Mokulana Peninsula Across of Auloa Road (2012)

1.4.5 Subarea E: Hāmākua- Pu‘uoehu

The Hāmākua-Pu‘uoehu subarea (Subarea E) includes the State designated wildlife sanctuary of Hāmākua and the eastern (makai) half of the Pu‘uoehu hillside up to the ridge line located above (mauka) Hāmākua. This subarea is comprised of two sections referred to as: 1) Hāmākua; and 2) Pu‘uoehu, and is shown on Exhibit 1.30.

Exhibit 1.30 View of Hāmākua and Pu‘uoehu Hillside

Hāmākua Section

The Hāmākua section includes the entire wildlife sanctuary of about 23 acres under DOFAW jurisdiction bounded by commercial uses and Hāmākua Drive on the makai side and Pu‘uoehu hillside on the mauka side. This sanctuary is closed to the public, but DOFAW conducts periodic day visits as part of educational programming (service learning programs) with schools and other non-profit organizations.

Hāmākua is characterized as a seasonal floodplain that is divided into four basins, approximately 2 to 8 acres in size. These basins are fed by runoff from the Pu‘uoehu hillside and the adjacent Kawainui Stream. DOFAW has been managing Hāmākua since 1995, and an ecosystem restoration project was completed in 2002 that removed red mangrove (*Rhizophora mangle*) from the banks and included planting of native species.

DOFAW management and continual restoration activities include removing invasive vegetation from wetland banks, managing open water areas within the wetland by removing vegetation, clearing various upland areas of non-native vegetation and trees, and planting native vegetation within wetland and upland areas to improve habitat for endangered waterbird species (Exhibit 1.31). Other management activities include predator control (trapping and removing). Recent activities include upland restoration of areas as part of school programs near the entrance and at an area above (mauka) the wetland.

As shown on Exhibit 1.31, Kawainui Stream travels eastbound along most of Hāmākua's makai boundary next to the commercial area before passing under Hāmākua Drive heading toward Kaʻelepulu Canal. Hawaiian Electric (HE) also has three utility poles serving electrical subtransmission lines routed through a portion of Hāmākua. One pole is located on a mound within the wetland, and the other two poles are located on upland areas next to the shopping center and by the Hāmākua Drive Bridge.

Exhibit 1.31. Oblique Aerial View of Hāmākua

Puʻuoehu Section

Puʻuoehu is a hillside covered predominantly with non-native vegetation and trees situated mauka of Hāmākua. The makai half of this hillside up to the ridgeline is under DOFAW jurisdiction, and serves as the watershed feeding the Hāmākua wetland. The mauka half of the hillside is outside of the project area, and owned by both the State and private landowners. DOFAW has been clearing some vegetation and trees along Puʻuoehu's makai boundary bordering Hāmākua to improve management and maintenance operations surrounding this wetland.

1.5 OTHER BACKGROUND INFORMATION

1.5.1 Ramsar Convention

In 2005, Kawainui-Hāmākua was designated a Wetland of International Importance by the Ramsar Convention, raising its statewide and international visibility as a significant natural and cultural resource. The Ramsar Convention is an intergovernmental environmental treaty that was adopted in the Iranian city of Ramsar in 1971, and focused on wetlands as a particular ecosystem.

The Ramsar Convention's mission is for the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world. At the center of the Ramsar philosophy is the "wise use" concept, which is defined as "the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development" (Ramsar, 2014). The Ramsar Convention also places importance on the identification of cultural elements of wetlands, or the cultural elements of the landscape in which they are found (Gland, 2008).

In 2005, DOFAW, in conjunction with several other organizations, nominated Kawainui-Hāmākua as a Wetland of International Importance to the Ramsar Convention. The nomination stated that this complex is sacred to Hawaiians, and functioned as Hawai‘i's largest ancient freshwater fishpond. Kawainui is the largest remaining emergent wetland in Hawai‘i. It provides primary habitat for four of Hawai‘i's endemic and endangered waterbirds, and contains archaeological and cultural resources, including ancient irrigated agricultural terraces (lo‘i) where fish were also cultivated. Kawainui stores surface water, providing flood protection for adjacent Kailua town. Hāmākua is a smaller wetland historically connected to and immediately downstream of Kawainui, and also provides significant habitat for several of Hawaii's endemic and endangered waterbirds (HHF, 2014).

In keeping with the Ramsar Convention mission and philosophy, DOFAW and DSP are working toward providing more opportunities for the public to access Kawainui with trails and wildlife viewing areas. In July 2012, the Ramsar Convention recognized the increased demands for tourism expansion and potential impacts, but also acknowledged that tourism and recreation in and around wetlands can bring environmental, social, and economic benefits if managed sustainably. Ramsar supports sustainable tourism, recreational use, and cultural practices within designated wetlands of international importance. Ramsar views sustainable tourism as maintaining a high level of visitor satisfaction, ensuring a meaningful experience, and raising awareness about sustainability issues.

This recognition resulted in the adoption of Resolution XI.7 at the 11th Meeting of the Conference of the Parties (Ramsar COP11 Resolution XI.7). Resolution XI.7 addresses the mutually beneficial relationship between tourism and wetlands. This resolution also identifies issues stakeholders managing wetland areas must address to ensure wetlands benefit from and are not adversely impacted by tourism. The project's consistency with Kawainui's Ramsar wetland designation and relevant Ramsar policies is discussed further in Chapter 6 (Relationship of the Proposed Action to Land Use Plans, Policies and Controls).

Ramsar Sites Across the U.S.

The Wetland of International Importance designation has been granted to 37 wetland areas across the U.S., in addition to the Kawainui- Hāmākua Complex. U.S. Ramsar sites are diverse in geographic size and location. Examples of other U.S. Ramsar sites are discussed below.

Horicon Marsh, located in Wisconsin, is one of the largest freshwater wetlands in the U.S., and serves as an important staging, nesting, and feeding site for endangered birds such as the bald eagle (*Haliaeetus laucocephalus*). A 6,000 square foot visitor center, shown in Exhibit 1.32, is sited at the marsh and serves as an important location for environmental education activities conducted with a variety of participants (Kitchen, 2010). Other facilities include an environmental education barn, a paved auto tour route with interpretive signage, and a number of hiking trails. The facilities discussed are located in the northern two-thirds of the marsh, with public access prohibited in the remaining portion of the marsh. Programs using these facilities support the Ramsar wise use concept by facilitating greater public education and awareness of this wetland, thereby encouraging its long term sustainable use.

Exhibit 1.32. Horicon Marsh Visitors Center
Source: Wisconsin Dept. of Natural Resources.

Corkscrew Swamp Sanctuary is located in Florida and is home to over two hundred species of birds, a number of which are threatened or endangered (Knight, 2008). This Ramsar site contains pine flatwoods, wet prairies, cypress swamps, and marshes. Corkscrew Swamp Sanctuary attracts over 100,000 visitors annually. Visitor access to site wetland areas is restricted to a 2.25 mile boardwalk nature trail, which is shown in Exhibit 1.33. A visitor center with classrooms, food service facilities, and back porch rest area for passive appreciation of the wetland is also located on site. Educational programs are conducted in these classrooms for school aged children and adults. Guided walks are also conducted on the boardwalk nature trail, which allows

participants to better understand and appreciate the wetland. The facilities discussed allow the public to become more educated and aware of the ecological value of Corkscrew Swamp, supporting Ramsar wise use concepts.

Congaree National Park is comprised of freshwater swamp forests, seasonal sloughs, forested peatlands, shrub-dominated wetlands, and surface water features. Located in South Carolina, this Ramsar site supports a variety of species with different conservation statuses and has one of the highest wintering bird densities reported in the U.S (Hulslander, Kinzer, and Thom, 2011). A visitor center located on site contains a number of interpretive exhibits and is the site for a number of public educational programs (Exhibit 1.34). These educational programs include a summer Science Camp for children. A 2.4 mile boardwalk is complemented by 14.2 miles of hiking trails located within this Ramsar site. Facilities located at this Ramsar site support wise use concepts by providing spaces where the public can learn about and better appreciate this natural resource.

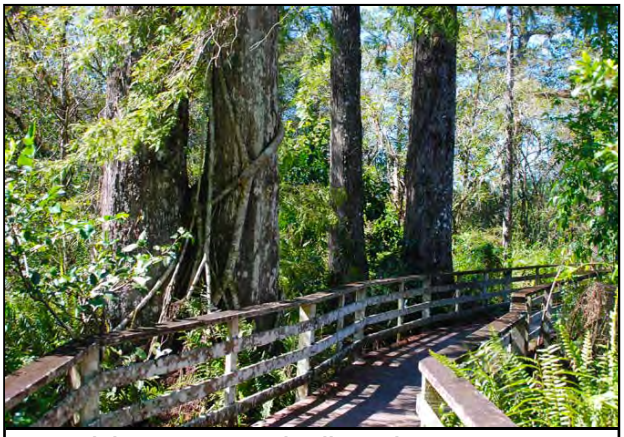
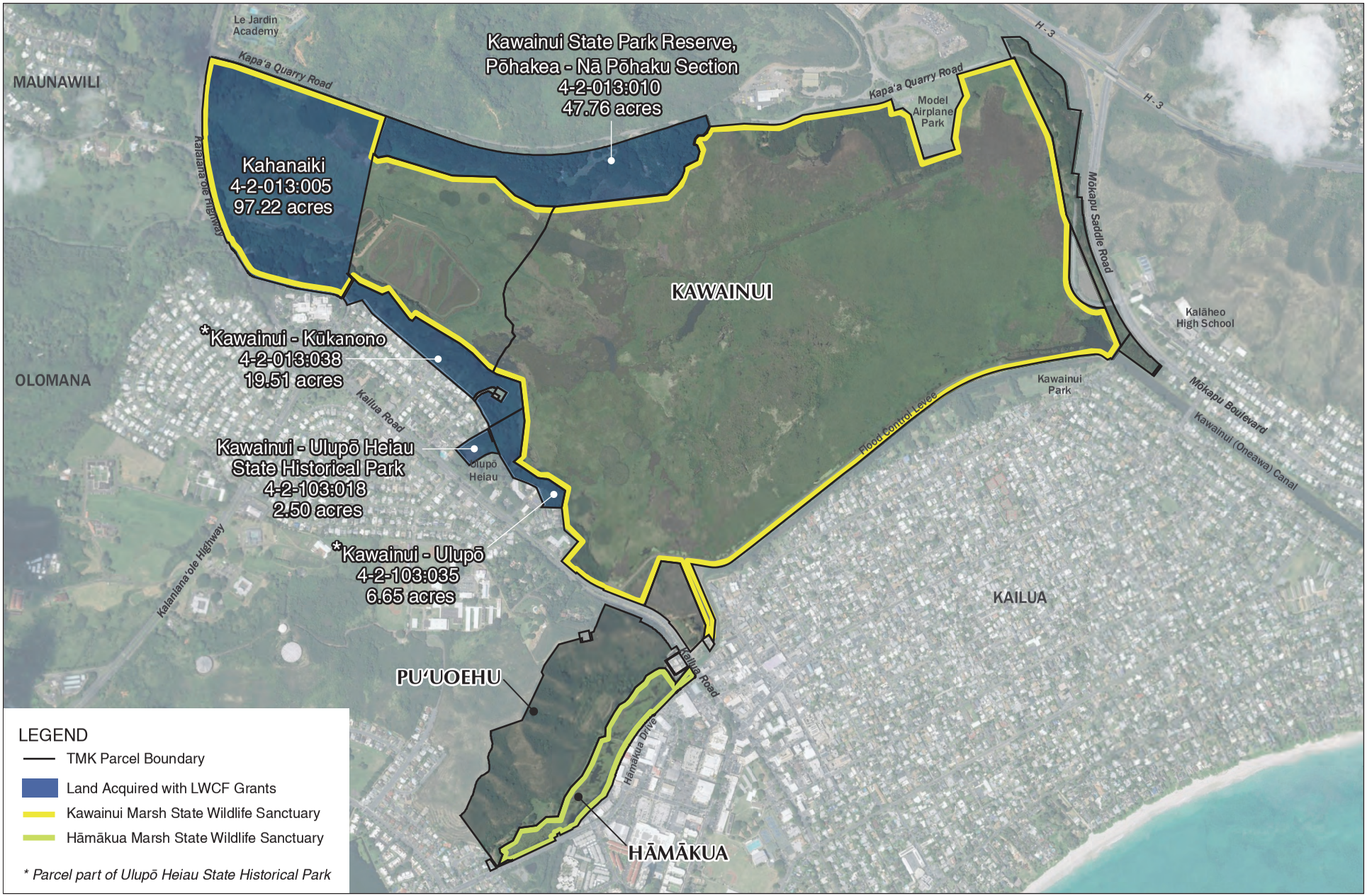


Exhibit 1.33. Boardwalk, Corkscrew Swamp Sanctuary, Source: Florida Hikes

Exhibit 1.34. Visitor Center, Congaree National Park Source: Roots Rated Sanctuary, Source: Florida Hikes

1.5.2 State of Hawai‘i Wildlife Sanctuary

Hāmākua and much of Kawainui including the levee are designated as state wildlife sanctuaries, regulated under Title 13, Chapter 126, HAR (State of Hawai‘i, 2010). The purpose of a state wildlife sanctuary is to conserve, manage and protect indigenous wildlife and their habitats in sanctuaries. The Pu‘uoehu hillside is not part of the wildlife sanctuary, but serves as the main watershed for the Hāmākua Marsh State Wildlife Sanctuary. Figure 1.5 shows the wildlife sanctuary boundaries for Kawainui and Hāmākua along with areas subject to Land and Water Conservation Fund program requirements. Requirements of the Land and Water Conservation Fund program are discussed in section 1.5.3.



Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 1.5 - Land & Water Conservation Fund (LWCF) Parcels

Kailua, O'ahu

0 800 1,600 FEET

HHF PLANNERS places for people

Designation as a state wildlife sanctuary imposes controls on entry and the types of uses allowed. Public access within state wildlife sanctuaries is restricted to marked trails and roads, and no motorized public vehicles and pets are allowed. Within Kawainui, access is "restricted to the perimeter marked trails and roads, or other marked trails or roads." Within Hāmākua, access is "prohibited in wetland areas bounded by the perimeter fence and Makai canal." According to state regulations, commercial activities may be permitted within ~~the~~ Kawainui and Hāmākua, ~~though~~ as a guideline ~~at a~~ limit of 100 commercial visitors per day for both sites (Chapter 126, HAR).

Currently, there are no marked trails or roads designated for public use within the Kawainui and Hāmākua sanctuary areas. Access is restricted to DOFAW employees for management and maintenance operations, ~~and~~ contractors hired by DOFAW, or others authorized by DOFAW to support management activities. DOFAW has authorized limited access to the non-profit organization ʻAhahui Mālama I Ka Lōkahi and the Hawaiʻi Nature Center to conduct restoration and educational activities within Kawainui. The public is invited into the Sanctuary to participate in educational programs and workdays sponsored by DOFAW.

1.5.3 Land and Water Conservation Fund Program

The Land and Water Conservation Fund (LWCF) Act of 1965 was enacted by Congress to assist in preserving, developing, and assuring accessibility to outdoor recreation resources for America's citizens and visitors. The federal grants program, administered by the Department of the Interior, National Park Service, provides funding assistance to state and local governments for the acquisition of land for public recreation and the development and/or renovation of outdoor recreational facilities. The LWCF program is administered on the State level by DLNR, Division of State Parks. Once LWCF funds are used, the property is protected for public outdoor recreation in perpetuity under Section 6(f) of the LWCF Act.

In the 1980s, five parcels totaling 173.64 acres at Kawainui were acquired by the State using matching LWCF funds. Initially, all these parcels were placed under the jurisdiction of DSP for outdoor recreation purposes. However, 97.22 acres at the mauka end of Kawainui (TMK: 4-2-013:005) were transferred to DOFAW in 2007 to be incorporated within the Kawainui Marsh State Wildlife Sanctuary. This area is still subject to LWCF requirements, and Figure 1.5 shows all of these areas affected.

Currently, public access and passive outdoor recreation are available at the Nā Pōhaku o Hauwahine site and Ulupō Heiau where trails, viewing areas, and interpretive signs are provided. The project proposes to increase public access and passive outdoor recreational opportunities to other areas included under Section 6(f) in compliance with the LWCF program requirements. The following are the LWCF requirements for this 173.64 acres of "Section 6(f)" land.

1. The property must be maintained for public outdoor recreational use in perpetuity.
2. The property must be kept reasonably open, accessible, and safe for public use. Hours and times of public use must be reasonable according to area and type of facility.
3. The property shall be maintained so as to appear attractive and inviting to the public.
4. Limitations may be imposed on the numbers of people using an area as necessary for maintenance and preservation, or the type of users, such as "hikers only."
5. No exclusive use, discrimination on the basis of residence, or required memberships are allowed.
6. Sanitary facilities, buildings, roads, trails, and other structures must be maintained in good repair and to health standards.

1.5.4 Existing Land Use Entitlements and Approvals

There have been several land use entitlements and other approvals issued for the Kawainui project area since the 1970s from both the State and City. Consequently, there are improvements that could already be implemented based upon these past approvals, and a background summary of these past approvals is provided.

State Conservation District Use Permits

1. OA-318 (1972). The City Department of Parks and Recreation received approval to implement a masterplan for 750 acres of Kawainui for regional recreational park use (Exhibit 1.35). Proposed uses included developing a 300-acre lake in the middle of Kawainui, a bird sanctuary with islands and smaller ponds, and storage area for flood waters. Perimeter areas had more intense active recreational uses such as a golf driving range, archery range, playfields (football, baseball, softball), courts (tennis, basketball, volleyball), community recreation center, hiking trails and garden. Water areas could be used for sailing, rowing, and swimming. A 3.5-acre area along Kapa'a Quarry Road was also included for use as an open field for model airplane flying.
2. OA-1374 (1981). The State Department of Planning and Economic Development received approval to conduct observations, monitoring and measurements within 750 acres of Kawainui so that a resource management plan can be developed.
3. OA-3068B (2002). The State DLNR, Land Division received approval to implement improvements to 680 acres of Kawainui under a 2000 Resource Management Plan developed. This includes management measures to support enhancing and protecting Kawainui's resources pursuant to both the Resource Management Plan and the 1994 Kawainui Marsh Master Plan developed (Exhibit 1.36).
    a. The approval allows Kawainui's resource management plan to be developed, changed, and implemented subject to approval of the Chair of the BLNR without further CDUP approval. The exception to this was an education center proposed in the 1994 Plan that would still require separate CDUP permit approval.

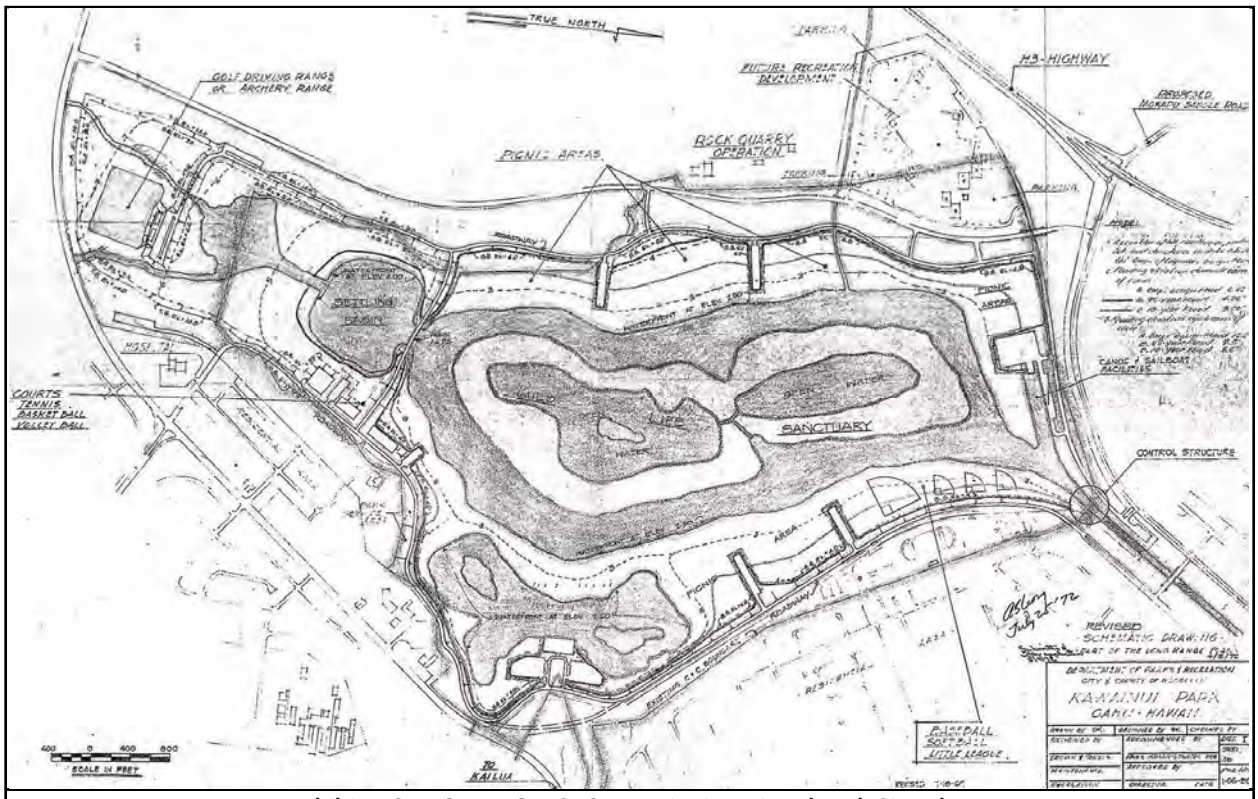


Exhibit 1.35. CDUP OA-318 Kawainui Regional Park Site Plan

b. Existing uses permitted included development and operation of wildlife habitat and vegetation buffers, agricultural activities, flood control, and ranching (Note: ranching operations have been discontinued). Research, educational and cultural activity along with passive park use are also allowed. This includes other uses consistent with resource management, such as relocation of existing facilities, development of trails and interpretive areas, and sediment basins. Other future possible facilities are subject to review and approval by the Chair of the BLNR.

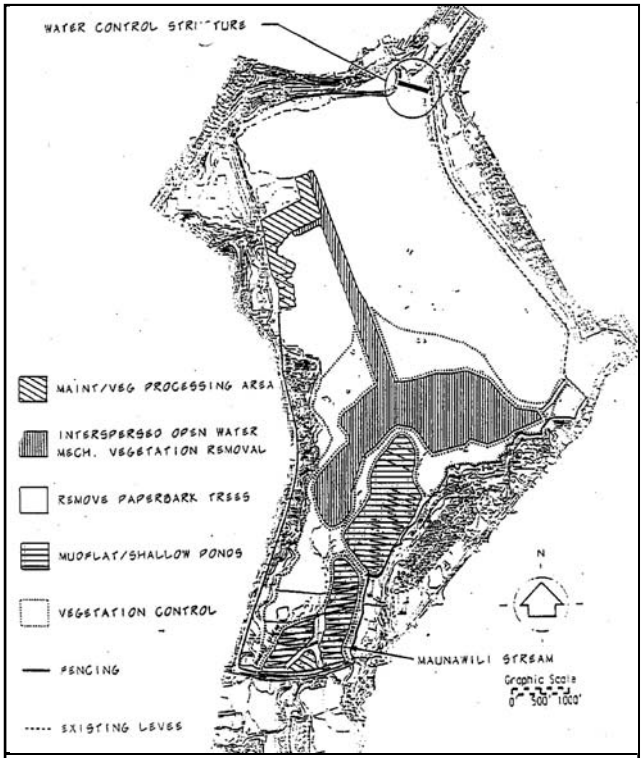


Exhibit 1.36. CDUP OA-3068 Kawainui Resource Management Plan

c. The subdivision and set aside of land for the City's model airplane field was included along with a site for a baseyard maintenance facility located next to the landfill transfer site. The City model airplane field has been established and is currently in use.

d. Wildlife habitat restoration improvements include wetland restoration, creating mudflats, restoring riparian habitat along streams, adding perimeter fencing, and vegetation control.

5. OA-3126 (2003). The City DDC received approval to construct park improvements at Kawainui's Gateway Park site located across of Kalāheo High School (currently the DSP Kawainui SPR, Kalāheo site). Improvements included a comfort station, parking lot with access road, educational pavilion and viewing platform, open space canoe storage area, canoe access to Kawainui Canal, and pedestrian bridge over the canal (Exhibit 1.37).

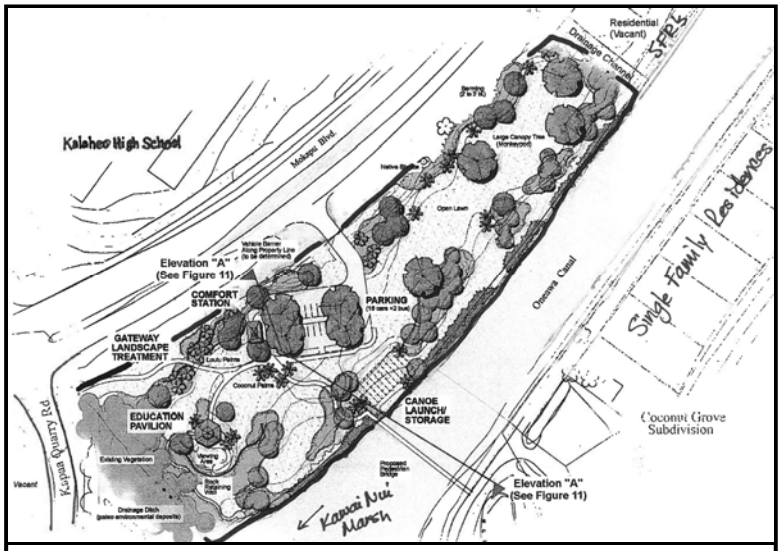


Exhibit 1.37. CDUP OA-3126 Kawainui Gateway Park Site Plan

6. OA-3278 (2006). The City DDC received renewed approval for same Gateway Park improvements proposed under OA-3126.

City Special Management Area Use Permits

1. Resolution 01-58 (2001). The State DLNR received approval to implement the wildlife habitat restoration portion of their 2000 Management Plan. This includes 71 acres of mudflats (restoration ponds and other areas), restoration of riparian wetland habit along streams, 17 acres of vegetation clearing, fencing, and developing a maintenance and vegetation processing areas.
2. Resolution 02-339 (2003). The City DDC received approval to construct the Kawainui Gateway Park project at a site located across of Kalāheo High School. Park improvements included the same uses approved under CDUP OA-3126.
3. Resolution 12-337 (2013). The State DOFAW received approval to implement wetland restoration, upland reforestation, and drainage improvements within 80 acres of Kawainui associated with the Kahanaiki area (mauka of restoration ponds), referred to as the Kahanaiki Restoration Project in this document.
4. SMA Minor Permit 1999/SMA-69 (1999). The City Department of Design & Construction received approval to undertake the Kawainui Stream Bank Beautification Project at Hāmākua Marsh.

5. SMA Minor Permit 2015/SMA-52 (2015). The State DOFAW received approval to construct a new storage building within their Kawainui Management and Research Station site to replace existing shipping containers being used temporarily for storage.
6. SMA Minor Permit 2016/SMA-69 (2016). The City Board of Water Supply received approval to establish a reinterment site at a site located northwest of Kailua Road at the eastern end of the project area. The site provides space to reinter the remains of individuals disinterred by projects in the Kailua ahupua‘a since the 1990s.

State Right-of-Entry Permits and Other Authorizations

1. AML Management Right-of-Entry (2012). AML received ROE (right-of-entry) approval from the BLNR to implement conservation and management improvements, educational programs, and subsistence, traditional, and customary native Hawaiian practices consistent with the long-term preservation of sanctuary resources within about 800 acres of Kawainui. This ROE permit allows AML to implement activities stemming from a 2010 Memorandum of Agreement executed between them and the BLNR to engage as partners in managing Kawainui. Activities include conservation management, and wetland and upland restoration activities near and around Ulupō Heiau and Na Pōhaku o Hauwahine. This includes creating lo‘i kalo at Ulupō Heiau along with wetland restoration and maintenance at both the heiau and Nā Pōhaku o Hauwahine.
2. AML Curatorship Agreement (2016). AML executed a 5-year curatorship agreement with the BLNR to implement conservation and management improvements, educational and interpretive programs, a landscape plan, and install passive park facilities at Nā Pōhaku o Hauwahine in coordination with DSP.
3. Ke Kahua O Kūali‘i Curatorship Agreement (2016). Ke Kahua O Kūali‘i executed a 5-year curatorship agreement with the BLNR to implement conservation and management improvements, educational, cultural, and interpretive programs, a landscape plan, and install passive park facilities within a 14-acre area of the Kawainui SPR, Pōhakea in coordination with DSP.

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CHAPTER 2:
PROJECT DESCRIPTION AND ALTERNATIVES

The Kawainui-Hāmākua Master Plan project was initiated to provide the State DLNR, DOFAW and DSP with a master plan to guide programming and implementation of future improvements needed within the Kawainui-Hāmākua project area. Proposed improvements are needed to support DOFAW and DSP's efforts in achieving their agency missions, to sustain, protect, and enhance the natural and cultural resources associated with this area, improve public access and outdoor recreational opportunities that align with sustainability objectives, support cultural practices, and increase stewardship opportunities. This chapter discusses the purpose and need for the project, and describes the project improvements and alternatives considered.

2.1 PROJECT NEED AND OBJECTIVES

As Hawai'i's largest freshwater wetland, a Ramsar wetland of international importance, a State wildlife sanctuary, and a place with historic and cultural significance, Kawainui-Hāmākua is a public resource that must be managed with care for current and future generations consistent with agency mission objectives. As the designated caretakers for the long-term management of this resource, DOFAW and DSP are tasked with sustaining, protecting, and enhancing the area's natural and cultural resources, providing opportunities for public access and use, as well as complying with applicable statutory and regulatory requirements.

In order to effectively manage, obtain funding, and implement proposed improvements needed in the project area, a current master plan is desirable. Therefore, DOFAW and DSP propose to implement several improvements to the Kawainui-Hāmākua project area that stem from a draft master plan serving as a planning document which embodies a shared long-term vision and serves as a guide for future programming and implementation. A master plan supports these agencies in seeking future funding and executing their resource conservation, public access, cultural, and recreational objectives in alignment with sustainability goals. The concepts and recommendations of this project support the "wise use" concepts central to a Ramsar Convention Wetland of International Importance. They also ensure that management actions are consistent with state and federal regulations governing a wildlife sanctuary, wetlands, native Hawaiian cultural practices, and increased and improved public access with opportunities for outdoor recreational activities.

The update of the master plan for Kawainui-Hāmākua is needed to provide a current and relevant document which reflects present conditions, identifies improvements supporting agency missions, and includes public input. Over the years, other plans have been developed for select areas within the Kawainui-Hāmākua project area. Various proposals have been partially implemented, however, most of the previous plans and proposals were never implemented. The

current master plan proposed incorporates many of the components included in plans prepared from 1982, to the 1994 master plan, and later plans.

Based upon public comments received on the project draft master plan, modifications were incorporated into the initial master plan improvements proposed that were subsequently identified in the published EISPN (Section 2.2). The resulting project improvements were then studied and assessed as part of the environmental review process as the Proposed Action to determine impacts addressed in the Draft EIS. Based upon comments received on the Draft EIS, additional modifications (reduced improvements) have been incorporated into the project that are discussed later in this Final EIS. The resulting Final EIS reflects those project improvements that are proposed by DOFAW and DSP at this time. The draft master plan would be updated to reflect present project improvements proposed from this Final EIS, and would serve as a planning document for DOFAW and DSP.

2.1.1 Background on Previous Planning Efforts

The last comprehensive plan for the project area was completed by the DLNR in 1994. The *Kawai Nui Marsh Master Plan, Report R-100* (WOAI, 1994) was an outgrowth of a 1983 DLNR resource management plan that focused on the long-term sustainment of Kawainui. Recommendations in the 1994 plan included waterbird enhancement areas, a visitor center, a cultural park at Ulupō Heiau, ethnobotanical gardens, recreational parks at Kalāheo, Mokulana, and Waiʻauia (the former ITT site), and a pedestrian pathway around the perimeter of Kawainui.

While these recommendations are still valid concepts, that plan is now over 20 years old. Changes have occurred to the area's physical characteristics, property ownership, agency jurisdiction and objectives for this area, and community priorities for the area, thus requiring a need to develop a current updated plan that addresses current needs and objectives. Several of the major factors or conditions that have changed since the 1994 plan include:

1. Designation of Kawainui-Hāmākua as a Wetland of International Importance by the Ramsar Convention in 2005.
2. Transfer of 97.22 acres at the mauka end of Kawainui (TMK: 4-2-013:005) from DSP to DOFAW jurisdiction in 2007 for inclusion within the Kawainui Marsh State Wildlife Sanctuary.
3. Transfer of ownership for large areas of Kawainui from the City to the State completed in 2008, and later added to the Kawainui Marsh State Wildlife Sanctuary in 2009.
4. State acquisition of the Puʻuoehu hillside in 2013.
5. Discontinuation of ranching operations within the project area.
6. Completion of 40 acres of habitat restoration ponds by the COE in 2013 that are now being managed by DOFAW.
7. Increased need for wetland and upland restoration and habitat enhancement due to continued expansion of non-native invasive vegetation.

8. Increased recognition of the area's historic role in native Hawaiian culture for over 700 years, which included active use as the largest freshwater fishpond on O'ahu and the presence of extensive taro cultivation and habitation.
9. Recognition of support for efforts that provide opportunities for native Hawaiian cultural practices and stewardship for organizations along with allowing for a permanent presence at Kawainui. This was reinforced in November 2014, when the Association of Hawaiian Civic Clubs at their annual convention unanimously (300-0) adopted a resolution supporting the draft Kawainui-Hāmākua Complex Master Plan because it supported cultural practices, a permanent presence, education, and continued curatorship and stewardship opportunities.
10. Recognition of support for efforts that increase and improve managed public access and outdoor recreational opportunities at Kawainui (LWCF requirements).
11. Increased educational programming conducted at Kawainui-Hāmākua along with growing public awareness of the need for successful long-term management.

2.1.1.1 Planning Documents Prior to 1994 Plan

Planning efforts for Kawainui-Hāmākua prior to the 1994 master plan include the Kawai Nui Heritage Plan (1982) and Kawainui Resource Management Plan (1983). These plans were developed with participation from governmental agencies along with community organizations. Many of the concepts and recommendations developed from these plans over 30 years ago involve consistent themes that have been incorporated nto later plans, as well as the current project plans. These themes included improving waterbird habitat, providing public access and trails for public viewing and educational programs, providing a visitor center, increasing outdoor recreational opportunities, and incorporating improvements that support cultural practices and interpretation.

Kawai Nui Heritage Plan, Directional Plan No. 5 (1982)

The Kawai Nui Heritage Plan, Directional Plan No. 5 was prepared by Robert Herlinger in 1982. The plan reflected input from the over 60 organizations belonging to an ad hoc committee for Kawainui. Exhibit 2.1, identifies those sites of significance from the 1982 plan which are relevant to the current master plan project. These recommendations were evaluated and incorporated as applicable in the 1994 master plan later developed for Kawainui.

This 1982 plan included recommendations in the following areas: 1) land and recreation; 2) ecology; and 3) cultural resources. Notable sites identified in this plan pertinent to the current Kawainui-Hāmākua project include the following:

1. A visitor information center and observation area (at former Kailua Drive-In).
2. Trail access at Nā Pōhaku o Hauwahine and a perimeter canoe trail.

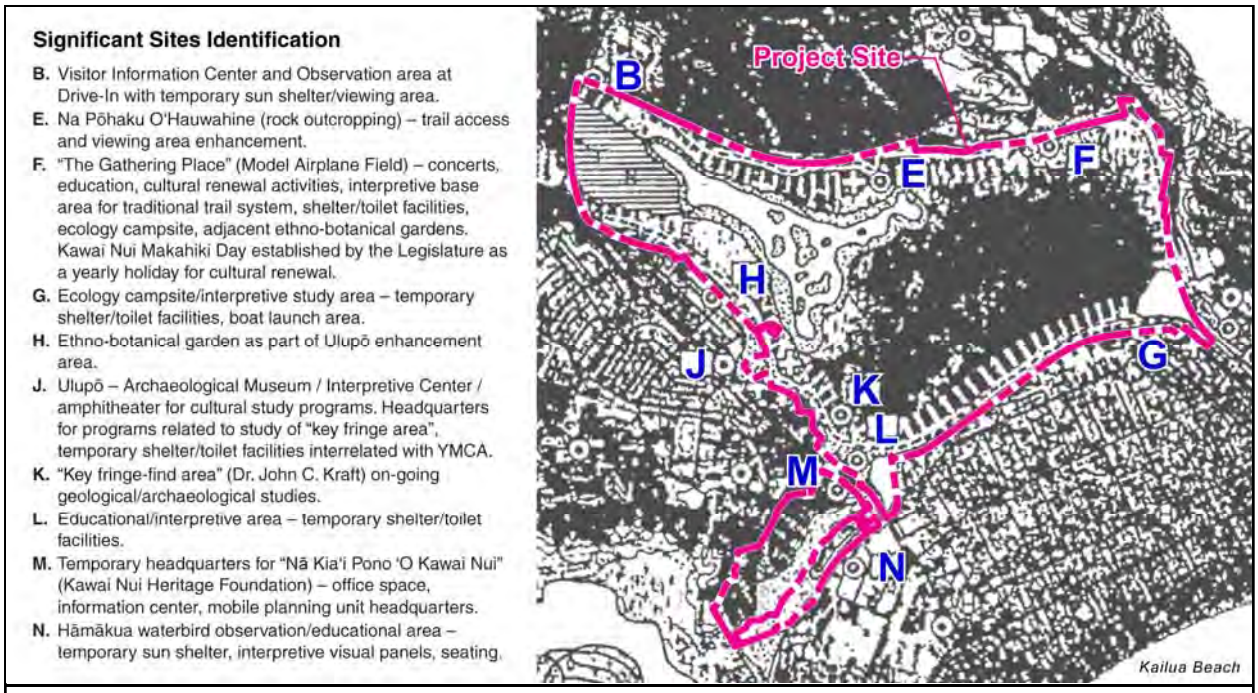


Exhibit 2.1 1982 Kawai Nui Heritage Plan Identifying Components Associated with Project Site

3. A gathering place at the model airplane field area for cultural and educational activities, interpretive base for a trail system, ethno-botanical gardens, and shelter and restroom facilities.
4. Interpretive center with amphitheater at Ulupō Heiau historical park to support cultural programs, shelters and toilets, and serve as a headquarters for program-related events.
5. Observation and educational programming area for Hāmākua with a shelter.

Kawainui Marsh Resource Management Plan (1983)

The *Resource Management Plan for Kawainui Marsh* (DPED, 1983) was developed in 1983 by the State Department of Planning and Economic Development under their Hawai'i Coastal Zone Management Program. Development of this plan included participation by a multi-disciplinary advisory committee consisting of representatives from the three levels of government (federal, state, and city), community organizations, landowners, and company's having principal interest in Kawainui. The resource plan was the first step in the establishment of a natural heritage area at Kawainui, and recommended a means through which multi-resource management could be accomplished, and offered a framework through which the plan could be implemented. Committee members could not represent the position of their respected organization, however, recommended policies represent a general consensus of the committee.

The objectives, policies, and implementing actions from this plan were organized under three broad resource components: 1) economic; 2) ecological, and 3) cultural that are summarized below. Exhibit 2.2 shows the recommended actions from this plan, which are identified under the respective objectives summary below. Proposals under the current project generally support the majority of these resource objectives and recommended actions through restoration efforts, increasing public access, and supporting traditional cultural practices.

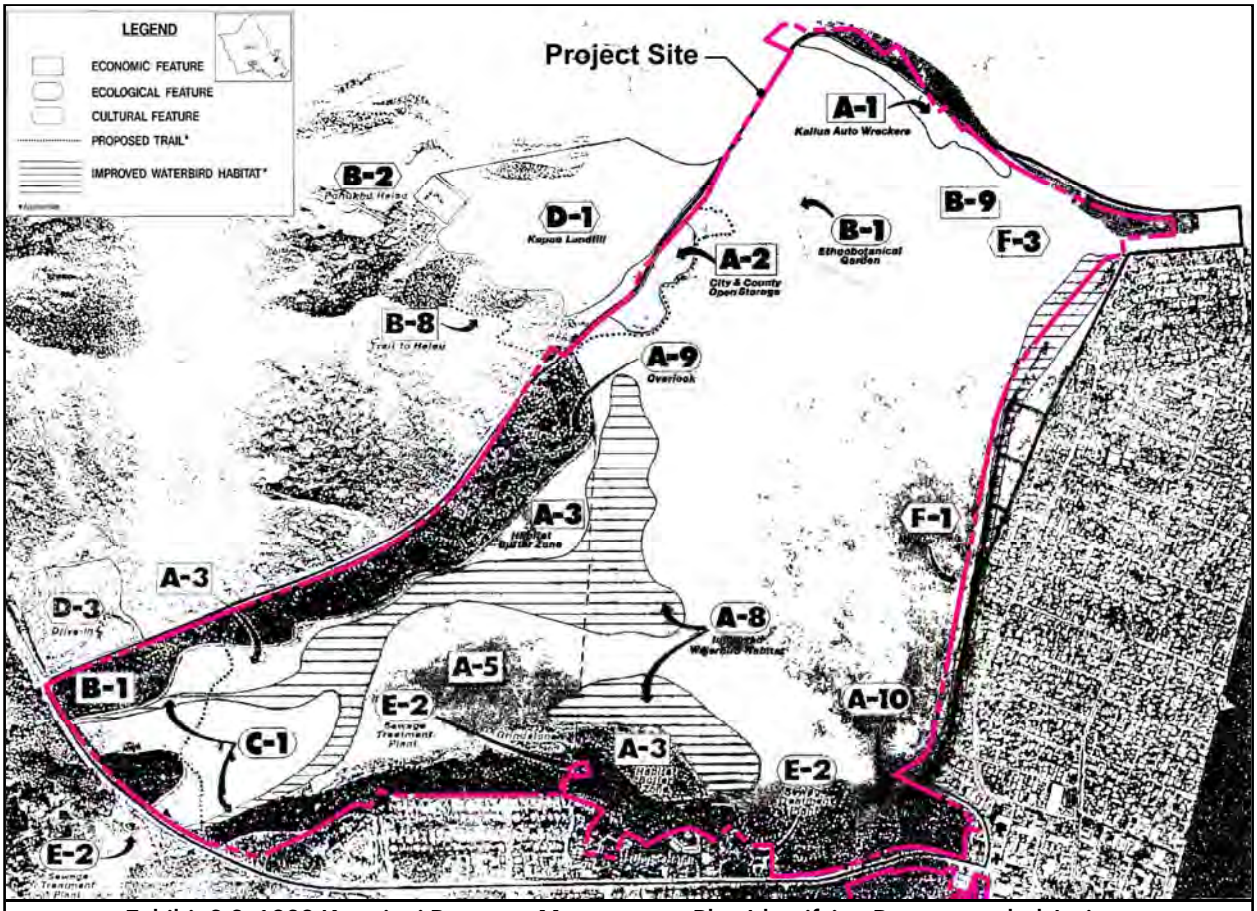


Exhibit 2.2 1983 Kawainui Resource Management Plan Identifying Recommended Actions

A. Economic Resources

1. Protect compatible natural, cultural, and economic resources through management of existing and future land uses.
2. Provide for public use and enjoyment of existing and potential resources of the marsh.
3. Provide for a centralized and consistent means for reviewing and regulating land use and development in the primary study area.

Recommendations Shown on Plan:

A-1 Remove the auto dump (Recommendation completed. Auto dump no longer present).

A-2 Relocate industrial uses (Recommendation completed. City baseyard no longer present).
A-3 Establish buffer zone around wildlife habitat and next to Ulupō Heiau.
A-5 Restore taro fields near Ulupō Heiau and between Maunawili and Kahanaiki Streams.
B-1 Purchase privately-owned land (Kahanaiki area acquired by State).
B-9 Investigate realigning northeast section of Kapa'a Quarry Road for quarry operations access and to improve public access within Kawainui.

B. Ecological Resources
1. Protect waterbird species and enhance their habitats.
2. Protect identified stream, estuarine, and terrestrial wildlife and fish and enhance their habitats.
3. Improve and maintain the water quality of the marsh.

Recommendations Shown on Plan:
A-8 Expand waterbird habitat by clearing areas (DOFAW is currently implementing restoration efforts).
A-9 Establish access path to Nā Pōhaku o Hauwahine for waterbird observing and cultural uses (AML has completed trails and has created a lowland forest of endemic and indigenous plants).
A-10 Develop waterbird habitat with interpretive uses at other areas.
B-1 Develop ethnobotanical garden.
C-1 Expand stream courses by removing vegetation (DOFAW is currently implementing restoration efforts).
E-2 Discontinue direct discharges of sewage effluent into wetland.

C. Cultural Resources
1. Protect and preserve identified historic and pre-historic sites and districts within the primary and secondary areas which are listed or eligible for listing on the National and State registers.
2. Promote traditional cultural values through the development and use of important archaeological sites in the marsh area.
3. Provide for the enhancement and use of the primary area as a learning resource for educational institutions.
4. Identify, enhance, and preserve aesthetic qualities of the primary and secondary areas, including vistas, view planes and site-specific features and elements.
5. Provide for recreational activities in the marsh area.

Recommendations Shown on Plan:
F-1 Create hiking paths and trails along perimeter of Kawainui (A marsh pathway plan for Kawainui was funded by the City and County in 2003).
F-3 Study potential for expanding estuary for fishing and boating activities.

2.1.1.2 1994 Master Plan for Kawainui

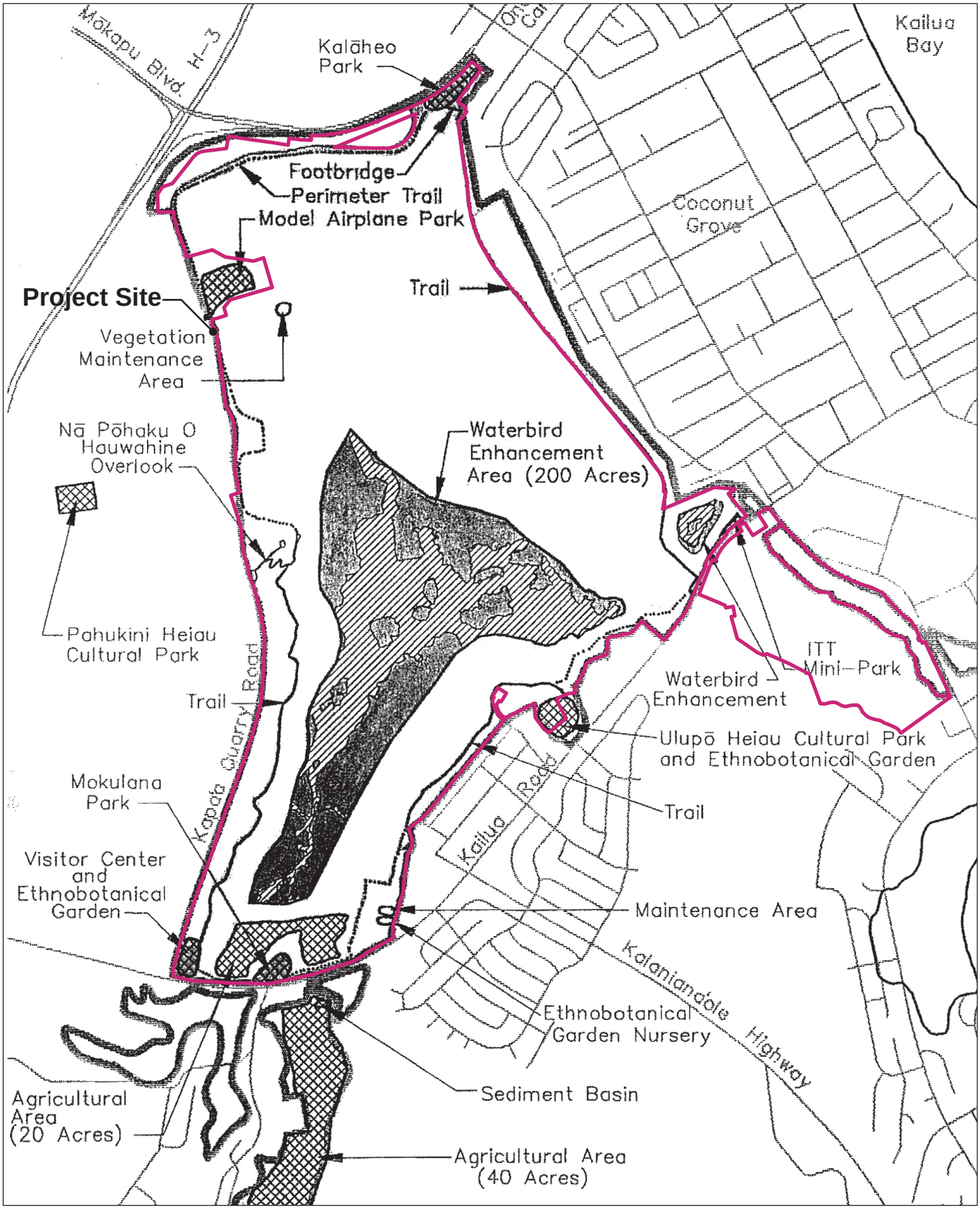
The State DLNR prepared a master plan for Kawainui in 1994 that was an outgrowth of the *Resource Management Plan for Kawainui Marsh* (DPED, 1983). The resource management plan specified objectives, policies and a comprehensive list of recommended actions for the protection and enhancement of Kawainui's resources. The 1994 master plan built upon that conceptual framework by developing site specific recommendations for implementation. This updated plan is the *Kawai Nui Marsh Master Plan, Report R-100* (WOAI, 1994), and shown on Figure 2.1.

During that time, a range of resource management concerns hindered the potential of Kawainui serving as a wildlife habitat, flood storage basin, cultural and educational asset, and recreational area. Open water areas were continually filled with vegetation, and there was no control of predation preventing its function as a waterbird habitat. Increased urbanization of the areas surrounding Kawainui and natural infilling of sediment reduced the wetland's flood storage and containment capacity. Kawainui's value as a cultural asset was diminished by poor access to cultural sites and lack of interpretive and educational programs. Limited public access to areas where ecological and open space resources can be appreciated was also a factor restricting Kawainui's value as a recreational and aesthetic resource.

The 1994 Plan recommended enhancement and management improvements for three areas: 1) preservation actions; 2) master plan improvements; and 3) management actions. Preservation actions included recommendations to create a wildlife sanctuary within Kawainui and Hāmākua's wetland, list Kawainui on the National Register of Historic Places, acquire contiguous wetland areas mauka of Kailua Road, and reclassify land use designations of acquired areas to conservation or preservation status. Master plan improvements consisted of developments within Kawainui that increase public access and educational opportunities about the value of natural resources at Kawainui. Proposed improvements included a visitor center, cultural parks, ethnobotanical gardens, commercial taro lo‘i, waterbird habitat enhancement, passive parks, trails, and overlooks. Figure 2-1 illustrates the major elements of the plan.

Management actions included long-term maintenance activities needed to ensure the protection of the resource's preservation values. This included maintenance of flood control structures and capacities, vegetation removal, water quality monitoring, sediment basin construction, predator removal, and powerline relocation. The master plan also accommodated the planned COE flood control improvements designed to increase the wetland's flood storage capacity.

The majority of elements from the 1994 plan have been incorporated into the current master plan project with updates based upon current conditions, agency objectives, and community input. This includes wetland restoration efforts to support waterbird habitat improvements being implemented by DOFAW. A summary of other specific elements are discussed below, along with how the currently proposed plan is addressing each element.



Source: Wilson Okamoto & Assoc., Inc.

Legend

- Roads
- Shoreline
- Master Plan Area
- Perimeter Trail
- Project Area Boundary
- Open Water

Kawainui - Hāmākua Master Plan Project

Figure 2.1 - 1994 Master Plan for Kawainui

Kailua, Oʻahu

0 800 1,600 FEET

HHF PLANNERS places for people

1. Visitor Center. Located at the corner of Kalaniana‘ole Highway with Kapa‘a Quarry Road, the objectives of the visitor center were to: 1) orient residents, school groups and visitors to designated points of interest within Kawainui; 2) serve as a center for educational and interpretive programs; and 3) provide a repository for historical, cultural, ecological and other references and exhibits.

   Proposed Project. An education center is proposed in Pōhakea at the site of a former ranch near Kapa‘a Quarry Road, but is intended to serve the same objectives. The proposed facility is conveniently situated to orient visitors and serve educational programs at Kawainui. Nā Pōhaku is located north of this site with a connecting trail, and a kauhale (group of houses) established to the south provides cultural and interpretive elements.

2. Cultural Park at Ulupō Heiau. The cultural park objectives were to: l) increase public awareness about Ulupō Heiau and the cultural significance of Kawainui; 2) foster respect and reverence for Hawaiian cultural traditions; and 3) integrate the culture, history, and legends of the area, and augment interpretive programs at the visitor center.

   Proposed Project. Cultural landscape restoration (re-establishing lo‘i kalo and planting culturally important plants) is already occurring at Ulupō Heiau SHP with increasing educational programming. These efforts would continue under the proposed master plan generally following a *Draft Ulupō Heiau Cultural Resources Management and Landscape Plan* (Orr, McNamara, Palama and Yent, 2011).

3. Ethnobotanical Garden. Ethnobotanical gardens were proposed at several areas to establish native and Polynesian introduced wetland, food and medicinal plants for display and educational purposes.

   Proposed Project. Specific gardens are not designated under the proposed project, but several areas would allow the establishment of native plant reforestation for similar purposes. These include the kauhale complex at Pōhakea, Kapa‘a Cultural Center, Ulupō Heiau SHP, and other upland areas as part of reforestation efforts implemented by nonprofit organizations in coordination with DOFAW.

4. Parks. Park space was proposed to provide outdoor areas for passive recreational activities, such as picnicking, walking, wildlife viewing, and experiencing the wetland environment. Locations proposed were at Kalāheo, Nā Pōhaku o Hauwahine, Mokulana peninsula, and Wai‘auia (former ITT site).

   Proposed Project. Areas for passive outdoor recreation with support facilities (e.g. viewing pavilion, shelters, parking, and restrooms) are proposed at ~~the Kawainui State Park Reserve (SPR), Kalāheo Section,~~ Pōhakea, Nā Pōhaku o Hauwahine~~, Mokulana peninsula,~~ and the Kahanaiki area.

5. Trail System. Pedestrian trails were proposed to provide access along the wetland fringe for outdoor recreation, educational activities, and to link the visitor center, cultural features and other components.

   Proposed Project. Pedestrian trails are proposed under the project to achieve similar objectives.

2.1.1.3 Planning Documents After 1994 Plan

Other planning documents and individual projects have been proposed for Kawainui since 1994. These projects have included concepts similar to the 1994 plan. These include:

1. Kawainui Education Center (1998);
2. Management Plan for Kawainui Marsh (2000);
3. Kawainui Gateway Park (2002);
4. Kawainui Marsh Pathway Plan (2003);
5. Kawainui Marsh Environmental Restoration Project (2009);
6. Ulupō Heiau Cultural Resources Management and Landscape Plan (2011); and
7. Kawainui Marsh Wetland Restoration Project (2012).

Kawainui Education Center

A Draft Environmental Assessment was published in OEQC's September 8, 1998 edition of *The Environmental Notice* for a proposed education center at Kawainui by the Hawai'i Audubon Society. Education center facilities were proposed on a 5-acre area along Ulukahiki Street (below Castle Medical Center) where DOFAW's existing management research station is now located. The Hawai'i Audubon Society desired to partner with other organizations to seek private sector funding to develop the center and educational and cultural programs that support and enhance Kawainui's resources.

The facility included a covered, open-sided kiosk to provide an assembly area for up to 40 persons for programs that would include classes, public lectures, tour orientation, demonstrations, and docent and teacher training programs. Support facilities included a restroom, office, storage facility, and parking area. A demonstration taro lo'i was proposed for a portion of the area nearest to Maunawili Stream. In addition, one or more boardwalks would provide access within the wetland. The proposed actions were intended to enhance public appreciation of and access to Kawainui.

The current project proposes an education center similar to the 1998 proposal. DSP is considering having a non-profit organization to manage the facility and implement educational, interpretive, and cultural programs. However, the center's location is proposed at Pōhakea along Kapa'a Quarry Road providing convenient access to Nā Pōhaku and a one-mile stretch of uplands at Kahanaiki for walking and viewing. A kauhale component with lo'i and culturally important plants adds cultural and interpretive elements not included in the 1998 proposal.

Management Plan for Kawainui Marsh

The State DLNR, Land Division obtained CDUP approval in 2002 (OA-3068B) for their proposed *Management Plan for Kawai Nui Marsh* (DLNR LD, 2000). Figure 2.2 shows the improvements approved under the plan. Proposals are identified below.

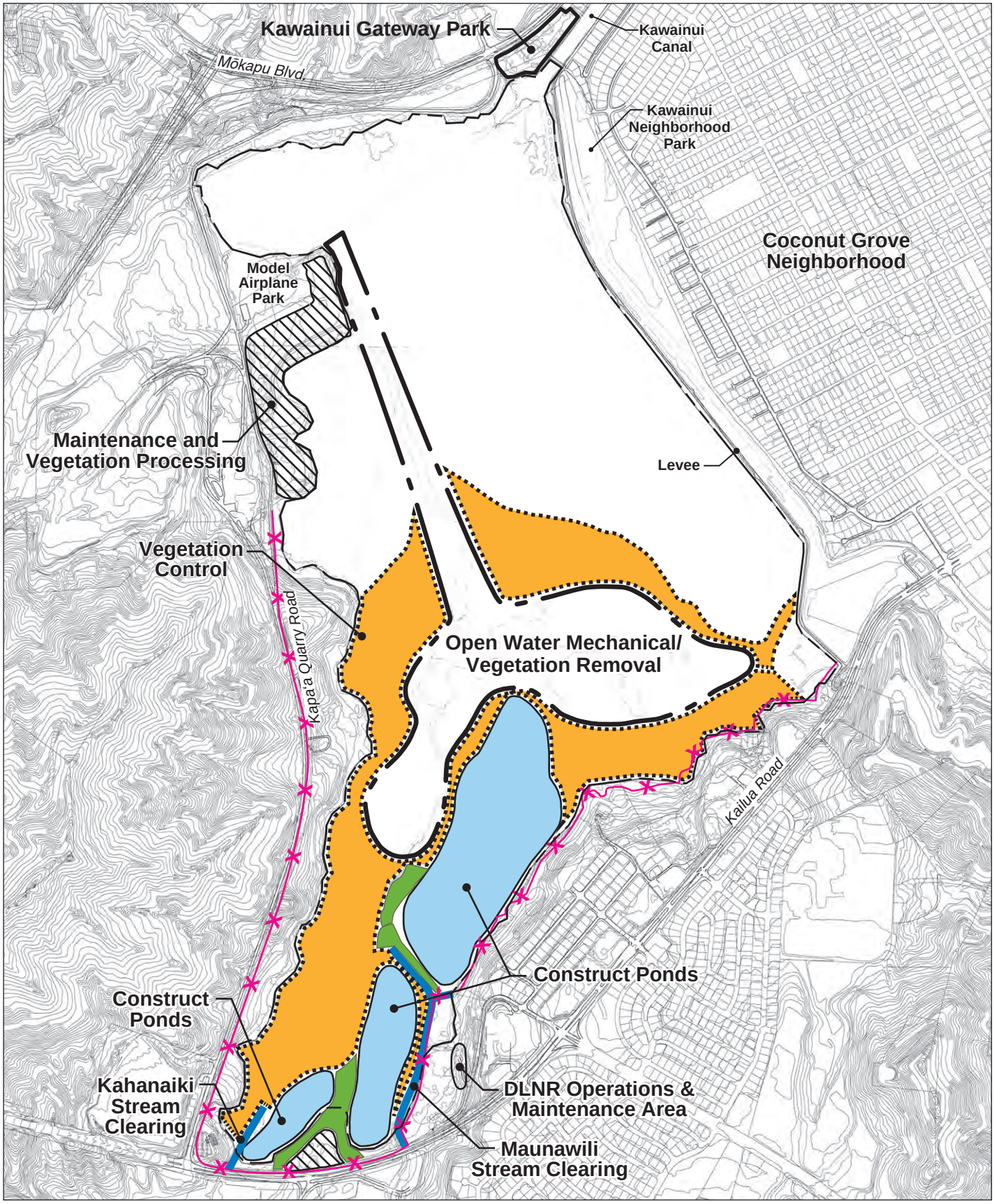
1. Habitat restoration that would create 70 acres of mudflats and shallow ponds, and mow 17 acres of vegetation.
2. Continue ongoing vegetation management and clearing of vegetation from certain marsh areas to improve flood storage capacity, create wildlife habitat, and improve water quality.
3. Restore 2,800 lineal feet of riparian habitat along Kahanaiki and Maunawili Streams.
4. Install 16,200 linear feet of fencing.
5. Other improvements would include the relocation of existing facilities (e.g. electrical lines and utility poles), vegetation processing, development of trails and interpretive areas, construction of sediment basins, and other future possible facilities that are consistent with the Conservation District and objectives of wetland management.

The current project includes these similar management concepts for Kawainui proposed under DLNR's 2000 management plan. This includes wetland restoration to create more open water, but now proposes a combination of mudflats and transition vegetation from wetland to upland areas. A vegetation processing area next to the City's model airplane park is proposed in the current plan, but the DOFAW maintenance baseyard will remain at its present location behind Adventist Health Castle (formerly Castle Medical Center). Some DLNR-related operations (e.g. DOCARE, research programs) could be relocated to the vegetation processing site. DOFAW is implementing portions of the management plan that includes management and monitoring of the restoration ponds, ongoing vegetation management (cutting and clearing), and installation of fencing.

Kawainui Gateway Park

The City Department of Design and Construction (DDC) proposed the Kawainui Gateway Park project in 2002 across from Kalāheo High School which corresponds to the Kalāheo Section of the Kawainui SPR. Both CDUP (OA-3126) and SMA (Resolution 02-339) approvals to construct the park project were obtained by the City DDC. Proposed improvements include a comfort station, parking lot with access road, educational pavilion and viewing platform, open space canoe storage area, canoe access to Kawainui Canal, and a pedestrian bridge over the canal.

~~Improvements under the current plan for the Kalāheo Section of Kawainui SPR include many of the same improvements. The differences are: 1) the pedestrian bridge over the canal has been removed; 2) a hale wa'a has been added for canoe storage, repair, and educational programming; and 3) additional parking stalls are provided, including trailers for canoes.~~ No new improvements are proposed under the project from that already permitted for this park site.



LEGEND

- Construct Ponds
- Mowing
- Vegetation Control
- Stream Clearing
- Maintenance and Vegetation Processing
- Fencing
- Open Water Mechanical/ Vegetaion Removal

Kawainui - Hāmākua Master Plan Project

Figure 2.2 - State DLNR Kawainui Management Plan (2000)

Kailua, O'ahu

0 650 1,300 FEET

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Kawainui Marsh Pathway Plan

The City Department of Transportation Services (DTS) proposed a pathway plan for Kawainui in 2003 under a Final Environmental Assessment (HHF, 2003). The inspiration for the pathway plan came from the 1983 resource management plan and 1994 master plan for Kawainui. Elements of the pathway plan are shown on Figure 2.3 and include:

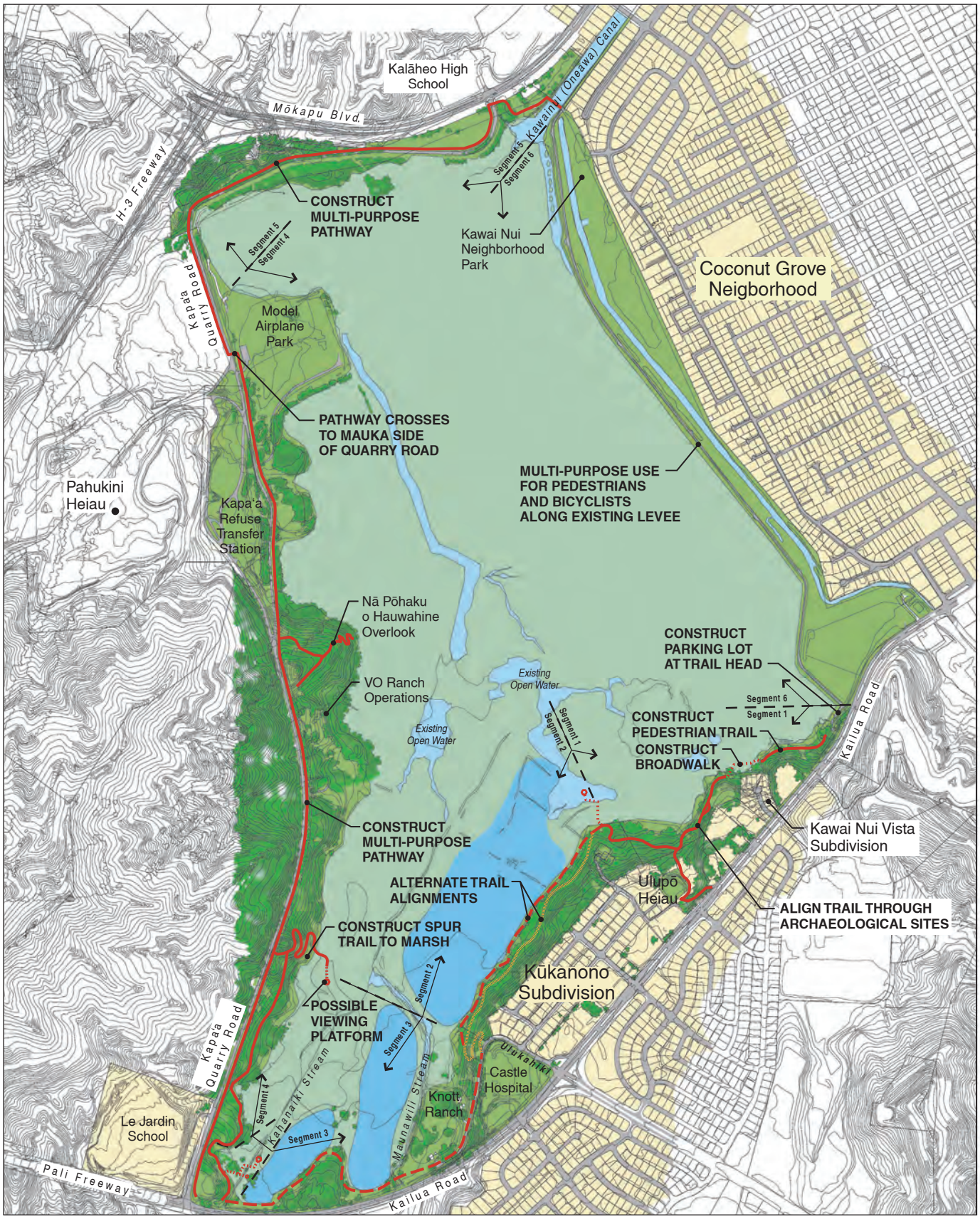
1. A multi-purpose pathway for pedestrians and bicyclists along Kapa‘a Quarry Road;
2. A pedestrian trail below Kapa‘a Quarry Road extending from a visitor center site as proposed in the 1994 plan. The trail extended along the highway and around the Mokulana Peninsula toward Castle Medical Center.
3. A boardwalk and viewing platform extending into the marsh from the visitor center site.

Trails planned under the current project plans generally follow the intent and concepts from the City’s pathway plan. A pedestrian bridge crossing Kawainui Canal (Oneawa Canal) included in the previously approved Kawainui Gateway Park proposal is not planned to be implemented by DSP, and ~~has been removed along with~~ a multi-purpose pathway along Kapa‘a Quarry Road is not proposed by the project because properties associated with the road have multiple owners, as discussed in Chapter 1. Trails through the Kahanaiki area are intended to support educational activities and passive outdoor recreational enjoyment of the area along Kapa‘a Quarry Road.

Kawainui Marsh Environmental Restoration Project

The COE completed a *Kawai Nui Marsh Environmental Restoration Project; Final Supplemental Environmental Assessment* in 2008 that proposed to restore habitat by creating 24 acres of mudflats and shallow ponds, installing predator control fencing, and constructing two access roads for maintenance activities (COE, 2008). The environmental restoration pond project encompassed about 40 acres and was completed in 2013.

The COE is in the process of formally transferring maintenance responsibility of the new ponds to DOFAW, but DOFAW is already managing and maintaining the ponds. The current project plan includes improvements to DOFAW’s management and research station to support maintenance operations for the ponds, along with conducting educational programs and service learning projects.



Kawainui - Hāmākua Master Plan Project

Figure 2.3 - City DTS Kawainui Pathway Plan 2003

Kailua, O'ahu

0 800 1,600 FEET

HHF PLANNERS places for people

Ulupō Heiau Cultural Resources Management and Landscape (CRML) Plan

A draft cultural resources management and landscape plan was prepared for Ulupō Heiau SHP in 2011 to establish a vision and purpose for cultural resources in the area (Orr, McNamara, Palama and Yent, 2011). This culturally based management plan was prepared with community participation for AML, Kailua Hawaiian Civic Club, and DSP, and had the following components: 1) develop a conceptual site plan for Ulupō Heiau SHP (Exhibit 2.3); 2) develop and integrate a Hawaiian cultural protocol policy for activities that take place in Ulupō Heiau SHP; 3) develop a cultural resource management plan to document, protect, and revitalize the cultural resources; 4) develop a cultural landscape and ethnobotanical restoration plan; and 5) develop an educational/interpretive program plan.

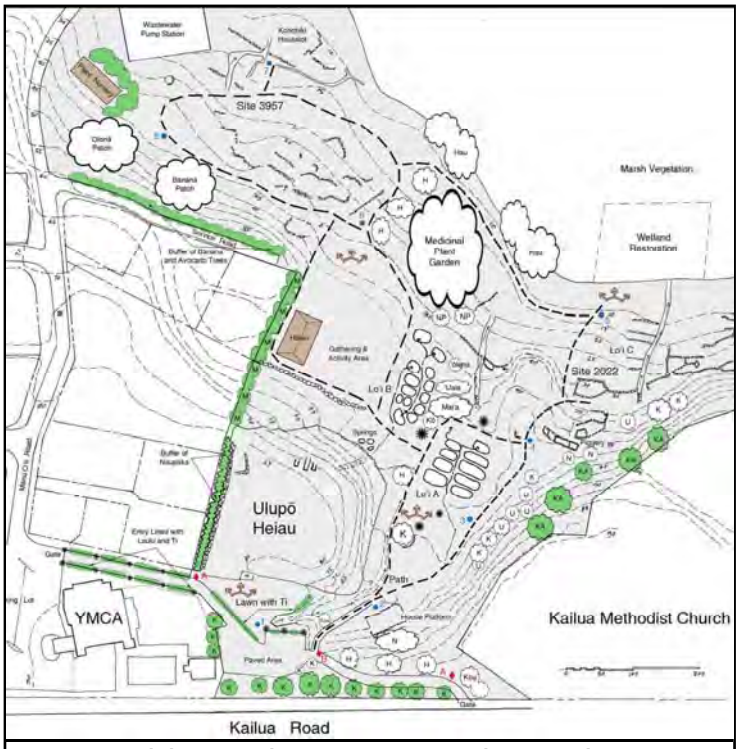


Exhibit 2.3 Ulupō Heiau CRML Plan Site Plan

The current project's conceptual plan for Ulupō Heiau SHP incorporates a majority of the site plan concepts proposed under the CRML plan. However, the project excludes the portion of property owned by the Windward YMCA. The plan also relocates the proposed hālau further away from existing residences.

Kawainui Marsh Environmental Restoration Project

DOFAW proposed wetland restoration and upland reforestation on 80 acres in the Kahanaiki area under their Kawainui Marsh Wetland Restoration and Habitat Enhancement Project in 2012 (HHF, 2012), and received entitlement approval for the actions (Resolution 12-337). Wetland restoration efforts consist of the gradual removal of invasive vegetation covering the wetland and restoring it with native vegetation to open up surface water flows and establish seasonal mud flats. Upland areas will be cleared of most invasive vegetation to allow for reforestation activities and landscaping with native vegetation. Other improvements address drainage culverts along Kapa‘a Quarry Road and within upland areas, improving maintenance access roads, and installing perimeter fencing.

Restoration improvements under the current master plan incorporate the wetland restoration and upland reforestation concepts. The methods proposed under the 2012 Kahanaiki Restoration Project serves as the framework for expanding efforts to include additional wetland and upland areas within Kawainui. Restoration improvements have begun in select upland areas and include replacement of a drainage culvert and programming of phased wetland restoration for implementation.

2.1.2 Need for Master Plan Improvements

Chapter 1 described the jurisdictional roles and responsibilities of DOFAW and DSP, which include oversight of natural heritage and flood control along with cultural, educational, and recreational resources. In keeping with these responsibilities, the following themes are presented to establish the purpose and need for proposed improvements included in the proje t's plans.

1. Natural Resource Restoration and Habitat Enhancement. The vast majority of the project area includes wetlands that need restoration actions to deal with: 1) the overgrowth of invasive vegetation; 2) flood control requirements; 3) enhancement of habitat for endangered waterbird species; 4) enhancement of waterbodies as suitable habitat for aquatic biota. Upland reforestation is needed to address: 1) overgrowth of invasive vegetation; and 2) erosion control for surface runoff into the wetlands from upland areas. Improvements are also needed to support DOFAW's management and maintenance operations in the project area.
2. Cultural Practices and Stewardship. The Kawainui-Hāmākua area is an important repository of cultural tradition and historical resources. The area is culturally significant to native Hawaiians and the public. Providing opportunities to establish long-term use of specific lands to support cultural practices, stewardship, and educational opportunities is needed. Protecting and managing cultural resources is a core agency mission for both DOFAW and DSP.
3. Public Access for Outdoor Recreation and Educational Opportunities. Increasing opportunities for passive outdoor recreational use is needed to comply with agency missions and regulatory requirements. Increased and improved public access supports educational and stewardship opportunities that support DOFAW and DSP's management of resources in the area.
4. Resource Management. Effective management of resources with increased public access at Kawainui-Hāmākua is critical for the public interest and for the protection of this resource.

2.1.2.1 Natural Resource Restoration and Habitat Enhancement

Throughout the project area, there is a need for environmental stewardship in the form of wetland restoration, upland reforestation, habitat enhancement, erosion control, and enhancement of aquatic resources. The following discussion presents the need for such improvements.

Kawainui

Kawainui provides important wetland habitat for endangered endemic waterbirds, migratory shorebirds, and waterfowl. These functions are being threatened by the overgrowth of alien (non-native) and invasive vegetation. Water flow into this wetland from streams and drainageways is substantial at about 12.6 mgd and is thus not an issue. DOFAW assumed management of most areas of Kawainui in 2009 after acquiring the property from the City. Challenges with its management and maintenance over the previous decades have resulted in a current condition that needs to be addressed through wetland restoration and upland reforestation. Other factors contributing to the current condition include erosion of upland areas around Kawainui and challenges with predator control.

Overgrowth of Invasive Vegetation. Vegetation at Kawainui is dominated by introduced and invasive plant species (Exhibit 2.4). The expansion of invasive vegetation at higher elevation areas outside Kawainui, cattle grazing, agricultural use, diverted water sources, increased storm water runoff, erosion, and sediment loading from surrounding urban development have all contributed to the present condition. As a result, open water areas within the wetland has been reduced by invasive vegetation along with an accumulation of a floating mat of peat (partially decomposed plant matter that is saturated with anoxic water). This situation threatens remaining native plant assemblages, reduces the wetland's function and value, and diminishes its ability to provide suitable waterbird habitat.

North View from South End of Kawainui Northeast View from Center of Kawainui

Exhibit 2.4 Overgrowth of Invasive Vegetation at Kawainui

Invasive vegetation in the wetland restoration area can be characterized as consisting of a California grass (*Urochloa mutica*) community, Elephant grass (*Pennisetum purpureuma*) stands, Job's Tears (*Coix lacryma-jobi*), and some pasture lands typically dominated by California grass. The California grass community is dominant along with patches of Cattail (*Typha latifolia*), and bulrush and terrestrial vines (e.g. *Canavalia cathartica* and *Paederia scandens*) occur in some places. These dominant invasive plants have contributed to the reduction of open waterways and native emergent vegetation, and have severely curtailed habitat for endemic Hawaiian waterbirds to forage and nest.

The upland portion of the project area outside of the wetland is similarly dominated by invasive species of non-native vegetation that is gradually eliminating former native vegetation present in the area (Exhibit 2.5). Such plants include Java plum (*Syzygium cumini)*, Gunpowder tree (*Trema orientalis*), Siris tree (*Albizia lebbeck*), Strawberry guava (*Psidium catteianum)*, Koa haole (*Leucaena leucocephala)*, and African tulip trees (*Spathodea campanulata*). As a result, reforestation of upland areas is needed to gradually replace non-native vegetation and trees with native vegetation.

Exhibit 2.5 Photo of Upland Area Dominated with Non-Native Vegetation Growth

Flood and Erosion Control. Kawainui serves an important flood control function as a flood basin, slowing down surface runoff and protecting low-lying urbanized areas of Kailua. As part of the 1994 master plan report, a study evaluating hydraulic conditions determined that Kawainui has a large and effective storage capacity. This results in peak flows discharged into Kawainui Channel being over 70 percent less than peak flows entering the wetland (e.g. Maunawili and Kahanaiki Streams) for the 100-year storm (WOAI, 1994). The overgrowth of invasive vegetation (peat mat) within the wetland reduces open water areas and impacts Kawainui's ability to serve as a sedimentation and flood control basin. Increasing open water areas helps to facilitate distribution of water throughout the larger wetland basin instead of having flows being concentrated along narrower corridors of open areas discharging toward Kawainui Canal.

Kawainui also protects the water quality of Kailua Bay by serving as a nutrient and sediment sink for runoff discharged from upland areas by allowing pollutants to settle and filter before being discharged downstream. Surface water runoff from upland areas associated with the Maunawili and Olomana communities enter Kawainui primarily from Kahanaiki and Maunawili Streams. Runoff from Kalaniana'ole Highway and Kapa'a Quarry Road also sheet flows into

drainage culverts or across low lying areas that either discharge into these streams or directly into the wetland. There is a need to restore the wetland so that upland agricultural and urban contaminants (e.g. fertilizers, herbicides, pesticide, septic system discharges, etc.) can be better filtered before discharging into Kawainui Canal and ocean.

Drainage culverts and other low lying discharge points along Kapa‘a Quarry Road also need repair or improvements. Storm water runoff from these culvert locations have caused erosion of upland areas of Kawainui contributing to increased discharges of sediment and other materials into the wetland. Improvements to these culverts and upland areas are needed to mitigate erosion and reduce discharge of sediments and other debris into the wetland.

Habitat Recovery for Endangered Waterbirds. Kawainui provides important habitat for four endangered species of native Hawaiian waterbirds and for migratory bird species. The area also provides habitat for various migratory waterfowl, wintering shorebirds and a variety of resident and introduced bird species. Standing ponds, wet pastures, and open water areas serve as an attractive habitat for migratory waterfowl. Its waters also support a variety of introduced and indigenous aquatic wildlife. The loss of open water areas and other wetland values affects the suitability of this area to serve as essential habitat for the recovery of endangered waterbirds.

Four species of endangered Hawaiian waterbirds found in Kawainui include the Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), Hawaiian moorhen (*Gallinule chloropus sandvicensis*), and Hawaiian duck (*Anas wyviliana*). Several migratory shorebirds identified include Pacific golden plovers (*Pluvialis dominica*), Ruddy turnstones (*Arenaria interpres*), Sanderlings (*Calidris alba*), and Wandering tattlers (*Heteroscelus incanus*).

The U.S. Fish and Wildlife Service (FWS) latest draft of the *Recovery Plan for Hawaiian Waterbirds* (FWS, 2011) identified Kawainui as a “core wetland” consisting of area providing habitat essential for larger populations of Hawaiian waterbirds prescribed for recovery. The recovery plan cites a need to expand open water areas at Kawainui that are used as habitat by endangered waterbirds which use the area in smaller numbers. The plan also recommends recovery actions that include implementing management plans, securing water sources and managing water levels, managing vegetation, reducing and monitoring predator populations, minimizing human disturbances, monitoring and controlling avian disease, monitoring populations, and removing the threat of mallard-Hawaiian duck hybridization (FWS, 2011).

Another factor affecting waterbird recovery within the project area is threats from various predators. Waterbirds are threatened by a wide variety of mammalian, avian, and amphibian predators that live within Kawainui or access the wetland from surrounding areas. The small Indian mongoose (*Herpestes auropunctatus* or *javanicus*) is the most pernicious of the predators in the wetland and a prevalent predator to waterbirds. The roof rat (*Rattus rattus*) inhabits a wide range of environmental conditions, and has been identified as a predator of native birds.

Feral dogs (*Canis familiaris*) are present intermittently in the area and constitute a threat to ground-nesting birds. Because of the proximity of urban communities, domesticated dogs pose a threat to Kawainui waterbirds when they are illegally walked through the wildlife sanctuary. Feral cats (*Felis catus)* pose a similar threat to both ground nesting and arboreal nesting birds.

Other species have been observed consuming or endangering native waterbirds and therefore constitute a threat to their recovery in the marsh. The cattle egret (*Bubulcus ibis*), introduced in Hawai‘i in 1959 to control flies on cattle, is a predator on Hawaii's endangered waterbirds. Predation of waterbird chicks by the cattle egret, Black-Crowned Night Heron (*Nycticorax nycticorax*), and American Bullfrog (*Rana catesbeiana*) has been documented at the Oahu National Wildlife Refuge (NWR).

Habitat Enhancement for Aquatic Biota. Oceanic migration through Kawainui's streams for endemic, amphidromous aquatic biota found upstream of Kawainui is limited by the overgrowth of invasive vegetation in the wetland. This invasive vegetation and layer of peat contribute to the reduction of open waterways needed for this migration.

Endemic amphidromous species include the ‘o‘opu nākea (*Awaous stamineus*), which have been documented in Maunawili Stream located upstream outside of Kawainui. Amphidromous species like the ‘o‘opu nākea lay their eggs in freshwater streams with larvae drifting downstream to the ocean. Juveniles later travel upstream to freshwater to grow into adults. Additionally, the layer of peat mat and invasive vegetation covering the surface of the marsh prevents sunlight from penetrating marsh waters. This condition prevents photosynthesis from occurring, resulting in comparably lower dissolved oxygen concentrations than nearby streams. It should be noted that a body of water covered by a layer of peat is biologically dead (except for bacteria). Without light penetration, oxygen cannot be generated by aquatic algae, and the subsurface of the wetland supports no invertebrates (such as aquatic insects) or vertebrates (such as fishes).

Hāmākua

Hāmākua has been managed as a waterbird sanctuary by DOFAW since 1995. An ecosystem restoration project was completed in 2002. DOFAW monitors waterbird nesting activities, but needs improvements to support ongoing management and maintenance of the wetland and surrounding areas (Exhibit 2.6). Two main management activities consist of predator control (first started 2003) and vegetation maintenance as needed. The level of effort for each activity has been contingent upon the availability of funding, and has varied over the years.

Exhibit 2.6 Photo of Hāmākua Wetland Areas

The FWS *Recovery Plan for Hawaiian Waterbirds* (FWS, 2011) identifies Hāmākua as a "core wetland" providing habitat essential for larger populations of Hawaiian waterbirds prescribed for recovery. The recovery plan recommends additional work be implemented to further improve habitat for native waterbirds. The recovery plan cites a need to expand open water areas at Kawainui that are used as habitat. The same recovery actions identified for Kawainui were also recommended for Hāmākua, plus minimizing contamination of waterbird habitat by toxic substances and contaminants (FWS, 2011). This additional action is likely due to the commercial and light industrial uses situated adjacent to the sanctuary along Hāmākua Drive.

Creating additional wetland and open water areas is needed to support these efforts and increase nesting habitat for endangered waterbirds. Restoration of inland areas is needed because it is part of the watershed providing water to Hāmākua, can be used to support habitat for native plants, and is used for loafing and foraging by waterbirds. Management improvements are also needed to address human interaction with Hawaiian gallinule (*Gallinula galeata sandvicensis*) along this commercial area. Hawaiian gallinule have adjusted to interactions with people at Hāmākua from feeding activities. This has led to occasional wandering into the parking lot increasing the potential for injury from cars.

Pu‘uoehu

The Pu‘uoehu hillside is presently overgrown with invasive non-native vegetation (Exhibit 2.7). Upland reforestation is proposed as a long term strategy to gradually replace non-native vegetation and trees with native vegetation to retain this hillside's function as a watershed. The lower (makai) portion of the hillside needs to be improved in conjunction with Hāmākua improvements that support a maintenance access trail for DOFAW management activities along with supporting educational programs and service learning projects.

Exhibit 2.7 Photo of Pu‘uoehu Hillside Dominated with Non-Native Vegetation Growth

Support for DOFAW Management Activities

Improvements consisting of permanent support facilities, maintenance access roads or trails, and additional staffing are needed to support DOFAW's ongoing management and maintenance operations within Kawainui-Hāmākua. Restoration activities are programmed to occur in phases over time based upon available staffing and funding, and DOFAW needs infrastructure to maintain restored areas and conduct daily operations and educational programming. For example, DOFAW has taken over management and maintenance of the restoration ponds constructed by the COE (Exhibit 2.8). This requires regular vegetation maintenance and monitoring of water quality and pond water levels. DOFAW is also implementing wetland restoration and upland reforestation within areas mauka of the ponds (Kahanaiki area).

Exhibit 2.8 Photo of Restoration Pond at Kawainui

Improvements are needed at DOFAW's management and research station located behind Castle Medical Center to provide adequate support facilities that properly store and secure equipment and vehicles, and provide office space for staff to conduct research and administrative activities. Additional DOFAW staffing is needed to support increasing management activities and office space. Additional staff along with support facilities (e.g. pavilion for shelter or rest area) are also needed to continue and expand educational programs, service learning projects, and other program activities. Improved vehicle access utilizing maintenance roads or trails within upland areas of Kawainui and Hāmākua are also important in order to more effectively move equipment and conduct maintenance activities. Additional methods of predator control (e.g. fencing) are needed to support endangered waterbird habitat supplementing DOFAW's existing predator control program.

2.1.2.2 Cultural Practices and Stewardship

Kawainui-Hāmākua is recognized as an important center of pre- and post-contact Hawaiian activities, and as an important repository of cultural tradition and history. There is a need to protect historic properties and support native Hawaiian cultural practices along with increasing educational programs and stewardship opportunities for the resources. Responsibilities involving cultural resources and practices are part of the agency mission for both DOFAW and DSP. The agencies have supported actions by native Hawaiian community organizations for a number of years to conduct restoration projects at Ulupō Heiau and Nā Pōhaku that respect the cultural history of the sites. Based on this history, a component needed within the current master plan is to support native Hawaiian cultural practices, increase educational opportunities, and facilitate stewardship of natural resources by cultural practitioners and organizations.

A prominent cultural feature within the project area is Ulupō Heiau, one of three major heiau associated with Kawainui. The other two heiau, Pahukini and Holomakani, are located on the slopes of Ulumawao on the western side of Kawainui. The presence of three heiau and the great abundance offered by the 450-acre Kawainui fishpond and expansive agricultural fields, illustrates why several chiefs, including Kākūhihewa and Kūali‘i, chose to reside in Kailua. Mo‘olelo (stories) attest to Hawaiian stewardship of the resource while archaeological sites indicate the continuous occupation and wealth of the Kawainui and the Kailua ahupua‘a.

Many stakeholders and community members who participated in the master plan process expressed a desire to establish a permanent Hawaiian cultural presence at Kawainui and expand stewardship activities. Stakeholders envision places where the Hawaiian community can sustain their culture through traditional practices and stewardship activities, as well as having facilities to support dedicated study, practice, and perpetuation of Hawaiian culture. This includes restoring the cultural landscape with native and Polynesian-introduced plants that can be used for cultural practices such as hula, medicine, food, implements, and crafts. The concept of combining cultural practices with resource stewardship and educational programming is consistent with DOFAW and DSP agency missions to manage and protect cultural resources.

2.1.2.3 Public Access for Outdoor Recreation and Educational Opportunities

There is a need to increase public access within Kawainui-Hāmākua to provide passive outdoor recreation, and support educational programs and related activities. The project area offers unique teaching and hands-on learning opportunities for Hawai‘i’s students, educators, and families. DOFAW and DSP receive frequent requests from schools and community organizations for educational programming, research activities, and service learning projects within Kawainui and Hāmākua. Active involvement with a variety of community organizations, schools, and government agencies is important to promote the long-term management of resources in the project area. Such involvement would foster a sense of ownership and stewardship through participation in restoration and maintenance activities, as well as research and educational programming.

Under LWCF Section 6(f) requirements, the 173 acres of land at Kawainui acquired with LWCF funds must provide some type of public outdoor recreation, with reasonably open, accessible, and safe access. At present, public access and limited passive outdoor recreation are provided at Nā Pōhaku o Hauwahine and at Ulupō Heiau SHP. At Nā Pōhaku, the public can walk along trails to view Kawainui and experience the native lowland reforestation project by AML and volunteers. At Ulupō Heiau SHP, the public can view Kawainui, learn about Ulupō Heiau, and participate in cultural restoration activities. The public can also participate in periodic community service projects and educational activities conducted by non-profit organizations at Ulupō Heiau SHP, Nā Pōhaku, the wetland ponds, and the broader Kawainui area (e.g. AML MOA with DLNR).

Increasing managed public access and providing outdoor recreational activities within Kawainui is needed to comply with Section 6(f) requirements and State DOFAW and DSP agency mission objectives (public interest). Managed access is needed to protect the resources while providing opportunities to experience Kawainui through designated trails, educational programs, and volunteer projects. At Kawainui, there are minimal facilities and infrastructure to support these objectives. Improvements needed include restroom facilities, shelters (e.g. protection from sun and rain), parking areas, and pedestrian trails.

At Hāmākua, there is no LWCF requirement for public access or passive outdoor recreation. However, there has been increasing requests to DOFAW for allowing educational opportunities. Limited support facilities (restroom, storage, shelter) and infrastructure improvements are needed to support DOFAW's management activities, research, and educational programs. These improvements would also support opportunities for DOFAW to conduct periodic events allowing limited public access to further expand educational programs and increase community awareness and stewardship of this resource. Pu'uoehu would continue as a watershed for Hāmākua, and access on the hillside (maintenance trails) is only needed to support DOFAW reforestation efforts along with periodic educational programs and research efforts.

2.1.2.4 Resource Management

There is a need for DOFAW and DSP to effectively manage Kawainui-Hāmākua and control increased public access proposed under the current master plan. Many stakeholders and community members who participated in the master plan process expressed a concern with increased visitors to Kailua that may result from this project. Comments include not permitting tour buses, minimizing parking areas for visitors, additional traffic concerns, protecting Kawainui from development, preventing commercialization, changing the character of Kailua, and skepticism with the State's ability to manage resources.

An important component of the project is to address activities and restrictions that need to be implemented to allow DOFAW and DSP to manage the project area. Most of the area consists of State wildlife sanctuaries under DOFAW's jurisdiction that are subject to state regulations. Therefore, DOFAW has the ability to manage and restrict access to certain areas in accordance with these wildlife sanctuary regulations. Public access would not be permitted within wetland areas that encompass the vast majority of the project area, along with the Pu'uoehu hillside.

Upland areas under DSP's jurisdiction are generally more open to the public as part of the state park system. In some upland areas, such as Kahanaiki, public access would need to be coordinated and jointly managed by DOFAW and DSP. Partnerships with non-profit organizations would support stewardship and management responsibilities of individual areas. Management activities, restrictions, enforcement, and staffing requirements need to be considered.

2.1.3 Project Objectives

The master plan project addresses the need for a document that serves as a guide for the programming and implementation of future improvements at Kawainui-Hāmākua by DOFAW and DSP. Proposed master plan concepts would support efforts to achieve agency missions and to sustain and enhance the natural and cultural resources associated with the project area. Proposed master plan components address the need associated with the following categories:

1. Wetland restoration, upland reforestation and habitat enhancement.
    - Restore and manage wetlands by increasing open water areas, reducing invasive vegetation, and creating mudflats;
    - Improve habitat to support recovery of endangered waterbirds;
    - Improve suitability of Kawainui Streams as habitat for aquatic biota;
    - Restore ecological function as sedimentation and flood control basin; and
    - Restore upland areas by reducing invasive vegetation, reforestation with native species, and implementing erosion control measures.
2. Providing for cultural practices and stewardship opportunities.
    - Recognize Kawainui-Hāmākua's cultural and historical significance;
    - Enhance and manage existing historic and cultural features (e.g. Ulupō Heiau);
    - Incorporate a native Hawaiian presence at Kawainui; and
    - Integrate cultural practices, educational programming, and resource stewardship opportunities.
3. Increasing public access for passive outdoor recreational and educational opportunities.
    - Create opportunities for public enjoyment of natural and cultural resources;
    - Provide trails to designate public access areas and minimize effects on resources;
    - Provide support facilities for educational programs, service learning projects, and areas open to the public; and
    - Promote a sense of ownership and stewardship through participation in restoration efforts, maintenance activities, and educational programs.
4. Managing the resource and public access.
    - Utilize phased approach in opening up areas available for public access;
    - Provide structures to support management of areas (e.g. fencing);
    - Increase coordination with State DLNR, Division of Conservation and Resource Enforcement (DOCARE) for monitoring and enforcement of regulations along with non-profit organizations stewardship partnerships to supplement management activities; and
    - Increase staffing to support management activities.

Proposed improvements supporting these project objectives would help DOFAW and DSP to fulfill their agency mission objectives, LWCF Section 6(f) requirements, and wildlife sanctuary objectives for current and future generations.

2.2 PROJECT DESCRIPTION

The EISPN published for this project included a description of the project along with a summary of modifications to concept plans since the *Draft Kawainui-Hāmākua Complex Master Plan* (HHF, 2014) was published for public review in 2014. Subsequently, a Draft EIS was prepared and published addressing the results of assessments, analysis, and studies conducted to identify the impacts associated with proposed improvements. After evaluating comments received on the Draft EIS, DOFAW and DSP are proposing revisions to the project to further reduce the level of improvements supporting public access and visitors to address community concerns. This section discusses the revised conceptual plans for improvements proposed under the ~~master plan~~ project (Proposed Action).

The master plan is not a legally binding document as compared to a Final EIS or land use entitlements. However, it is a planning reference document that serves as both a resource management plan and a guide for DOFAW and DSP to plan for and program future improvements within the project area, subject to available funding. However, only improvements proposed under this Final EIS and approved by land use entitlements are planned to be implemented at this time. If other improvements not covered by this Final EIS are proposed in the future, such actions would be subject to separate environmental review (Chapter 343, HRS) and would need to obtain applicable land use entitlements before they could be implemented. Based upon this Final EIS, the master plan would be revised to reflect project improvements proposed by this document.

Under §11-200-17(e), HAR, a Draft EIS shall contain a project description, but need not supply extensive detail beyond that needed for evaluation and review of the environmental impact. Conceptual plans and details associated with project improvements have been developed to a sufficient level for evaluation by the Draft EIS, and additional details added to this Final EIS allow significant impacts to be reasonably identified and assessed. Chapter 2 discusses details of project improvements and activities, shows conceptual site plans with building locations and footprints, and includes exhibits and other supporting descriptions to provide a reasonable understanding of proposed improvements so that likely impacts could be identified. Furthermore, based upon prior State judicial review, the Final EIS does not need be exhaustive to the point of discussing all possible details bearing on the Proposed Action under the "rule of reason" standard.

This Final EIS sets forth sufficient project information to enable decision-makers to consider environmental factors and to make a reasoned decision after balancing the risks of harm to the environment against the benefits to be derived by the Proposed Action. Implementation will involve more detailed site specific design phases for individual projects so that design details and construction plans can be prepared along with obtaining applicable ministerial permits (e.g. grading permit) that are reviewed by government agencies having the expertise and experience to evaluate construction plans.

Overview of Master Plan Components

An overview of master plan concepts and proposed improvements is illustrated in Figure 2.4. They include the following main initiatives: 1) natural resource management; 2) cultural resource management; and 3) educational and recreational programs. Conceptual site plans for each subzone area are provided, and include discussion of site specific improvements.

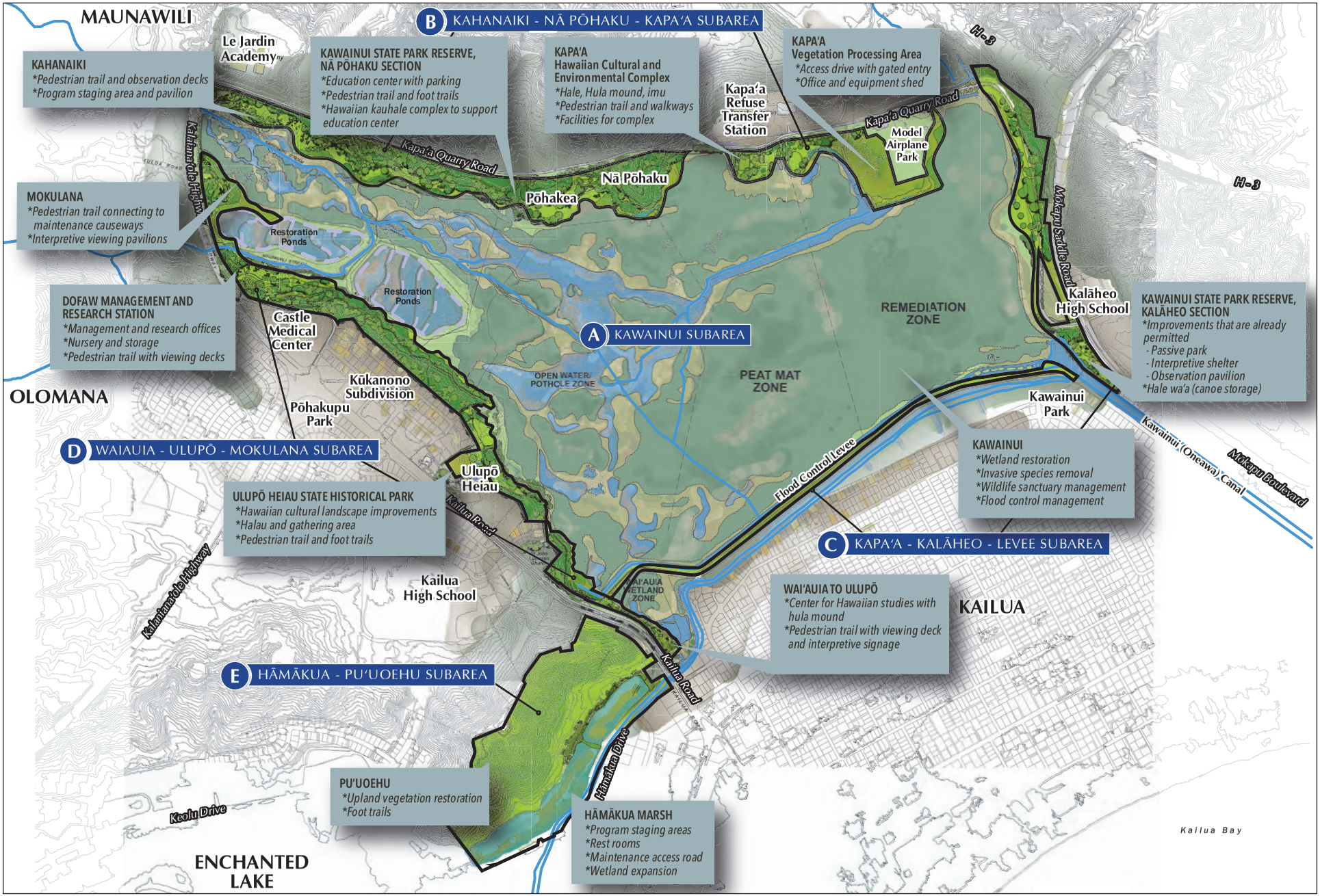
The majority of the improvements are associated with natural resource management activities, such as wetland restoration, habitat enhancement, and upland reforestation. Table 2.1 presents a breakdown of the total acreage proposed for resource management and program activities. As shown in the table, over 93 percent of the project area would be limited to resource management activities. The remaining 7 percent or about 66 acres are proposed for "program activities," intended to support cultural, educational and recreational activities. These include improvements for DOFAW operations (management and research station), an education center for visitors, areas for conducting cultural practices, passive outdoor recreational activities, and support facilities (e.g. parking, rest rooms, shelters).

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), the hale waʻa, and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaiki Stream.
2. Pōhakea to Nā Pōhaku o Hauwahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kauhale complex at Pōhakea from about 8,250 sf to 5,300 sf by reducing the number of proposed structures.



Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 2.4 - Master Plan Overview

Kailua, O'ahu

0 800 1,600 FEET

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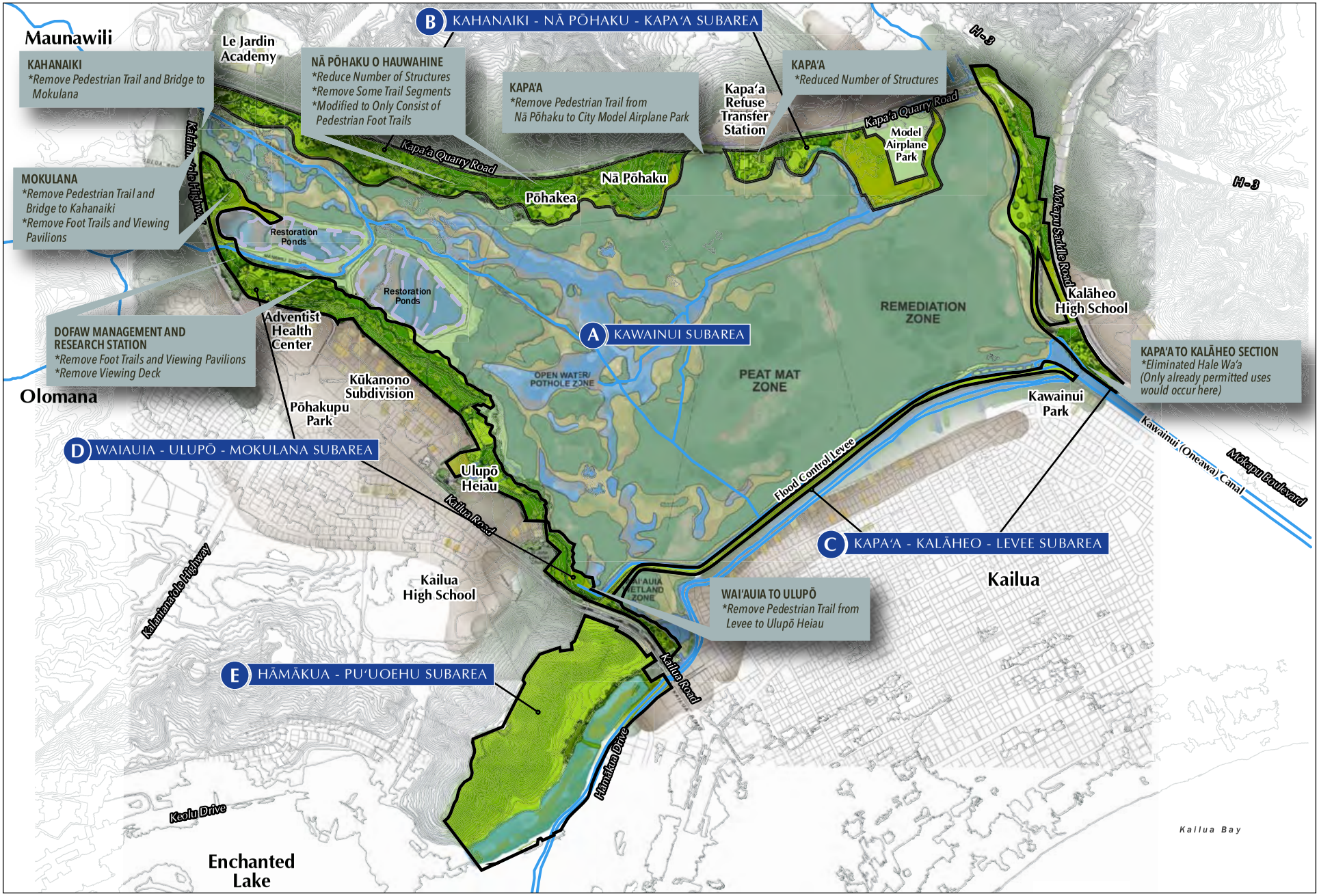

Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 2.4A - Summary of Modifications to Proposed Action

Kailua, O'ahu

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2. Pōhakea to Nā Pōhaku o Hauwahine Area (continued)
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.
3. Kapa‘a Area
   a. Remove pedestrian trail section along Kapa‘a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.
4. Kapa‘a to Kalāheo Area

   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa‘a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.
5. Wai‘auia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.
6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
   c. Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

2.2.1 Natural Resources Management Activities

Project improvements are intended to meet the project need for resources restoration and support for DOFAW management, maintenance operations, and research programs. Major initiatives include:

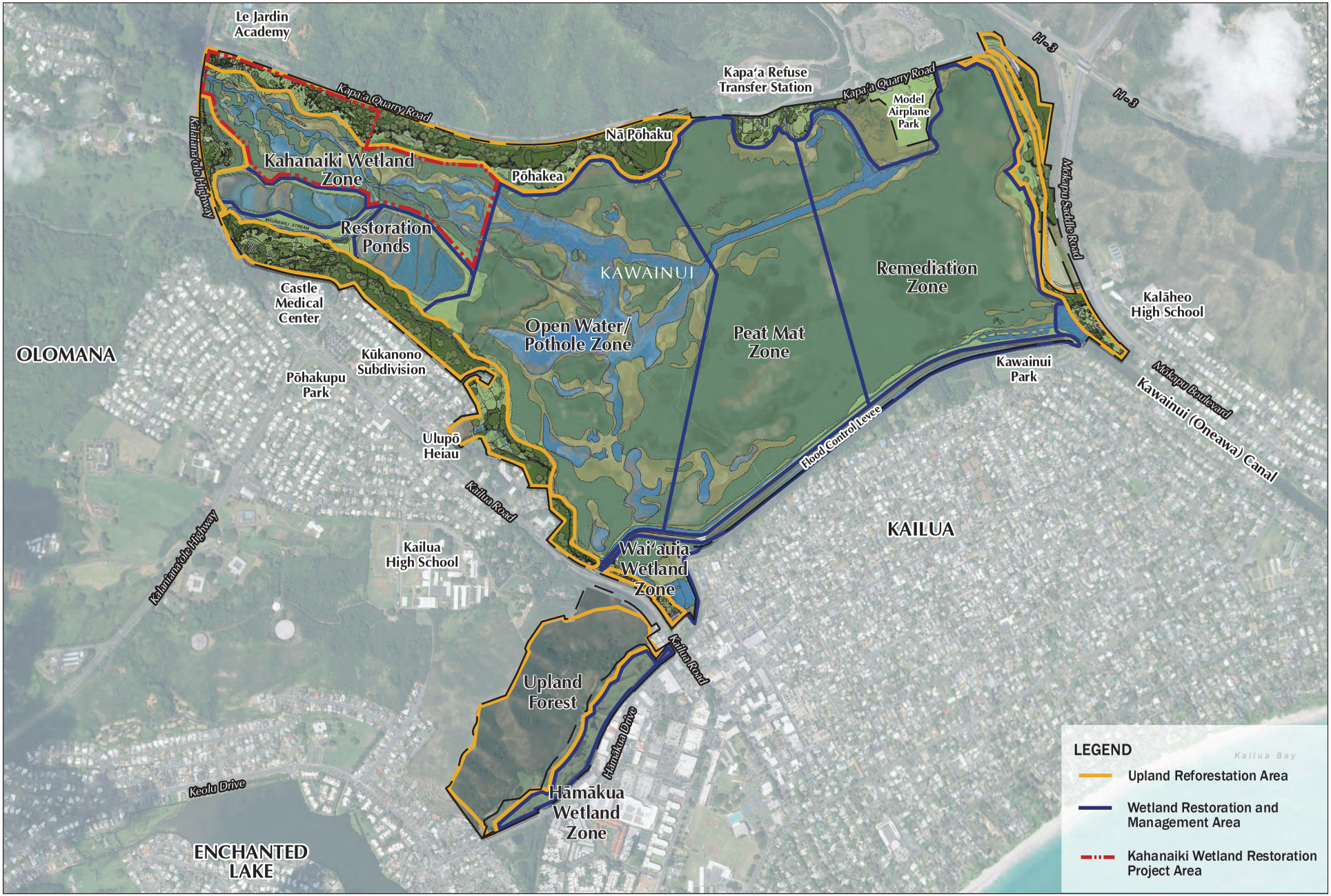
- Wetland Restoration
- Upland Reforestation
- Storm Water Runoff Improvements
- Improvements Supporting DOFAW Operations

Table 2.1
Acreage Designated for Resource Management and Program Areas

General Description of Area	Acreage	Jurisdiction
Natural Resource Management Areas		
Wetland Restoration – Kawainui (Includes Levee)	741.6	DOFAW
Kawainui Upland Reforestation & Open Space (Includes Areas for Trails)	~~88.5~~ 84.7	DOFAW/DSP
Hāmākua Marsh State Wildlife Sanctuary	22.7	DOFAW
Pu'uoehu	67.2	DOFAW
Management Area Acreage	~~**920.0**~~ 916.2	**93%**
Cultural, Educational and Other Program Areas		
Kawainui-Hāmākua Management & Research Station	14.2	DOFAW
Vegetation Processing Area	~~9.9~~ 13.8	DOFAW
Nā Pōhaku o Hauwahine	11.1	DSP
Ulupō Heiau State Historical Park	9.2	DSP
Kapa'a Cultural Center	~~7.3~~ 9.2	DOFAW
Wai'auia Cultural Center	1.3	DOFAW
Pōhakea	~~8.4~~ 6.4	DSP
Kawainui State Park Reserve, Kalāheo Park	4.6	DOFAW/DSP
Program Area Acreage	~~**66.0**~~ 69.8	**7%**
Total Project Area Acreage	**986.0**	

Figure 2.5 shows DOFAW-designated management areas. As illustrated, a large majority of the project area consists of wetlands needing restoration. This also includes wetland management activities at the restoration ponds and Hāmākua. All wetland restoration activities would generally take place in this area highlighted in blue. As shown in the figure, the wetland management area is further divided into subzones based upon DOFAW's specific planned restoration and management objectives for that area. Resource management initiatives occurring in the upland management area, identified with an orange border, include reforestation, storm water improvements, and facility improvements supporting DOFAW operations.

A majority of the wetland restoration and management work is already permitted under prior entitlements received by DOFAW or is allowed as part of their normal operations and activities. Fencing is planned around the perimeter of project areas, and additional fencing planned around wetland boundaries to support habitat management. Discussion of improvements planned within these zones is provided.



Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 2.5 - DOFAW Management Areas

Kailua, O'ahu

0 800 1,600 FEET

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1. Hāmākua Wetland Zone (Hāmākua Marsh State Wildlife Sanctuary). Programmed actions to manage and improve existing wetland habitat will expand the wetland area inland by up to 3 to 4 acres and implement stream bank enhancements. Activities include mowing, grubbing, debris removal, invasive species control, vegetation management, and the monito ingof water levels, water quality, and habitat activity.
2. Restoration Ponds. Management activities for the existing ponds include vegetation removal and maintenance along with the ma ntenanceand repair of pond infrastructure. Additional management activities include monitoring of water level, water quality, and habitat activity.
3. Kahanaiki Wetland Zone. A 60-acre area mauka of the restoration ponds is planned for wetland restoration by creating shallow open water, mud flats, and stream bank enhancements. Subsequent management activities will include mowing, grubbing, debris removal, invasive species control, vegetation management, and monitoring of habitat activity.
4. Open Water/Pothole Zone. An area planned to create and manage additional open water areas, implement stream bank enhancements, create shallow wetlands, manage peat mat by removing trees and controlling expansion, and monitor water level, water quality, and habitat activity.
5. Peat Mat Zone. An area important for Kawainui's flood control capability and would remain unchanged, with the exception of selective removal of trees and managing peat mat growth.
6. Remediation Zone. An area also important for flood control capability and would remain unchanged, with the exception of selective removal of trees.
7. Levee. Existing levee that would remain for flood control, would be monitored for maintenance and repair, and landscaped with grass on banks for stabilization. Its use as a pedestrian trail for passive outdoor recreational activities would be managed.
8. Waiʻauia Wetland Zone. Intended for wetland restoration and stream bank enhancement. Thûˇwould include mowing, grubbing, debris removal, invasive species control, vegetation management, and monitoring of habitat activity.

2.2.1.1 Wetland Restoration Activities

Wetland restoration work for various areas of Kawainui is planned to generally follow the program already being implemented for the 60-acre Kahanaiki Wetland Zone based upon the Kawainui wetland restoration and habitat enhancement project (HHF, 2012). This wetland restoration is planned to continue into the Open Water/Pothole Zone, and also be conducted at the Waiʻauia Wetland Zone.

Guiding principles developed for restoration efforts are based on best practices for the site, existing references and studies published for Kawainui, consultations with government agencies, and DOFAW's evaluation of existing site conditions. A number of principles developed to guide restoration efforts are identified below.

1. Removal of invasive vegetation within the wetland will be implemented in phases due to the size of the area, availability of DOFAW staffing, and funding.
2. Adaptive management concepts should be incorporated into the plan to provide DOFAW with options and flexibility to modify restoration activities.
3. Resource management information should be incorporated to support DOFAW efforts to maintain the study area after restoration activities are completed.
4. A variety of native plants should be considered for DOFAW's implementation of re-vegetation efforts.

Kawainui

Wetland restoration within Kawainui would involve the gradual removal of invasive vegetation covering most of the wetland and restoring it with native wetland vegetation. This would allow Kahanaiki Stream to naturalize, open up surface water flows, establish seasonal mud flats, and improve stream water chemistry. Restoration work at the more confined Wai'auia area would be similar and open up water areas, establish mud flats, and improve the water chemistry of related water bodies. Exhibit 2.9 illustrates the restoration concept, based upon the Kawainui wetland restoration and habitat enhancement project (HHF, 2012).

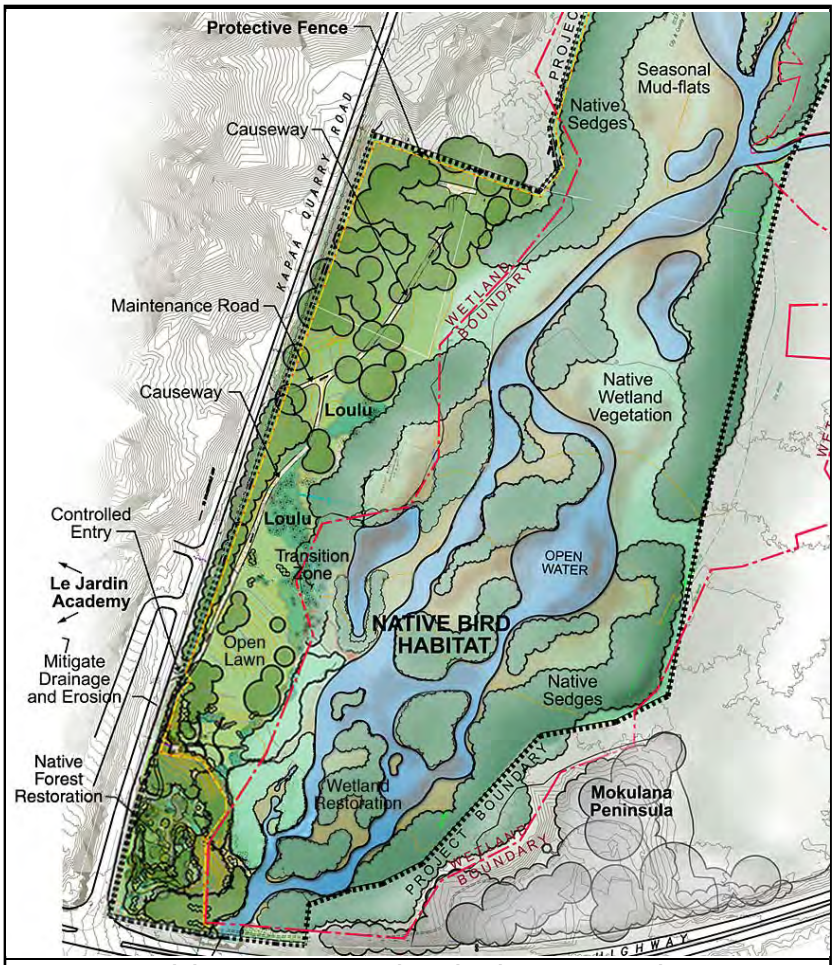


Exhibit 2.9 Conceptual Wetland Restoration Plan (Kahanaiki Wetland Zone)

Wetland restoration actions would be performed in phases based on seasonal conditions (wet and dry seasons) to allow streams and associated wetland areas to naturally re-establish within the project area. Restoration actions would also incorporate an adaptive management process to allow DOFAW flexibility to adapt and modify activities depending upon the progress of restoration efforts in alignment with resource issues (e.g., funding, available staff, etc.). The adaptive management process includes assessing the situation, implementing improvements, monitoring and evaluating results, and adjusting methods.

A combination of mechanical methods and localized application of only approved herbicide would be utilized to remove vegetation and the peat mat. Staging areas within upland areas would be established to process biomass or store it awaiting transport to the vegetation processing site. Existing invasive vegetation (e.g., California Grass, Cattail, etc.) would be removed along with dead vegetation that has formed a thatch layer. Below this vegetation is a contemporary sediment layer, about 12 to 20 inches deep, which was transported by storm water runoff over many years. A tractor, mower, or floating excavator would be used to cut or grub the vegetation and thatch layer, and extend up to a few inches below the soil level if necessary. DOFAW currently uses a Marsh Master for maintenance activities that could be used for restoration activities (Exhibit 2.10).

Exhibit 2.10 Photo of Marsh Master Being Utilized

A tiller could also be used to break up the soil to roughly 4-inches in depth to expose the invasive vegetation seed bank and aerate the soil. These activities would be conducted predominantly during the dry season to allow efficient movement of equipment within the wetland. Areas would be worked in sections of about three to four acres in size or larger dependent upon site conditions and progress of work. These methods should minimize impacts on potential subsurface archaeological sites, such as an ‘auwai, since such sites would only be present at depths below the contemporary silt layer.

These activities would not occur within the bed and banks of Kahanaiki and Maunawili Streams. Unimpeded surface water flowing into the area from Kahanaiki Stream would be allowed to resume its natural course through the area. The banks of Maunawili Stream are more easily defined along with Kahanaiki Stream, north of its confluence with this stream. Kahanaiki Stream south of this confluence is more defined by the extent of vegetation growth up to open water flows. Restoration work would include field inspections of stream conditions prior to implementing removal of vegetation using equipment so that activities do not encroach into the stream banks. During the wet season, increased water flow should establish seasonal mud flats along the stream’s natural meandering course through the area. Exhibit 2.11 illustrates a typical sectional view of restored wetland areas.

Invasive vegetation re-appearing in cleared areas would be mowed or sprayed with an herbicide approved for wetland use and compliant with State regulations. This process may be repeated over several months dependent upon the successful removal of invasive vegetation. Unimpeded surface water flowing into the area from Kahanaiki Stream would be allowed to re-establish its natural course through the area based on random changes in ground conditions. During the wet

season, increased water flow through the area should establish seasonal mud flats along the stream's natural watercourse as it meanders through the project area.

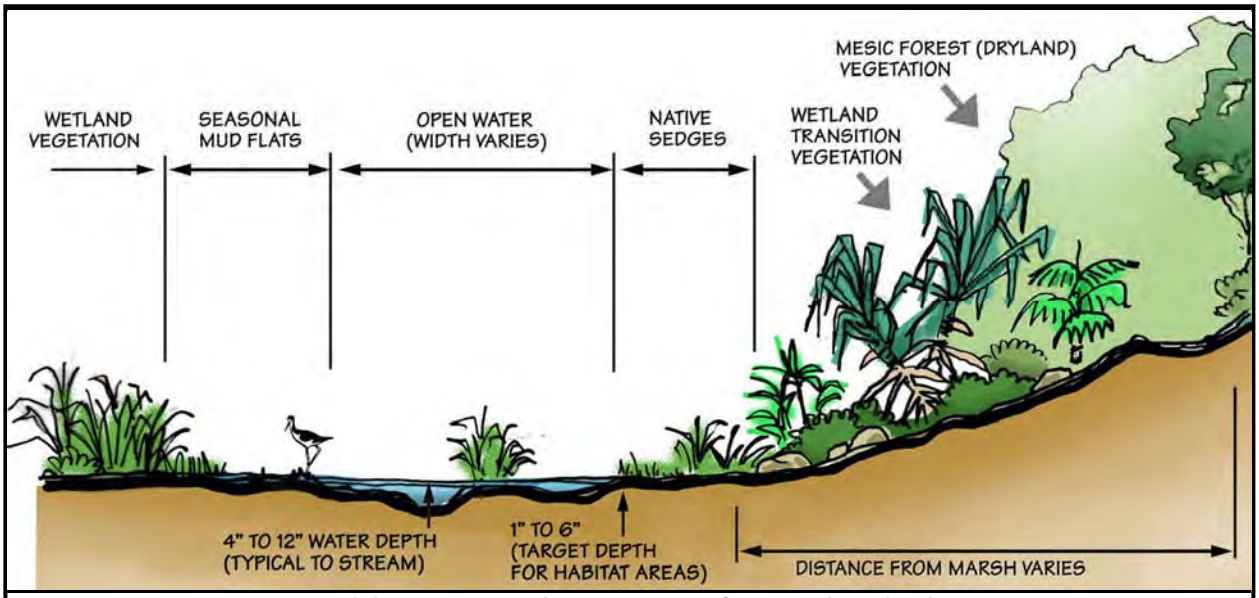


Exhibit 2.11 Typical Section View of Restored Wetland

The water depth of Kahanaiki Stream would continue to vary, typically from about four inches up to one foot in depth. Water habitat (shallow water and mud flats) along the stream would typically have a water depth of one to six inches as shown on Exhibit 2.11. Native plants would be re-established in the wetland along with transitional sections (riparian areas) to upland areas. Restored areas would be monitored to support re-establishment of native growth and to minimize reoccurrence of invasive plants.

Vegetation mowed or grubbed would be left within the project upland area to decompose or would be temporarily stored in established upland staging areas. Necessary best management practices would be implemented for these staging areas, such as silt fencing or compost filter socks to contain debris. The locations of specific areas for staging would be determined by DOFAW in consultation with the contractor implementing these improvements.

Adaptive management of this process may involve refining these plans based upon the progress of vegetation removal, material quantities, decomposition time, etc. Top soil removed during clearing and grubbing operations would be dispersed on-site within upland areas outside of the wetland. This will aid retention of storm water, and may be mixed with vegetation to enhance decomposition. As a result, the amount of biomass needing removal from the project site should be minimized.

Vegetation could also be transported to the existing vegetation processing site adjacent (south) to the City Model Airplane Park on Kapa'a Quarry Road. After processing, vegetation could then be transported to the appropriate City refuse disposal site. The vegetation processing site

previously established was used by the City in 1992 for this same type of activity as part of efforts to complete an open waterway project for the wetland to increase flood storage capacity. The site consisted of areas to process vegetation and sediment along with drying beds. Accessory facilities at this processing site consisted of roadways around the processing area, a maintenance facility, and a barge launch and off-loading area (M&E Pacific, Inc., 1990).

Hāmākua

Restoration work at the Hāmākua Marsh State Wildlife Sanctuary includes creating additional wetland areas (up to about 3 to 4 acres) along the mauka end of the wetland by lowering the elevation (cutting) of adjacent upland areas. Other work planned within this wetland would consist of maintenance activities and improving waterbird habitat.

Best Management Practices

Surrounding resources may be impacted by proposed wetland reforestation activities. Implementation of best management practices (BMP) would minimize impacts to these resources. Actual BMPs implemented would be determined as part of final design plans implemented by DOFAW or a selected contractor. BMPs implemented may involve:

- Establishment of erosion control measures prior to initiation of ground disturbing activities. Measures may include usage of silt curtains downslope of the module project area to mitigate conveyance of waterborne sediments.
- Avoidance of destruction, removal, or disturbance of pre-construction vegetative ground cover more than 20 calendar days prior to site disturbance.
- Usage of sediment traps at site discharge points until permanent erosion control measures are established.
- Inspection of sites by a project biologist before construction activities occur to avoid disturbance of waterbird nesting sites.
- Halting of work for a designated time period if waterbird nests or nests with chicks are discovered before or during implementation of reforestation activities.

2.2.1.2 Upland Reforestation Activities

Initiatives in the upland management area would consist of reforestation efforts to gradually replace invasive trees and vegetation with native vegetation. Healthy upland zones provide a protective buffer between developed areas and the wetlands. The upland zone includes those areas discussed later that are planned to support DOFAW management activities, an education center, pedestrian trails for passive outdoor recreational activity, areas for park use, and serve as general open space. A diversity of native vegetation could also be a resource for supporting Hawaiian cultural practices and stewardship of upland areas.

A hybrid ecosystem model for forest restoration is planned to allow native and existing non-native species to mix in a transitional period as shown on Exhibit 2.12. This hybrid ecosystem model benefits native biodiversity and aids the process of re-establishing a robust native forest. Implementation of this model is already permitted within about 20 acres of upland area at Kahanaiki as part of entitlements obtained under DOFAW's Kahanaiki Restoration Project (HHF, 2012), but is planned to be expanded to include other upland areas within Kawainui and at Pu'uoehu. DOFAW may decide to leave some upland areas unchanged, such as the hillside slopes below the Kūkanono Subdivision and slopes on the northern end of Kawainui above Kapa'a Quarry Road extending up to Mōkapu Saddle Road.

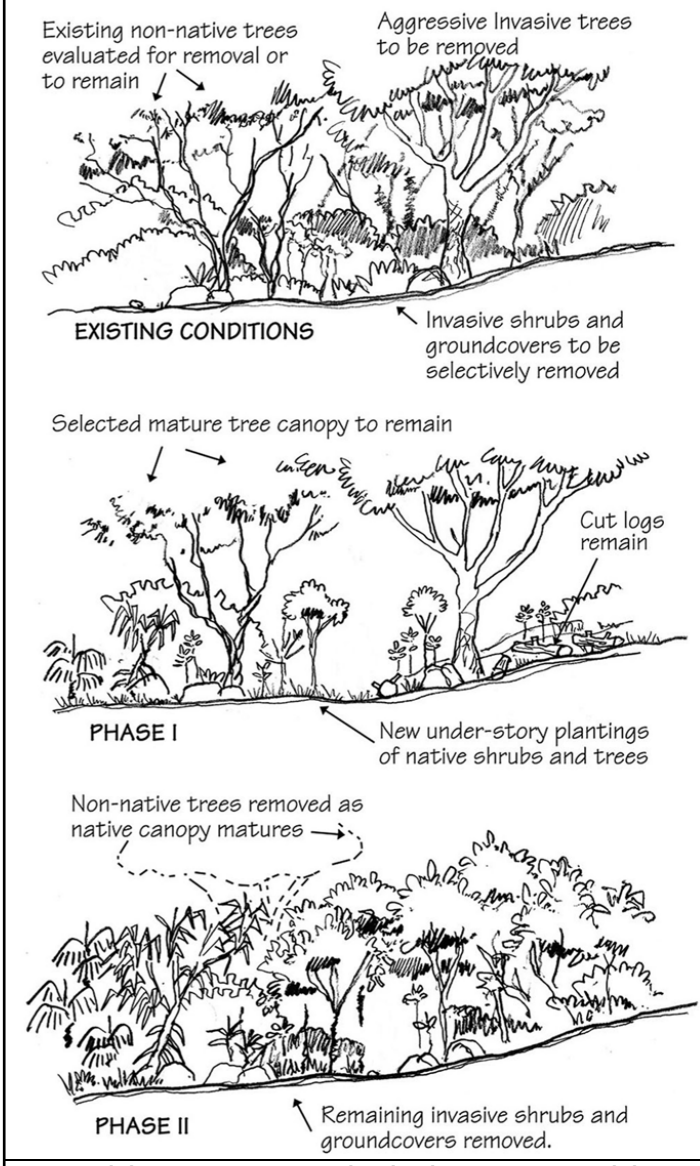


Exhibit 2.12 Conceptual Hybrid Ecosystem Model for Upland Reforestation

Since the project area has been heavily compromised by non-native invasive species, a process using a direct approach of clearing non-native plants and replacing them with native species is not cost effective or practical. By allowing some selective non-native plants to remain, particularly those with high canopies, other aggressive invasive species can be contained while understory plantings of native species can grow and mature. Once an appropriate density of native vegetation has been restored, remaining non-native species (high canopies) can be removed without allowing invasive species to return.

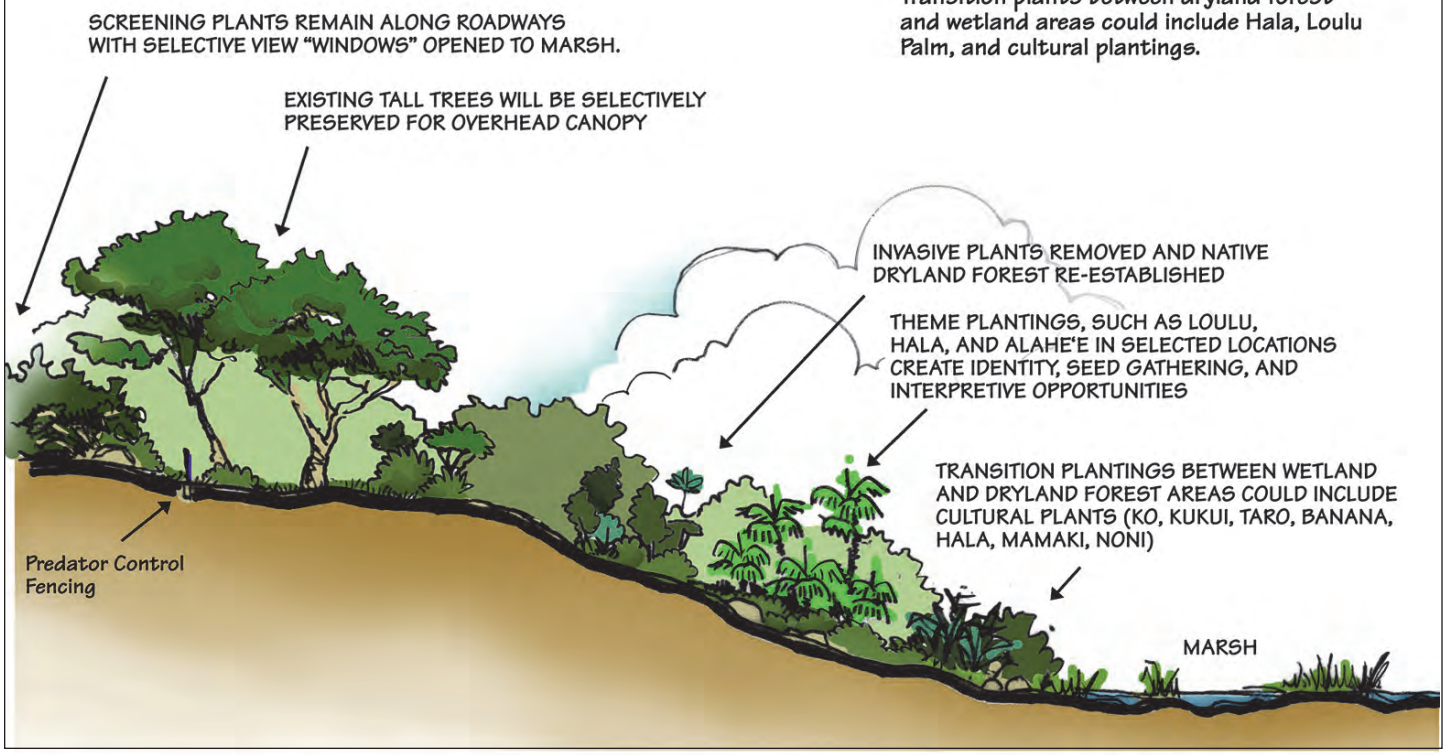
Trees and vegetation within upland areas would be selectively removed to retain a visual screen between roadways and the project area. Various types of native vegetation would be used for the area similar to those being planted at Kahanaiki, Nā Pōhaku o Hauwahine, or at a nursery established at DOFAW's management and research station. Transitional plantings using cultural plants along with theme plantings would be incorporated between the wetland and low mesic forest areas. Figure 2.6 shows a section view of the conceptual plan for upland reforestation efforts.

Dryland Forest contains wide diversity of species

Sparse groundcovers during dry season. Heavy application of mulch for organic humis layer and soil erosion control.

Within diversity of plantings are strong massings of similar plants to create themes and to reinforce plant associations.

Transition plants between dryland forest and wetland areas could include Hala, Loulu Palm, and cultural plantings.



Kawainui - Hāmākua Master Plan Project

Figure 2.6 - Sectional View of Reforestation Concepts-Low Mesic Forest

Kailua, O'ahu

HHF PLANNERS
places for people

Best Management Practices

Implementation of upland reforestation activities may impact surrounding resources. Usage of BMPs would minimize adverse impacts to these resources. Actual BMPs implemented would be determined as part of final design plans implemented by DOFAW or a selected contractor. BMPs utilized may involve:

- Establishment of erosion control measures before grubbing is initiated. Measures may include placement of filter socks around module areas to minimize downslope sedimentation impacts.
- Avoidance of destruction, removal, or disturbance of pre-construction vegetative ground cover more than 20 calendar days prior to site disturbance.
- Usage of a course aggregate entrance to minimize erosion at entrances from vehicular movement.
- Avoidance of disturbance of vegetation taller than 15-feet (4.6 meters) during birthing and rearing season of the Hawaiian Hoary Bat that may be present on a seasonal basis. If disturbance of vegetation taller than 15-feet is required during this season, vegetation would be inspected by a knowledgeable individual to ensure bats are not present.

2.2.1.3 Storm Water Runoff Improvements

Existing drainage culverts and low lying flood prone areas discharging into Kawainui from upland areas along Kapa‘a Quarry Road ~~outside of the project area~~ would be repaired or improved to mitigate stormwater runoff. Such improvements would occur for existing drain ge culverts or flood prone areas situated within State property under DOFAW or DSP jurisdiction. Existing culverts are generally in poor condition, filled with sediment, or in complete disrepair. One drainage culvert has already been repaired and repairs for three additional culverts are identified along Kapa‘a Quarry Road as part of DOFAW’s already approved Kahanaiki Restoration Project (HHF, 2012). Other existing drainage culverts or flood prone areas along Kapa‘a Quarry Road would be identified and evaluated to determine the appropriate repair or improvement needed. This includes two drainage culverts across from the City transfer station at the Kapa‘a site.

Culvert repair ~~could~~ would involve replacement or reconstruction with connection to new piping with headwall along with a grouted rip rap apron to mitigate discharge and erosion of upland areas. Such work may include replacing an existing junction box with a concrete drop manhole structure and installing a new reinforced concrete pipe. Drainage improvements would ~~likely~~ be connected to a grassed drainage swale for directing runoff into a shallow basin for detention and infiltration of water before eventually discharging into Kawainui, where feasible and practicable. Exhibit 2.13 shows ~~a~~ conceptual plans for a culvert repair from the Kahanaiki Restoration Project as an example of the type of improvements that ~~could~~ would likely occur for other drainage culverts along Kapa'a Quarry Road. However, actual design plans for such repair or replacement work would be dependent upon the condition of culverts and drainage conditions being served. It is noted that such repair and reconstruction of drainage facilities can already occur as part of DOFAW and DSP's current management activities because these are exempt actions under the State DLNR's exemption list in conformance with State environmental review regulations.

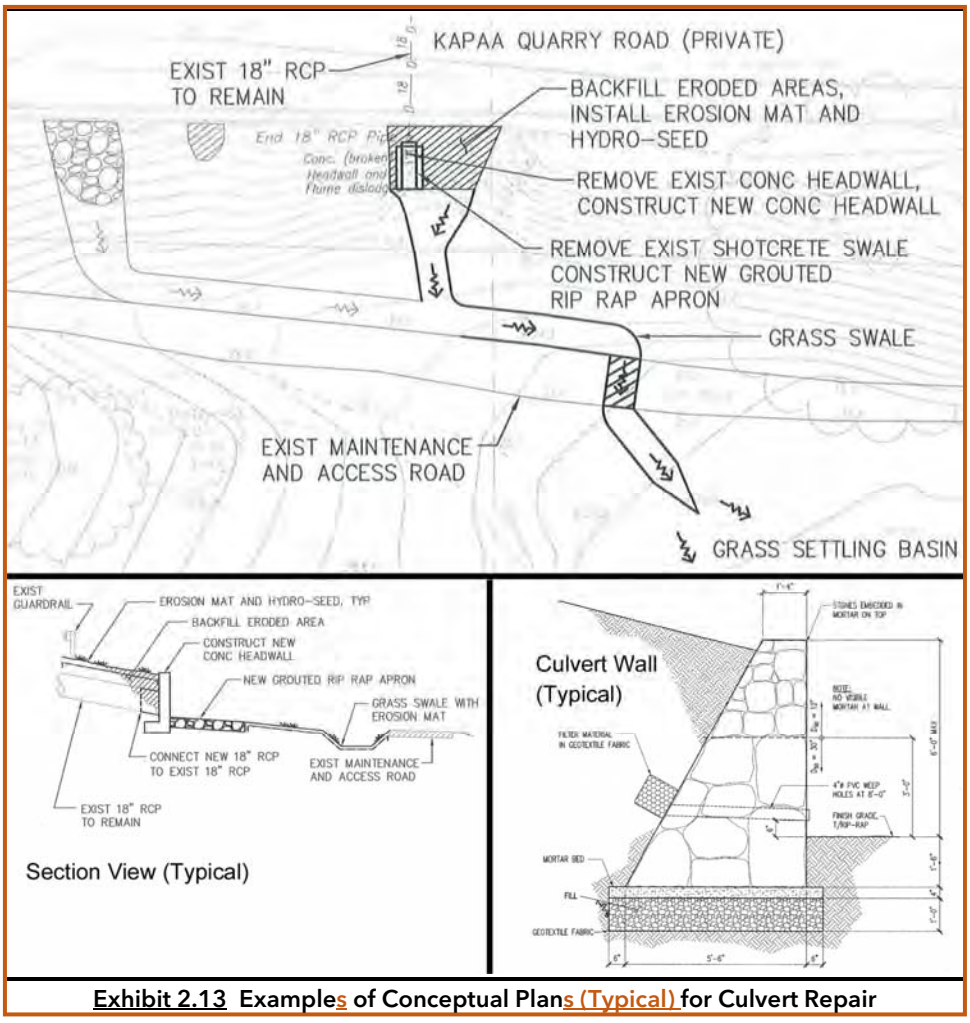


Exhibit 2.13 Examples of Conceptual Plans (Typical) for Culvert Repair

Other measures to detain stormwater runoff before discharging into the wetland ~~could~~ would include creating terraced walls downstream of culvert improvements. Open areas created between these walls could be used for native plantings, such as dryland kalo (taro) and 'uala (sweet potato) supporting cultural practices and stewardship of the area. Coordination with non-profit organizations could be conducted in implementing and maintaining these cultural plantings, and incorporated into educational programs or service learning projects.

Drainage swales ~~could~~ would also be directed into gravel causeways created along a section of DOFAW's maintenance access road in the area. The gravel causeway would typically occur along the low point section of the access road to widely disperse runoff, reduce its velocity, and increase retention and infiltration before entering the wetland. This causeway provides a stable surface allowing maintenance vehicle passage during wet conditions, but allows storm water to sheet flow over it during larger storm events. Exhibit 2.14 shows a sectional view of a conceptual plan for a typical causeway that ~~could~~ would occur for other upland areas.

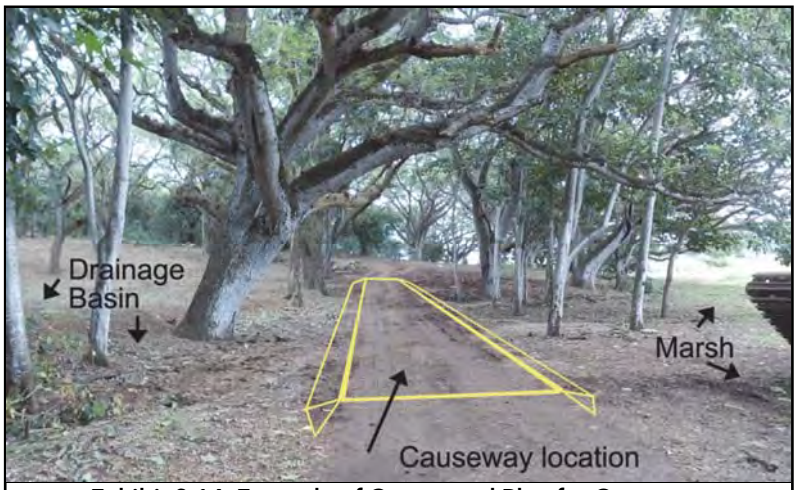


Exhibit 2.14 Example of Conceptual Plan for Causeway

At Hāmākua, existing culverts along Hāmākua Drive are generally in good condition and do not appear to cause erosion in the area. However, repairs or improvements addressing this area would be implemented, as appropriate. Storm water runoff from the Pu'uoehu hillside would be evaluated to determine if improvements (e.g. detention basins) are needed to address discharges into Hāmākua's wetland to minimize erosion in the area. Storm water improvements are necessary in the area along residences near DOFAW's gated entrance into Hāmākua due to occasional flooding during periods of heavy rain discharging from the hillside. Proposed ~~D~~drainage improvements ~~could include creating a causeway or other structural improvements~~ consist of an infiltration trench to mitigate stormwater runoff in this area as shown on Exhibit 2.14a.

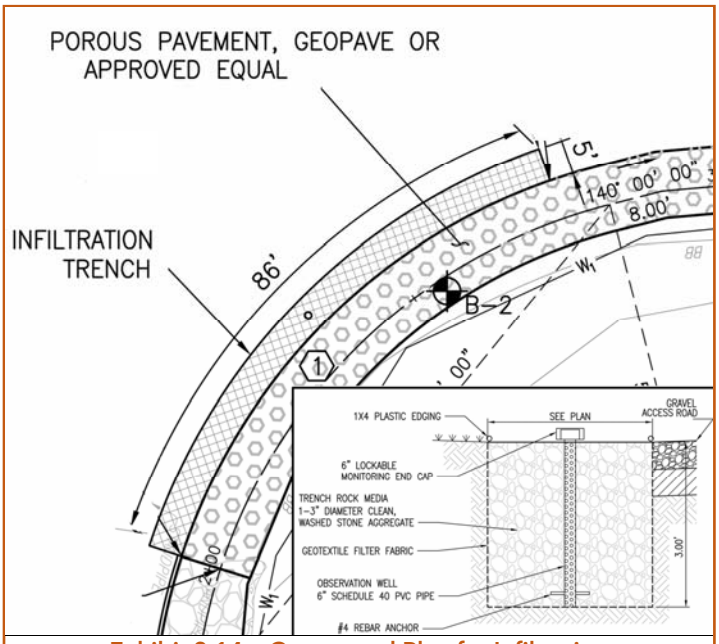


Exhibit 2.14a Conceptual Plan for Infiltration Trench at Hāmākua

2.2.1.4 Improvements Supporting DOFAW Operations

The construction of maintenance roads is proposed in upland areas to support DOFAW's management and maintenance operations within Kawainui-Hāmākua. Existing maintenance roads presently consist of dirt trails located within some upland areas of the Kahanaiki area, at Mokulana, and at DOFAW's management and research station. Existing access roads being used would be improved to better support maintenance vehicles, transport of equipment, and reduce erosion. Additional access roads along the southern and eastern ends of Kawainui would also be created to support maintenance of the restoration ponds and connect DOFAW's management and research station with Mokulana, and eventually with the Kahanaiki area.

Maintenance roads would generally be located well inland, however, vegetation buffers would be provided between certain sections of the road and the wetland, as appropriate. The roads would generally be about 10 feet wide, and could be constructed of compacted gravel, soil or reinforced grass. Only DOFAW vehicles or other authorized users would be allowed to use these roads.

A bridge ~~Bridges~~ would need to be constructed over Maunawili Stream ~~and Kahanaiki Stream~~ along the southern section of Kawainui ~~generally along Kalaniana'ole Highway~~ to connect access roads serving DOFAW's management station and the Mokulana peninsula to support management activities~~through these areas~~. The specific design of ~~these~~ this bridge~~s~~ would be developed during the design phase ~~of these improvements~~ when implemented. However, this bridge~~s~~ ~~are~~ is prop sedo span over ~~these streams~~ Maunawili Stream to not impact ~~their~~ its bed or banks. A bridge across Kahanaiki Stream is no longer required because the pedestrian trail connecting the Kahanaiki upland area with Mokulana has been eliminated.

The new DOFAW maintenance road bridge spanning over Maunawili Stream could be a single span bridge superstructure consisting of pre-cast, prestressed solid planks, and a composite concrete topping. The bridge could have a span about 25 to 30 feet in length and 12 to 16 feet wide within the bridge railings. It would accommodate one travel lane to support DOFAW maintenance vehicles and equipment transport.

Some segments of maintenance roads could also serve as pedestrian trails during specified periods as determined by DOFAW. At Pu'uoehu hillside, a maintenance trail is planned about midway up the hillside along with along the top of the ridgeline to support future reforestation and management efforts.

A predator control program currently in operation would continue and be expanded throughout the project areas as larger areas are restored. Effective predator control would become more important as improved waterbird habitat is created and nesting activity increases. Traps would continue to be the primary predator control method utilized to control mongoose and feral cats. Traps would generally be established around the perimeter of the upper reaches of the wetland and extend into the upland areas.

Perimeter fencing with signage is planned to be installed around the boundaries of the project area to deter unauthorized entrance, and to physically identify areas under DOFAW or DSP jurisdiction to support enforcement of trespassing violations. Fencing would consist of about 4-foot-tall wire (Exhibit 2.15), and vehicle driveway accesses would be gated. Perimeter fencing is already permitted for Kawainui as part of prior approvals and as part of their regular management activities, and DOFAW is currently progressing with implementation of some sections.

Protective fencing using the similar 4-foot-tall wire fence may also be implemented around the boundaries of wetland areas to minimize intrusion by predators, such as dogs and feral pigs. Another option for wetland boundary fencing would involve implementation of wire fencing with interpretive signage. This fencing would also assist in managing human access outside of restricted or wetland areas, and provide additional protection to environmentally sensitive areas. DOFAW would determine the necessity and appropriate locations for installing wetland and perimeter property fencing within the project area based upon their management activities and operations. Locations of fencing around wetland perimeters would also be determined after implementing restoration activities in the area and monitoring of conditions.

Exhibit 2.15 Typical Perimeter Wire Fencing and Fencing Option with Interpretive Signage

Vegetative buffers are also planned along transition areas between the wetland perimeter and upland areas to serve as a natural buffer providing separation as shown on Exhibit 2.11 and on site plans for subareas discussed later. Such vegetative buffers would support managing public access to provide separation from the wetland and complement fencing and other appropriate informational and educational signage. Such signage would be placed predominately to inform visitors about the site's importance, the legal status of the protected waterbirds, and the restrictions on public usage and behavior.

Other improvements include providing permanent and improved facilities at DOFAW's Kawainui Management and Research Station. Facility improvements would support the operation and management of Kawainui, as well as the agency's scientific, educational, and

recreational mission and goals. Further details of specific improvements planned at this management and research station is discussed later under the section covering site specific plans by subareas.

2.2.1.5 Adaptive Management and Monitoring

The long-term management of the project area will require adaptive management and monitoring of vegetation growth, water flow into the wetlands from streams and upland areas, and waterbird nesting and activities. Kawainui and Hāmākua are natural resources influenced by various environmental conditions that change over time and result in the need for adaptive management by DOFAW. Therefore, DOFAW will retain flexibility in their decisions knowing that uncertainties exist and management actions could change resulting in modifications to the methods implemented for wetland restoration and upland reforestation efforts. This will improve DOFAW's understanding of the wetland's ecological system and help future decision-making to improve restoration and reforestation progress and effectiveness.

The efficacy of restoration initiatives might be evaluated through biological surveys of areas before and after improvements are implemented. DOFAW would consider implementing surveys and other methods of data collection to support monitoring and evaluation of site conditions subject to funding availability, staffing availability, and other organization resource management responsibilities. Success of initiatives might be measured by factors including the number of birds using the marsh, the number of native plants that become established, and the number of native aquatic species present. This evaluation would allow DOFAW to understand whether restoration initiatives are effectively meeting organization restoration objectives, and adapt these initiatives to changing conditions if objectives are not being met.

DOFAW plans to develop a management plan for Kawainui in coordination with the FWS and COE as part of requirements associated with construction of the restoration ponds. Components developed under the management plan will provide a framework applicable to the management and monitoring of both the restoration ponds and other wetland restoration efforts initiated at Kawainui. DOFAW may also prepare a management plan for Hāmākua. The management plan would include the following:

1. A predator control program with BMPs to minimize interactions with listed waterbirds and other environmental impacts.
2. A program to survey for and eradicate feral mallards and Hawaiian duck-mallard hybrids.
3. A revision of the *Management Plan for the Control of Avian Botulism at Kawainui Marsh, Oahu, Hawaii August 1997* to include surveillance for botulism outbreaks, response measures such as removal of carcasses, and post-outbreak population monitoring.
4. Waterbird population and breeding productivity monitoring.

5. Adaptive management recommendations to address habitat requirements for Hawaiian waterbirds.
6. Commitment of dedicated State biologists to manage, monitor and implement the management plan.

2.2.1.6 Resource Management Principles

Future management and maintenance of restored areas at Kawainui will require dedicated staff to maintain the natural resources in the area. At least five (5) full-time staff will be required as follows:

1. A wildlife biologist;
2. An equipment operator;
3. Two forestry and wildlife workers; and
4. An outreach coordinator.

This level of staffing only allows DOFAW to maintain about four (4) acres a month of wetland and upland area. The wildlife biologist would manage DOFAW's maintenance and monitoring operations, and coordinate activities of the equipment operator and wildlife workers. The equipment operator would operate larger machinery such as a tractor, tiller, or floatable excavator (e.g. Marsh Master). Forestry and wildlife staff will control vegetation by mowing, weed whacking, spraying herbicide, and other daily maintenance activities. These efforts generally involve removal of reoccurring invasive vegetation, re-establishing native vegetation, trimming trees and other vegetation, and monitoring wildlife activities and public access in the project area.

The outreach coordinator is responsible for managing community projects and volunteers wanting to help maintain Kawainui. DOFAW receives requests throughout the year from organizations and individuals wanting to volunteer for projects associated with Kawainui and Hāmākua. However, such projects cannot be accomplished to the fullest extent now because of the wetland's existing conditions and lack of available staff to coordinate volunteer efforts.

DOFAW requires semi-aquatic machines such as a small excavator for restoration activities and an amphibious track vehicle to allow staff easy access within the wetland for regular maintenance. Other items needed include a long-bed truck and equipment (e.g. chainsaws, weed whackers, protective equipment, etc.). Additional costs will be associated with periodic repairs and maintenance of equipment, fuel, tools, herbicides, and predator control activities. DOFAW will continue to contract with the USDA to implement a trapping program at Kawainui Marsh in the foreseeable future.

2.2.2 Cultural Resources Management Activities

Cultural resource management activities proposed under the master plan are intended to meet the project's objectives to promote cultural practices, education, and stewardship. Proposed improvements seek to create opportunities for non-profit organizations to establish a broader native Hawaiian presence in Kawainui-Hāmākua. These improvements would create kīpuka, oases of continuity in a landscape of change, allowing for the expression and transmission of native Hawaiian culture. The project would allow activities at Kawainui for native Hawaiian traditional cultural practices consisting of: 1) education; 2) environmental stewardship; 3) performing and language arts; and 4) agriculture~~; and 5) sports (canoe)~~.

Two areas within Kawainui, Nā Pōhaku and Ulupō Heiau SHP, are already active with restoration activities and cultural practices. Proposed improvements to support efforts at these locations consist of implementing cultural landscape improvements and providing support facilities (e.g. improved parking, restrooms, and hālau structures).

Three new areas within Kawainui have been identified for providing additional opportunities to non-profit organizations that support increased native Hawaiian cultural practices, educational programs, and stewardship opportunities. These areas would allow the establishment of cultural centers or facilities to support these activities. Areas are intended to be developed and operated by non-profit organizations selected though the State procurement process (e.g. Request for Qualifications / Proposals Solicitation). A fourth area would be the Kalāheo Section of Kawainui SPR, where ~~canoe activities and educational programs are proposed~~ improvements already entitled and permitted as part of the Kawainui Gateway Park would occur. No new improvements to this site are proposed under this project (Proposed Action). Each of these areas are summarized below and further discussion is provided in Section 2.2.4, which presents details associated with more site specific conceptual plans.

1. Ulupō Heiau State Historical Park. This historic site under DSP jurisdiction includes Ulupō Heiau and the hillside below the Kūkanono residential subdivision. Ulupō Heiau is a religious site tied to agricultural practices. Cultural landscape restoration has consisted of the construction of loʻi kalo and ʻauwai. Interpretive signs share the cultural history of Ulupō Heiau and Kawainui. The removal of vegetation from the adjacent wetland has created a small open water area and waterbird habitat. This adjacent wetland area is under DOFAW jurisdiction. Proposed improvements would support continued cultural landscape restoration, a hālau for cultural and educational use, a nursery, trails, and interpretive signs. Educational programs and service learning projects would continue and support the expansion of the cultural landscape restoration.
2. Nā Pōhaku o Hauwahine. This historic site under DSP jurisdiction consists of volcanic rock formations and cultural features overlooking Kawainui and much of the Kailua ahupuaʻa. Restoration of a native lowland forest has been occurring on the site along with the opening of a small wetland pond, installation of a water catchment

system and a pedestrian trail with viewing areas, interpretive signs, and amenities for educational programs. Proposed improvements would support continued cultural landscape restoration efforts, provide improved parking shared with a nearby education center or more modest improvements (parking, restroom and open pavilion), and expanded foot trail connecting with adjacent areas. Educational programs and service learning projects would continue with managed expansion.

3. Kapa‘a Cultural Center. An area (about 7 acres) along Kapa‘a Quarry Road north of Nā Pōhaku is designated to provide the opportunity for a non-profit organization(s) to construct and operate a cultural center with various facilities to support the sharing of native Hawaiian cultural practices, education, and stewardship. Establishing taro lo‘i for cultural practices as part of wetland restoration efforts within surrounding areas would also be allowed. Environmental practices could be a focus for this center, but it could also support other areas such as performing arts, language, applied arts, ceremonial practices, and cultural exchange with other Pacific Basin nations.
4. Wai‘auia Cultural Center. A strip of upland area at Wai‘auia (less than an acre) is designated to provide the opportunity for a non-profit organization to construct and operate a cultural center. This center is envisioned to support Hawaiian studies in the areas of performing and language arts, applied arts, and religious and ceremonial practices. A burial preserve site already ~~being~~ established at this site would be maintained by the authorized native Hawaiian organization, and would need to coordinate activities with this center.
5. Kauhale Complex at Pōhakea. This area next to the proposed educational center would incorporate the kauhale concept into the interpretive and educational program with the construction of traditional Hawaiian structures and lo‘i kalo. Operated by a non-profit organization, this area would focus on traditional land management in the cultural education of Hawaiian arts and sciences. Park visitors and educational groups would be able to learn about traditional settlement and subsistence while the traditional structures could be adaptively used by cultural groups for gatherings, training, and cultural events.
6. Canoe Practice (Schools) and Programs at Kawainui SPR, Kalāheo Park. The project does not include any new improvements to this site beyond those already entitled and permitted as part of the Kawai Nui Gateway Park proposal as discussed in Section 1.5.4. The Kalāheo site will support outdoor recreation by allowing canoe launches into Kawainui Canal on a permit basis for practice by schools only~~and some canoe clubs~~. ~~Proposed~~ Permitted improvements include a parking area, restrooms, and an interpretive shelter for educational programs. ~~Construction of a hale wa‘a by a non-profit organization would be allowed for canoe storage along with space for conducting canoe repairs and educational programs related to navigation and the sport of canoe paddling and racing. This hale wa‘a would be constructed and operated by a non-profit organization, and support the Hawaiian cultural practice in the sport of canoe and the science of navigation.~~

2.2.3 Recreational and Educational Programs

Proposed recreational and educational programming would directly support the project's objectives to increase public access, allow for passive outdoor recreational use, and support educational programs. These initiatives meet the LWCF's Section 6(f) program's mandate to provide public recreational opportunities on lands acquired with these federal funds.

2.2.3.1 Recreational Improvements

Passive recreational activities proposed within Kawainui consist of pedestrian trails and accessory support facilities, such as shelters or pavilions for viewing and restrooms at select locations. An education center is proposed to serve as the management center for public access within the Kahanaiki to Nā Pōhaku area. No recreational activities are planned within Hāmākua or on the Puʻuoehu hillside.

Pedestrian Trails

Trails would consist of: 1) pedestrian trails; and 2) foot trails. Pedestrian trails under this project refer to either unpaved (dirt) or improved trails in natural resource areas that are used for walking. Improved trail sections would consist of a permeable surface using materials such as gravel, Grass Crete, etc. Foot trails would be either unimproved grassed or dirt trails, similar to hiking trails about 4 to 6 feet wide and only accessible by walking. Exhibit 2.16 shows conceptual typical sections for these trails.

Pedestrian trails encompass the majority of trails planned in upland areas. Improved trails using permeable material would be provided at select locations, such as the education center, where Americans with Disabilities Act (ADA) accessibility is provided.

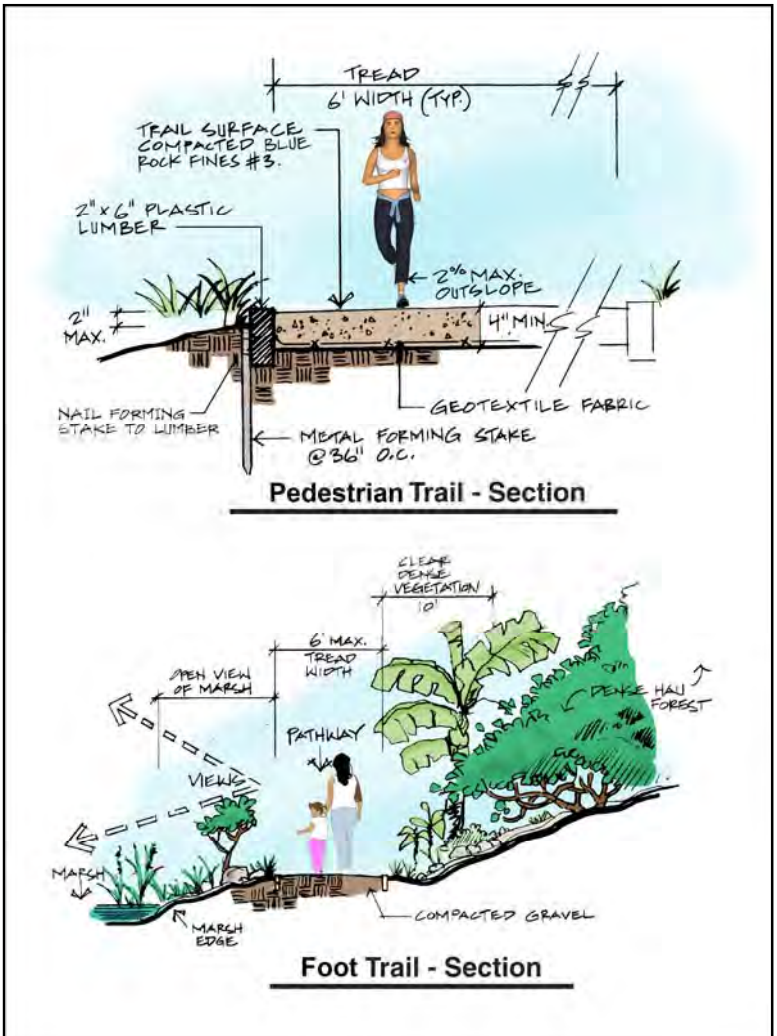


Exhibit 2.16 Typical Section View of Trails

Boardwalks are another type of improved trail ~~that would be provided within specific areas~~ to cross low lying drainage areas or wetland where no suitable upland area is available. However, boardwalk sections previously proposed are no longer included in the project due to reductions in trail segments to limit public access to address community concerns discussed in the beginning of Section 2.2. The levee would continue to serve as the only multi-use trail available for pedestrians and bicyclists. Figure 2.7 is a conceptual plan showing the general routes of various trails proposed within Kawainui.

DOFAW's unpaved maintenance roads within upland areas used for their maintenance activities would be about 10 to 12 feet wide, and also function as pedestrian trails for visitors when not used by DOFAW. Additional trail segments would extend from these roads to provide visitor access closer to the wetland and to observation areas. These trail segments could consist of pedestrian trails or foot trails. These existing unpaved maintenance roads can be utilized as foot trails with minimal or no improvements because they are already provide suitable walking conditions (e.g. gentle slope) within upland areas as shown on Exhibit 2.16A. Several other open upland areas can be similarly used to accommodate foot trails or allow general access to areas with no improvements necessary as shown on Exhibit 2.16A. In general, foot trails and access provided would utilize existing upland areas generally following the natural terrain that are already suitable for public access and would not require extensive site work (e.g. vegetation removal, excavation). ~~At the southern end of Kawainui, bridges would be needed to provide a crossing over Kahanaiki Stream and Maunawili Stream to support DOFAW vehicle maintenance operations and access. These bridges would also be available for visitors use as part of the pedestrian trail system.~~

Existing Maintenance Road at Kahanaiki Suitable for Public Access as Foot Trail

Open Grassed Area at Kahanaiki Suitable for Public Access With No Site Work Needed

Exhibit 2.16A Photos of Existing Areas Already Suitable for Public Access and Foot Trails

Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 2.7 - Proposed Pedestrian Trails

Kailua, O'ahu

0 800 1,600 FEET

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The Americans with Disabilities Act (ADA) requires that some new trails designed for pedestrian use should be made accessible. Paving of trails is not required, as long as the surface is firm and stable. Several sections of the pedestrian trail will not be practical to provide ADA accessibility due to terrain conditions. Departure from specific accessibility guidelines is permitted where terrain or the prevailing construction practices make ADA compliance unfeasible, or if there is potential harm to cultural, historic, religious, or significant natural features or characteristics. The actual alignment and design of trails would be determined during the design phase as sections are implemented, and may involve refinements to the route to avoid sensitive areas, historic sites, or due to terrain and topography of the specific location.

Accessory Facilities ~~and Education Center~~

Accessory support facilities are proposed at various locations along the pedestrian trails. Facilities would include observation decks, shelters (e.g. open pavilion), restrooms, interpretive devices, and directional signage (Exhibit 2.17). The general location of proposed support facilities are shown on individual conceptual site plans in the next section. The actual location and design of these facilities would be determined during the design phase as improvements are implemented, and may involve refinements to the site location and design characteristic due to terrain and topography of the area.

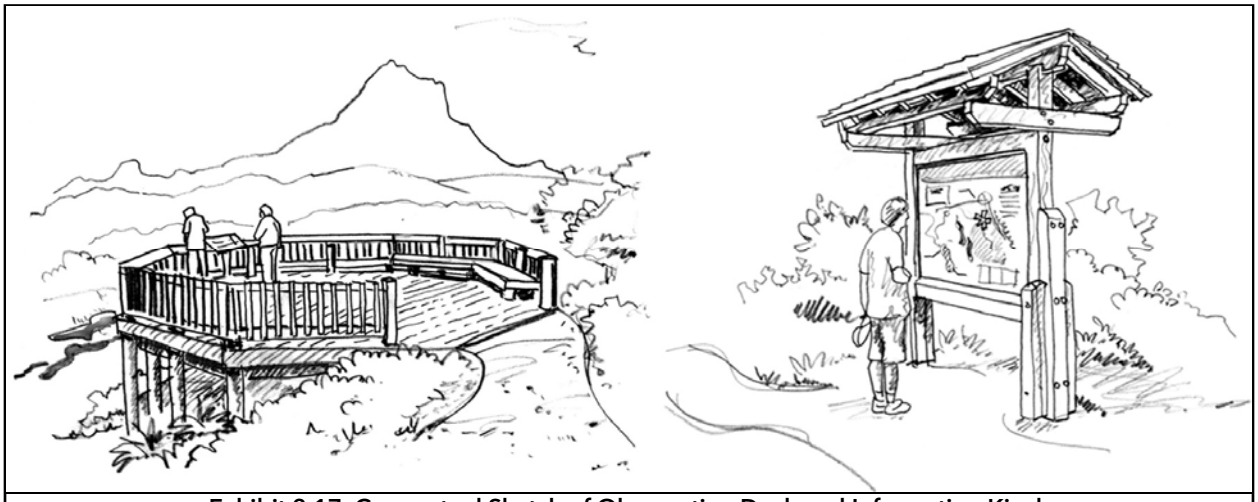
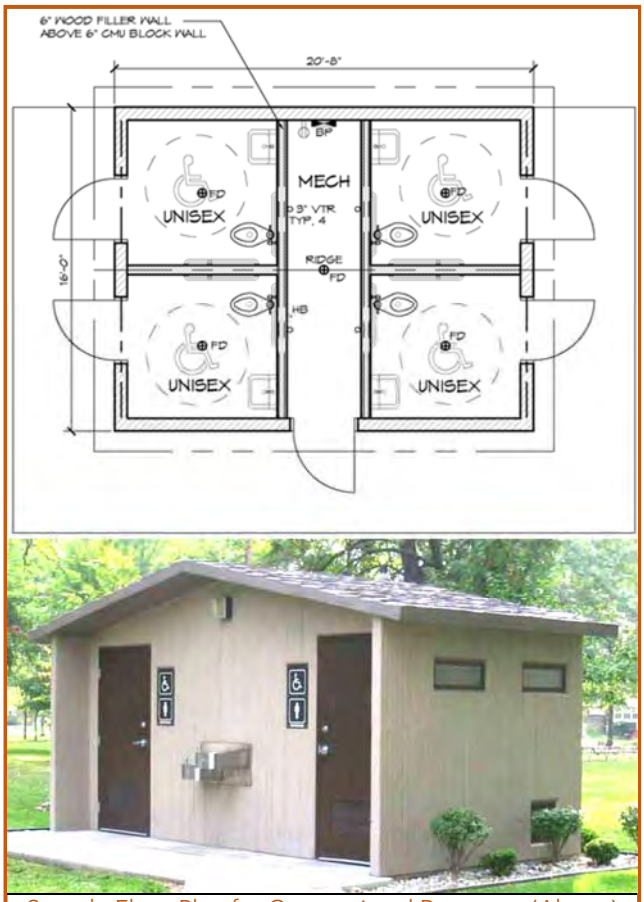


Exhibit 2.17 Conceptual Sketch of Observation Deck and Information Kiosk

Observation decks and shelters would provide the public with the opportunity to view Kawainui and its resources (e.g. wetlands, avifauna, cultural sites), and also support activities related to educational programs. Students would use the trails to access areas where hands-on learning could occur, and observation decks and open pavilions would provide locations for instruction along with shade and shelter from the rain.

Comfort Stations

Planned comfort stations, which are separate from the cultural centers or education center, would consist of modular prefabricated structures having either two or four toilets (two men, two women) with floor areas ranging from about 200 to 350 square feet, depending upon the number of toilets. These small single-story structures would be of a design typically used for other park sites. Such a restroom facility can be a conventional design that processes wastewater using a leach field similar to the existing facility serving the City Model Airplane Park, or utilize newer green technology consisting of a self-contained restroom with or without utilities. Exhibit 2.17A includes typical floor plans for such restroom facilities intended to serve parks along with a photo of another typical conventional restroom facility.



Sample Floor Plan for Conventional Restroom (Above)
Photo of Typical Restroom Facility (Below)
Exhibit 2.17A Typical Restrooms Concept

The septic tank under a conventional treatment design would act as a digester, breaking down wastes so only liquids flow to the leach field. The liquids would be disbursed over an area where the nitrogen-rich nutrients support plant growth. The tank can trap any solids that do not break down, and can be pumped periodically, as required. The leach field for such a small system would likely require less than 500 square feet of area. This system would be designed in compliance with State DOH requirements (§11-62, HAR). This treatment system is identical to the City Model Airplane Park, with no demonstrated adverse effects on Kawainui.

Exhibit 2.17B Conceptual Plan of Self Contained Restroom Facility

Another type of restroom that could be constructed consists of a self-contained facility (Exhibit 2.17B) utilizing green technology for treatment that is more environmentally friendly regarding energy consumption and water utilization (water use reduction up to 70%). Such facilities are modular buildings featuring vault toilets that

can be constructed with or without utilities, with options to utilize solar power and rainwater collection. Wastewater is stored in the sealed sewage vault below the floor, and would need to be pumped by a disposal service similar to other individual treatment systems.

Parking Lots and Site Improvements

Parking lots would be designed to be environmentally compatible with the area using pervious surfaces such as gravel or other porous materials. Porous gravel paver material, such as Gravelpave2 or similar, typically consists of a geotextile fabric layered with sand or soil and then seeded with grass. The fabric provides load bearing support and containment of material creating a porous surface supporting stormwater infiltration and pollutants removal by grass. Exhibit 2.17C includes representative photos of these types of pervious parking lots one of which uses Gravelpave2. Filter strips, also referred to as buffer strips, and bioswales would also be utilized in the parking lot design, consisting of a vegetated area to collect and slow stormwater runoff, reduce sediment transport, and increase infiltration.

Parking Lot with Gravel Pavement Parking Lot with Gravelpave2

Exhibit 2.17C Examples of Parking Lot Pervious Surfaces

Other site improvements supporting these various recreational improvements would incorporate low impact design (LID) elements that support a more sustainable land development pattern. LID incorporates various landscaping and design techniques that attempt to maintain the natural, pre-development hydrology of the area, mainly addressing stormwater runoff. Such measures would address practicably preserving natural features of the site where appropriate, reducing impervious cover, and source control for stormwater management.

Upland areas where these recreational improvements would occur are already proposed for upland restoration by DOFAW to replace invasive vegetation with native vegetation. Facilities, such as comfort stations, are planned within areas intended to minimize disturbing natural features, reducing grading requirements, and siting them within less sensitive areas. Foot trails would consist of unpaved areas and pedestrian trails would utilize pervious material. Parking lots would similarly include use of pervious materials and filter strips that reduce impervious cover

and support stormwater detention, reduced velocity, and increased infiltration. DOFAW plans causeways and drainage swales to address stormwater runoff from upland areas outside the project site to reduce velocity, increase detention, and subsequent infiltration. Specific LID, best management practices, and other design measures would be determined during the final design of these recreational facilities.

Educational Center

An educational center for visitors is proposed at Pōhakea within the Nā Pōhaku Section of Kawainui SPR. This facility would function as both an educational and interpretive center, and is envisioned to include space for informational and educational materials, interpretive exhibits and displays, restrooms, administrative offices, vehicle parking, and other accessory support facilities. The educational center would serve as a starting point for visitors to Kawainui, and serve as a base location for accessing pedestrian trails in surrounding areas along Kahanaiki and at Nā Pōhaku. Programs would educate visitors about the importance of wetlands and the area's cultural resources, creating more engaged and knowledgeable community stewards. Further details on the education center are discussed later regarding conceptual site plan concepts for subareas.

2.2.3.2 Educational Programming and Stewardship

DOFAW and DSP propose to create opportunities to allow specific venues at Kawainui-Hāmākua to support an integrated program of education, scientific research, service learning and community stewardship. The program would be based on three themes common to managing wildlife sanctuaries, historical parks, and passive recreation areas: 1) natural and cultural resources; 2) community stewardship; and 3) education. The curriculum and activities would target elementary through graduate level students in partnership with non-profit organizations, schools, and universities. Service learning projects would involve a teaching strategy, involving both students and adults, which integrate meaningful community service with instruction and reflection to enrich experience, teach civic responsibility, and strengthen communities.

Overview of Resources and Improvements Supporting Programming

The pedestrian trail along with accessory support facilities previously discussed would support educational programs and service learning projects proposed. Additional existing areas and improvements supporting these efforts include:

1. Education Center at Pōhakea with Nā Pōhaku o Hauwahine. The education center at Pōhakea would serve as the main center for educational programs and activities serving the general public. Nā Pōhaku o Hauwahine and a kauhale complex provide resources to enhance educational, environmental, and cultural programs occurring from the education center.

2. DOFAW Kawainui Management and Research Station. DOFAW's existing management and research station will continue serving as a center for scheduled educational programs and activities associated with Kawainui's wetland, the restoration ponds, wildlife, and DOFAW management activities.
3. Ulupō Heiau State Historical Park. The state park will continue serving as a resource for scheduled educational and cultural programs and activities along with visitations by the public. Continued cultural landscape restoration activities provide unique resources supporting these programs and education.
4. Hāmākua Marsh State Wildlife Sanctuary. Hāmākua will continue serving as a resource for scheduled educational programs and activities associated with the wetland, wildlife, and DOFAW management activities.
5. Kapa'a Cultural Center. The non-profit organization operating this complex at Kapa'a would be responsible for providing scheduled educational programs and activities in partnership with DOFAW and DSP. Cultural and environmental activities occurring at this complex would provide a unique resource for cultural-based educational experiences that differ from others conducted by DOFAW and DSP.
6. Wai'auia Cultural Center. A non-profit organization operating this center would be responsible for providing scheduled educational programs and activities in partnership with DOFAW and DSP. Cultural activities associated with Hawaiian studies along with performing and literary arts occurring at this center would provide unique cultural-based educational experiences that differ from others conducted by DOFAW and DSP.
7. ~~Kawainui SPR, Kalāheo. Canoeing activities at this park site would create unique opportunities for educational programs and activities related to that sport. Occasional functions occurring to educate the public on the sport of canoe paddling would be conducted by non-profit organizations.~~

Education and Scientific Research Activities

School groups would have an opportunity to participate in scientific data collection at both Kawainui and Hāmākua. Students would learn to analyze the data and help create long-term data sets that could be used by DOFAW in existing or planned resource management projects. To support consistency and long-term availability, data collected and projects initiated would be developed using criteria and techniques established by DOFAW. Such educational programs could include research regarding seabirds and outdoor lighting, water quality samples, and other topics that increase public knowledge of the resource and habitat.

DOFAW has established a solid foundation for long-term data collection through its relationship with the Center for Conservation, Research and Training (CCRT) at the University of Hawai'i at Mānoa. As a first step, automated sensors have been deployed at the restoration ponds to collect weather and water quality data. Eventually, this data is planned to be made available to students and teachers after site visits and service projects to allow them to continue their work for an

extended period of time and understand the relevance of their work to DOFAW management and restoration programs.

A DSP interpretive program would improve understanding and appreciation of Hawai‘i’s unique and significant natural and cultural resources. The education center at Pōhakea and interpretive elements at Kaûıinui SPR, Kalāheo are examples of areas with improvements supporting DSP’s program. Signage specifications based upon DSP’s standards would be used for the design and installation, as appropriate, of interpretive material. DSP would continue to work with non-profit organization partners to provide additional interpretive and educational opportunities.

Service Learning Projects

Policy initiatives at the Federal and State level emphasize environmental education instructed through service learning initiatives. At the Federal level, the No Child Left Inside Act (NCLI) provides funding support for environmental literacy education and requires states to develop environmental literacy plans to obtain these funds. The State of Hawai‘i has developed the Hawai‘i Environmental Literacy Plan (HELP), solidifying the State’s commitment to environmental literacy for Hawai‘i’s students. HELP identifies service learning as an important strategy for teaching environmental literacy. The project aligns with and supports these policy initiatives by providing DOFAW, DSP, and their community partners with improvements supporting service learning at the project area.

DOFAW currently sponsors service learning projects to provide students and adults with “hands-on” knowledge about basic wetland function, native/invasive species, and management techniques for restoring wetland function. A serving learning project can be described as a teaching and learning str tegy hat integrates meaningful community service with ins ruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities. Existing community partners engaging with DOFAW for service learning projects include ‘Ahahui Mālama I Ka Lōkahi, Hawai‘i Nature Center, Hawai‘i Pacific University, Le Jardin Academy, Pacific American Foundation, and the University of Hawai‘i at Mānoa.

Examples of service learning projects conducted by existing community partners include the Nature Activities for Learning and Understanding (NALU) Program led by the PAF. Students in the program gain an understanding of environmental processes through a combination of outdoor service based learning and laboratory work. The Pacific American Foundation’s Watershed Investigations, Research, Education, and Design Project (WIRED) is conducting a watershed wide water quality study with Kalāheo and Kailua High schools. The WIRED program aims to improve and increase the interest of Hawai‘i students in science, technology, engineering, and math (STEM) subjects. Additionally, Hika‘alani has partnered with other Kailua organizations and DOFAW to provide Kailua Intermediate School students with service learning opportunities at the project area. Through service learning, students learn about STEM subjects through direct interaction with project area natural resources.

DOFAW would continue to work with established partners to expand educational and service learning programming and may look to create new partnerships with other agencies such as the Hawaii State Science Teachers Association. The expanded program will allow school groups and community organizations participating to collect and share data, and learn important scientific information-gathering techniques in the process. Students will learn to analyze data and help create long-term data sets for use in existing or planned management projects.

The pedestrian trail, accessory facilities, education center, and several educational and cultural resource areas previously discussed all provide many opportunities to support and expand participation in service learning projects. Regularly scheduled service learning projects, usually 3 to 5 hours long, would typically involve 10 to 20 students/teachers/chaperones at time. However, once or twice a year, a large group service learning project could be scheduled, comprising up to 300 students/teachers/chaperones. Examples of service learning activities could include weeding, repairing and maintaining predator fencing, clearing areas of trash, removing invasive plants and replanting areas with new native plants, and/or conducting bird/plant surveys

Community Stewardship

DOFAW and DSP will work with current and future non-profit organizations to support maintenance of Kawainui and Hāmākua as part of community stewardship opportunities. Some areas are already proposed for possible use by a non-profit organization for cultural use and practices (e.g. Waiʻauia and Kapaʻa Cultural Centers) that will include stewardship of surrounding areas in partnership with DOFAW and DSP. The DSP already has curatorship agreements with several Hawaiian organizations to perform cultural landscape restoration and cultural practices, and additional partners will be sought for other areas (e.g. Kawainui SPR, Kalāheo).

At Kawainui's restoration ponds, DOFAW has been conducting volunteer days on the morning of the first Saturday of each month since August 2013. DOFAW has several community organizations working as partners on the maintenance of the restoration ponds through their "adoption" of a particular pond. DOFAW will continue to add more partnerships with community organizations to either adopt or support maintenance of restoration ponds by participating in DOFAW community service projects. Stewardship opportunities have occurred at Hāmākua with schools restoring upland areas with native vegetation. DOFAW would expand stewardship opportunities with schools, non-profit organizations, and other partners.

2.2.4 Conceptual Site Plans

This section discusses site specific conceptual improvements by subareas (Subareas A to E). The following table lists the various subareas, identifies the figure corresponding to the conceptual plan for the subarea, and lists the major concepts for each. It should be noted that some of the concepts identified in subareas are already entitled and permitted to proceed separate from this project as discussed in previous sections (e.g. wetland restoration, vegetation processing area) and are highlighted in "blue".

Table 2.2
Summary of Major Proposals

Subarea	Subarea Name	Conceptual Site Plan	Major Proposals
A	Kawainui	Figure 2.5 DOFAW Management Areas	-Wetland restoration -Invasive species removal -Wildlife sanctuary management
B	Kahanaiki-Nā Pōhaku-Kapa'a	Figure 2.8, Kahanaiki Section	-Upland vegetation restoration -Drainage improvements along Kapa'a Quarry Road -Pedestrian trails with observation decks/lookouts -Managed parking and program staging area
		Figure 2.9, Pōhakea-Nā Pōhaku Section	-Upland restoration (lowland dry forest restoration) -Drainage improvements along Kapa'a Quarry Road -Pedestrian trails connecting with Nā Pōhaku o Hauwahine -Education center with parking at Pōhakea -Hawaiian kauhale complex with cultural landscape restoration in outdoor area at education center
		Figure 2.10, Kapa'a Section	-Kapa'a Cultural Center -Taro lo'i restoration area ~~-Pedestrian trail along Kapa'a Quarry Road~~ -Reestablish vegetation processing area
C	Kapa'a-Kalāheo-Levee	Figure 2.11, Kapa'a-Kalāheo	-Upland reforestation -Drainage improvements along Kapa'a Quarry Road ~~-Passive recreational park with canoe launch and support facilities~~ -Levee maintenance and landscaping
D	Wai'auia-Ulupō-Mokulana	Figure 2.12, Wai'auia	-Open space supporting DOFAW maintenance -Pedestrian trail connecting to levee -Center for Hawaiian studies to support cultural practices ~~-Burial reinterment site~~
		Figure 2.13, Ulupō Heiau State Historical Park	-Pedestrian trail linking ~~levee with~~ Ulupō Heiau SHP ~~and~~ to DOFAW Management and Research Station -Accessory structures (hālau and nursery) -Cultural landscape improvements at Ulupō Heiau SHP
		Figure 2.14, Mokulana	-DOFAW Management and Research Station improvements -Pedestrian trail with support areas connecting research station ~~with Mokulana Peninsula~~
E	Hāmākua-Pu'uoehu	Figure 2.15, Hāmākua and Pu'uoehu	-Improvements to support DOFAW management -Upland reforestation of Pu'uoehu hillside -Hāmākua wetland improvements and management

Overall, the project proposes several new structures that support DOFAW management and operations, educational programs and activities, cultural practices and programs, and passive outdoor recreation. Table 2.2A identifies these structures and the approximate floor area proposed by subareas. The actual number of structures and building sizes would be dependent upon final design. Thus, the number of buildings could be less, but consolidated into larger structures. However, the total floor area proposed reflects the maximum build out.

Table 2.2A
Summary of Floor Area for Structures and Buildings

Subarea	Description of Structure/Building	Floor Area (sf)
Kahanaiki	Restroom Pavilion	350 350
Pōhakea to Nā Pōhaku	Education Center at Pōhakea Kauhale at Pōhakea (570-1,800 sf)	5,600 5,300
Kapa'a	DOFAW Vegetation Processing Site Cultural Center at Kapa'a • Various Buildings (800-1,500 sf) • Plant Nursery (2,000 sf)	5,000 10,000
Wai'auia	Cultural Center at Wai'auia	7,000
Ulupō Heiau State Park	Hale and Plant Nursery	5,000
DOFAW Station	DOFAW Management & Research Station • Office Building (2,000 sf) • Research Building (2,000 sf) • Plant Nursery (5,600 sf) • Pavilion (400 sf)	10,000
Hāmākua Marsh	DOFAW Restroom and Storage	400
	TOTAL APPROXIMATE FLOOR AREA	**49,000**

A total of approximately 70 acres are available for educational programs, cultural practices, outdoor recreation, and DOFAW management operations within the project site. The total floor area proposed within this upland area accounts for 1.1 acres, reflecting a very low building area ratio of only about 1.61%. In comparison, the maximum building area allowed is 5% (about 152,460 sf) by the City's *Land Use Ordinance* development standards for the General Preservation District.

Based upon Table 2.2A, the following floor area is proposed for the various program categories. As shown, the greatest percentage proposed is to support native Hawaiian cultural practices and associated educational programs. About one-third is accounted for facilities to support DOFAW's management and operations within the Kawainui-Hāmākua project site.

1. DOFAW Management and Operations: 15,400 31%
2. Cultural Practices and Programs: 27,300 56%
3. Educational Programs and Outdoor Recreation: 6,300 13%

2.2.4.1 Subarea A: Kawainui

The Kawainui Subarea A encompasses the entire Kawainui wetland area, and proposed improvements focus on wetland restoration, habitat enhancement and management activities as previously discussed under Section 2.2.1 (Natural Resources Management Initiatives). Figure 2.5 previously illustrated the DOFAW-designated management zones, each with specific restoration objectives.

2.2.4.2 Subarea B: Kahanaiki-Nā Pōhaku-Kapa‘a

Kahanaiki Section

The Kahanaiki section of Subarea B is shown in Figure 2.8, and generally includes the upland areas along Kapa‘a Quarry Road from its intersection with Kalaniana‘ole Highway and proceeding northbound. Major improvements planned for this section under the project include:

~~1. Continued upland reforestation work as described in Section 2.2.1.1.~~
~~2. Drainage improvements and repairs along Kapa‘a Quarry Road.~~
1~~3~~. Pedestrian and foot trails with observation decks/lookouts.
2~~4~~. Visitor parking lot at south end also used as program staging area.

In this section, DOFAW is already implementing upland forest restoration and drainage improvements to address erosion~~. These improvements would continue~~ under the already-approved Kawainui restoration project (HHF, 2012) and as part of their management and operational activities. In combination with the education center proposed at Pōhakea, the Kahanaiki section would support and serve as an “outdoor classroom” for place-based educational programs. The proximity to DOFAW’s wetland habitat restoration improvements make it an ideal environment for explorations in natural resources-based curriculum.

Kahanaiki also serves as a viewing area of Kawainui. Pedestrian trails are planned along with designated observation areas and interpretive signage to support passive outdoor recreation and education (previously discussed under recreational improvements section). These improvements support the LWCF Section 6(f) requirement for public access and outdoor recreational opportunities.

Managed Parking with Gated Entries: There are three existing gated access points along Kapa‘a Quarry Road into the Kahanaiki upland area as shown on the concept plan. These current DOFAW-managed entrances ~~access~~ and unpaved access roads would continue to serve DOFAW activities for upland reforestation work, maintenance, wetland restoration work, educational and stewardship programs, and special activities.

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Kawainui - Hāmākua Master Plan Project

Figure 2.8 - Conceptual Plan Subarea B - Kahanaiki

Kailua, O'ahu

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The access nearest to Kalaniana‘ole Highway leads to a visitor parking lot with about 25 parking stalls, including handicapped stalls. The parking area would serve visitors to Kawainui accessing pedestrian trails and foot trails, and function as a staging area for educational programs and management activities (e.g. clean-up event). Schools must coordinate with DOFAW so buses transporting students to these programs can access this parking lot. The parking lot would be gated and only open during daylight hours. The parking area would have a compacted gravel or other permeable surface to minimize storm water runoff along with other environmentally-friendly design measures (e.g. bioswale) as discussed in Section 2.2.3.

The access located further north across Le Jardin Academy’s entrance would continue to serve DOFAW for their management activities. A program staging area would be established for the loading/unloading of student groups for educational programming and service learning activities. The area would also function as operational space for DOFAW restoration, reforestation, and maintenance activities, equipment storage, and possibly for storing green waste from restoration activities prior to transport to the vegetation processing site.

The third access would continue to serve DOFAW’s existing maintenance road providing access to additional upland areas for restoration and maintenance activities.

Pedestrian Trails and Amenities: DOFAW’s existing unpaved maintenance roads within the upland area presently used for management activities would also function as pedestrian trails for visitors as discussed in Section 2.2.3. Additional trail segments or foot trails would extend from these roads to provide access closer to the wetland and to observation areas.

Maintenance roads and pedestrian trails would be about 10 to 12 feet wide, and continue to be unpaved or improved with permeable surface materials such as gravel, Grass Crete, etc. Foot trails would be comprised of grass or dirt, similar to hiking trails, about 4 to 6 feet wide and only accessible by foot. ~~At the southern end of this section, a bridge would be needed to provide a crossing over Kahanaiki Stream to extend DOFAW’s maintenance road toward Mokulana Peninsula. This single-lane bridge would support DOFAW maintenance vehicles and pedestrian use, and would span over the stream to minimize effects.~~

Two observation areas are proposed to provide scenic viewing points of Kawainui as shown on Figure 2.8. These viewing locations are proposed near the southern parking area and near the program staging area for convenient access. Observation decks with interpretive signage are proposed at each viewing location. ~~One observation area is proposed to include a boardwalk extending a short distance into the wetland to provide enhanced viewing of the waterbirds and the wetland.~~

An open air pavilion is proposed near the program staging area in proximity to the observation area and boardwalk. Exhibit 2.17D includes a photo of an existing open pavilion at another State park to provide a conceptual understanding of the character and design of such a minor accessory structure. The approximately 350 square-foot wooden structure would provide shelter from the elements and serve as a rest area supporting educational programming and outdoor recreation. A small restroom facility that can be designed utilizing a conventional treatment system with septic tank system or a "green" self-contained system is proposed near the pavilion. Additional information on restrooms were previously discussed in Section 2.2.3.

Exhibit 2.17D Photo of Existing Pavilion at Lava Tree State Park

Nā Pōhaku Section

The Nā Pōhaku section of Subarea B is an upland area under the jurisdiction of DSP. The section continues north from the Kahanaiki section along Kapa'a Quarry Road up to Nā Pōhaku o Hauwahine. Figure 2.9 shows the major improvements proposed by the project ~~concepts~~ for this section which include:

~~1. Continued upland reforestation work at Nā Pōhaku o Hauwahine (previously discussed).~~
1~~2~~. Drainage improvements along Kapa'a Quarry Road (previously discussed in Section 2.2.1.3).
2~~3~~. Pedestrian trails and foot trails.
3~~4~~. Education center with parking for visitors along with traditional Hawaiian kauhale complex, cultural landscape restoration, and open lawn gathering area. As discussed in the beginning of Section 2.2, DSP plans to first provide an off-street parking lot, restroom facility, and open pavilion to support programs either as an interim or permanent basis before proceeding with the education center.

Upland reforestation and landscaping work at Nā Pōhaku o Hauwahine already occurring would continue. The Nā Pōhaku section, in combination with the Kahanaiki section immediately to the south, is intended to support place-based education and serve as an "outdoor classroom." The area's proximity to wetland habitat restoration improvements along with ongoing reforestation efforts at Nā Pōhaku make it an ideal environment for supporting educational programming.

Kawainui - Hāmākua Master Plan Project

Figure 2.9 - Conceptual Plan Subarea B - Nā Pōhaku Section (Kawainui State Park Reserve)

Kailua, O'ahu

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The best panoramic viewing opportunities of Kawainui are provided from existing pedestrian and foot trails at Nā Pōhaku. Public access, passive outdoor recreational opportunities, and educational programming would directly support the LWCF Section 6(f) requirements.

Pedestrian Trails: Pedestrian ~~and~~ foot trails from the Kahanaiki Section would extend through this Nā Pōhaku area as shown on Figure 2.9. The existing foot trails at Nā Pōhaku would be maintained. ~~Most of the pedestrian trails shown would be designed to also accommodate both DOFAW, DSP, and other authorized vehicles used for management and maintenance operations.~~

Education Center: A proposed education center would serve as a starting point for students and visitors to the area for orientation and educational programs. The education center building is proposed to be designed using post-and-pier construction to minimize ground disturbance, and a lanai would provide dramatic, panoramic views of Kawainui. An entryway with a reception desk, a common area/exhibits room, a multi-purpose room, an office, restrooms, and a storage area are proposed for the approximately ~~4,000~~ 5,600 square feet of ~~interior space~~ building area planned. A covered, outdoor wrap-around walkway would lead to a viewing deck nestled under the canopies of large shade trees. Buildings are intended to reflect traditional and sustainable design elements, and may incorporate Leadership in Energy and Environmental Design (LEED) concepts or similar sustainable building guidelines if feasible. Actual incorporation of these guidelines would be determined in the design phase of these improvements.

As discussed in the beginning of Section 2.2, DSP plans to first provide an off-street parking lot, restroom facility, and open pavilion to support programs either as an interim or potentially a permanent basis before proceeding with the education center. These improvements would be sited in generally the same location where the education center is. Exhibit 2.17E includes a site plan showing these interim support facilities.

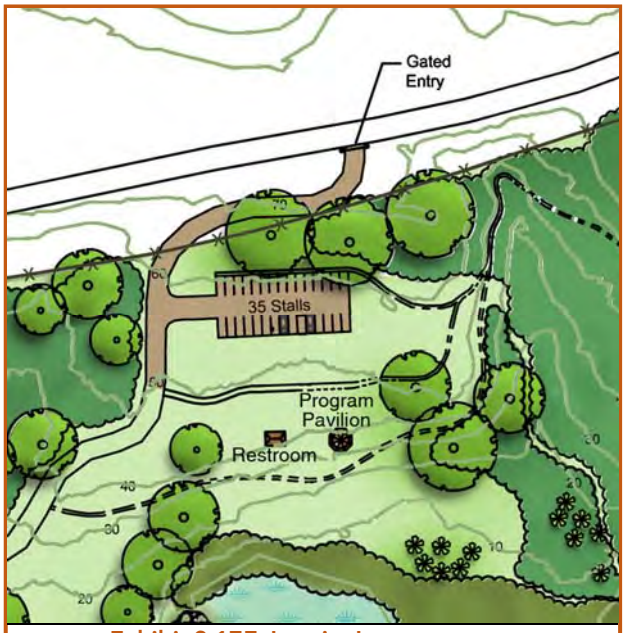

Exhibit 2.17E Interim Improvements for Education Center

A preliminary conceptual layout for the educational center building is illustrated in Exhibit 2.18. The actual design would be developed in the future when implemented by DSP. DSP intends to have a non-profit organization operate the education center. If feasible, the non-profit organization may also construct this facility. The selected organization would be qualified to develop and implement programs and educational curriculum, and would be selected through a Request for Proposal (RFP), Request for Qualifications (RFQ), or other procurement selection process.

An existing gated entry would provide access from Kapa‘a Quarry Road. Because it would be the primary visitor point of entry, the entrance area would be landscaped and include signage conforming to DSP park standards. The entry gate would be open during daylight hours and locked at night.

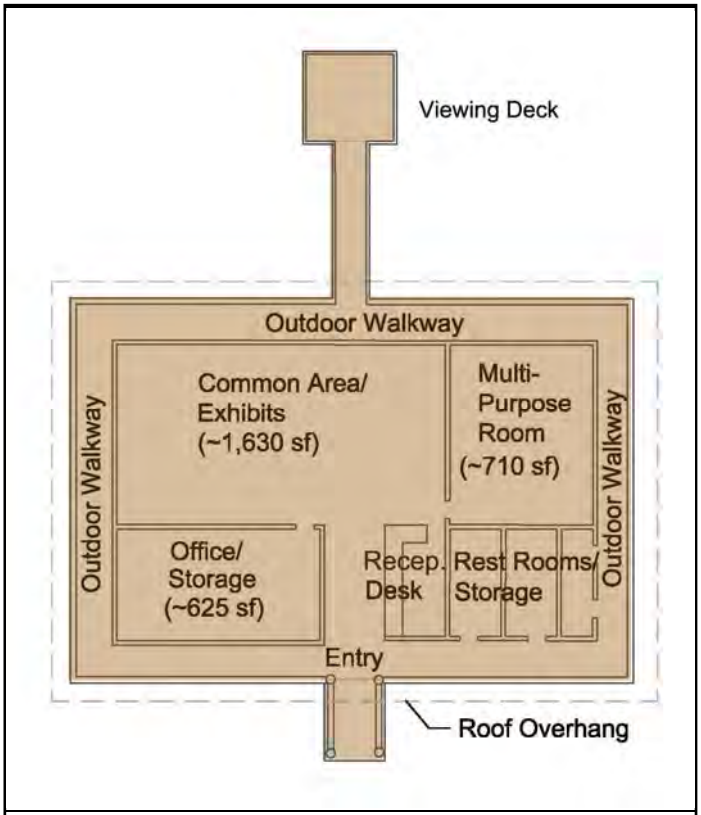

Exhibit 2.18 Conceptual Interior Layout of Education Center

Wastewater generated by facility users would likely be processed through an individual septic system because a sewer main is not present on Kapa‘a Quarry Road. The individual septic system would comply with applicable State Department of Health (DOH) regulations governing design and development of these systems. A parking lot with about 35 parking stalls, including handicapped stalls is proposed. The parking lot would accommodate visitors to the area as well as volunteers participating in restoration activities at Nā Pōhaku o Hauwahine. The parking area would include a drop-off area for permitted buses at the entrance to the education center. Organizations transporting individuals to the education center by bus, such as schools, must coordinate in advance with DSP to ensure the drop off area is available. This parking area would have a compacted gravel or other permeable surface to minimize storm water runoff. Low-impact design (LID) elements such as bioswales, bioretention areas, and rain catchment systems would also be incorporated. Additional information on restrooms and parking lots were previously discussed in Section 2.2.3. Exhibit 2.19 includes a conceptual section of the parking area and some LID design concepts that minimize storm water runoff.

The area south of the education center consists of an open lawn with controlled vehicle access. Under a permit issued by DSP, the area is currently being used on a short-term basis by a native Hawaiian organization for traditional cultural practices. As an added element to the education center, the construction of a traditional Hawaiian kauhale complex is proposed to assist in interpreting the cultural history of Kawainui. The kauhale cultural site would thus be an extension of the education center. DSP would similarly ~~issue~~ utilize an RFP, RFQ or other procurement process to select a non-profit organization to construct improvements and implement a cultural educational program in conjunction with the education center’s programs.

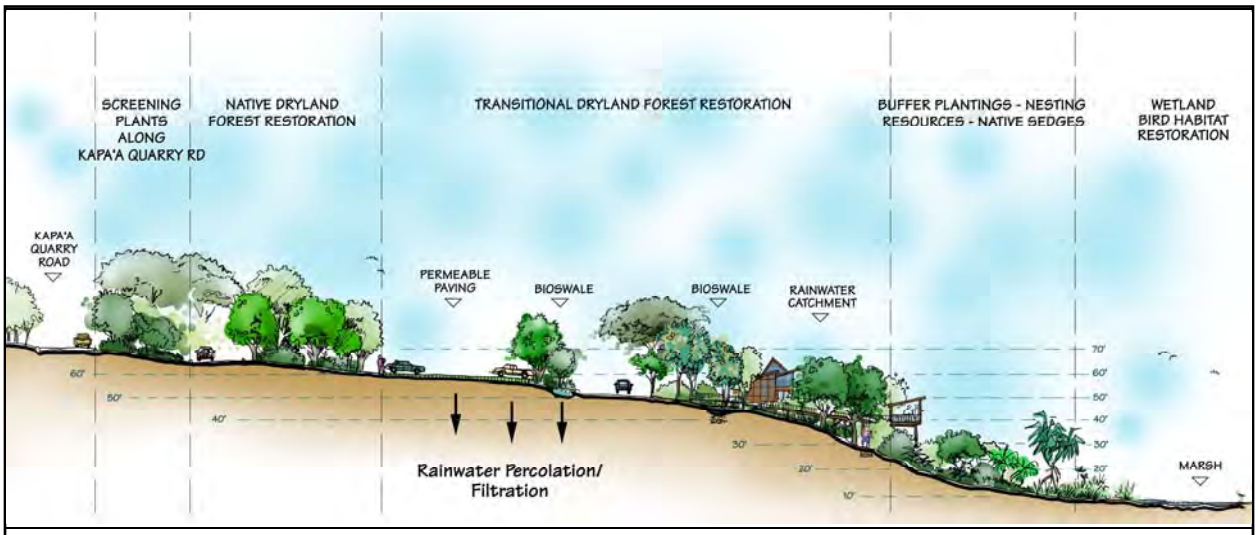

Exhibit 2.19 Conceptual Section View of Education Center and Parking

The kauhale complex would encompass an area of approximately ~~10~~ five acres and consist of up to ~~eight~~ five hale and/or hālau (traditional Hawaiian pole and thatch structures), a lo‘i kalo, gardens of native and Polynesian-introduced plants, and recreational features such as a hōlua slide. The traditional function of the hale/hālau includes dwellings, a cooking house with imu, canoe storage, and work areas for kapa-making and lauhala weaving. Proposed complex structures would occupy footprints ranging from 570 to 1,800 square feet, but the total floor area proposed for all structures would be 5,300 square feet. However, the actual design of complex structures and the footprint they may occupy would be determined during the design phase of these structures. A foot trail through the kauhale complex would share the traditional use of these structures, but they can also be adaptively used to support the perpetuation of Hawaiian cultural traditions and practices through educational programs and cultural events.

In compliance with the LWCF Section 6(f) requirements, the site would provide public programs and access with some opportunities to experience traditional Hawaiian outdoor recreational activities such as kōnane, ‘ulu maika, and hōlua demonstrations. Programs centered around the theme of the Hawaiian kauhale would be offered for schools and visitors in conjunction with the education center.

Contact between humans and endangered waterbirds may occur during the construction and operation of these facilities. Development of facilities proposed near wetlands would be coordinated with DOFAW to minimize adverse impacts to endangered waterbirds. ~~Mitigative~~ Minimization measures such as having an experienced biologist survey areas for waterbird nests would occur to ~~minimize adverse~~ avoid impacts.

Kapa‘a Section

The Kapa‘a section of Subarea B, shown in Figure 2.10, is an upland area under the jurisdiction of DOFAW. It includes the area north from Nā Pōhaku up to (but not including) the City’s model airplane park. Across from this area (mauka) is the City’s Kapa‘a Refuse Transfer Station and roadway leading into the Kapa‘a light industrial park. The figure shows the major concepts proposed for this section which include:

1. An area designated to support native Hawaiian cultural practices and facilities.
~~2. Pedestrian trail along Kapa‘a Quarry Road.~~
2~~3~~. Re-establishing vegetation processing at a site adjacent to the model airplane park.
3~~4~~. Short-term research activities and DLNR agency support at vegetation processing area.

Kapa‘a Cultural Center: The approximately 9-acre area offers an opportunity for use by one or more non-profit organizations for native Hawaiian cultural practices. The site was formerly used by the City as a road maintenance baseyard and for vegetation processing as part of the City’s flood improvements within Kawainui. The purpose of the complex is to support cultural practices and educational efforts to perpetuate Hawaiian knowledge, skills, and practices. Use of the site would be managed by the non-profit organization in accordance with DOFAW guidelines and restrictions developed.

The complex is conceived as a place for kanaka maoli to gather and share knowledge, and to support the stewardship and caring for (mālama ‘āina) Kawainui and the Kailua ahupua‘a. The complex is intended to be a place of spiritual, cultural, and environmental well-being. For example, kumu hula can teach ancient dances, sustainability practitioners can teach and apply the science of collecting and harnessing alternative energy, mahi‘ai (farmers) can instruct students on how to create and sustain lo‘i kalo and māla, and contemporary practitioners can demonstrate and implement the native Hawaiian conservation ethic. Educational components would include instruction in agriculture, chant, arts and crafts, environmental conservation and stewardship, recycling, and teaching related directly to the legends, history, and science of Kawainui-Hāmākua. It would also be a place for exchange with other indigenous cultures.

Programs and activities conducted at this cultural center would be intended for invited or registered guests visiting the center. However, other organizations (non-culturally based) could utilize facilities for conducting meetings, programs, etc. in coordination with the organization operating the center. In addition, the public would have opportunities to register for and participate in educational and cultural programs occurring, such as classes, workshops, etc.

Kawainui - Hāmākua Master Plan Project

Figure 2.10 - Conceptual Plan Subarea B - Kapa'a

Kailua, O'ahu

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DOFAW and DSP would be ~~available~~ able to conduct educational or stewardship activities related to native Hawaiian cultural practices at this site in coordination with the non-profit organization(s). The complex could host school groups of 20 to 25 students up to three times per week as part of DOFAW or DSP educational programs. Two or more times per week, the complex could conduct stewardship work sessions for up to 25 volunteers from the public at the site, at Nā Pōhaku O Hauwahine, and other areas within Kawainui. Occasional larger gatherings for special celebrations could also take place during the year that could be open to the general public. Thus, the public could sign-up on a first-come, first-served basis to attend events, allowing the non-profit organization to better manage the number of persons attending such events.

The complex would be comprised of several (about eight) single-story structures incorporating traditional hale design concepts about 800 to 1,500 square feet in size along with a plant nursery (about 2,000 sf). Structures would support administrative space, classrooms, hale for programs, restrooms, storage, workshops, kitchen, and a caretaker's cottage. Support structures would include on-site water storage and a plant nursery with shade structures for irrigation of grounds and landscaping and enhancing sustainability concepts.

Other components would include a hula mound and imu. Buildings are intended to reflect traditional and sustainable design elements, and incorporate Leadership in Energy and Environmental Design (LEED) concepts or other similar sustainable building guidelines. LID elements such as bioswales, bioretention areas, and rain catchment systems would also be considered in the project's design.

Up to ~~4,000~~ 10,000 square feet of ~~interior space~~ floor area would be allowed (~~not~~ including nursery), and concept sketches for the complex are shown on Exhibit 2.20. Buildings having exterior night lighting would be required to have them

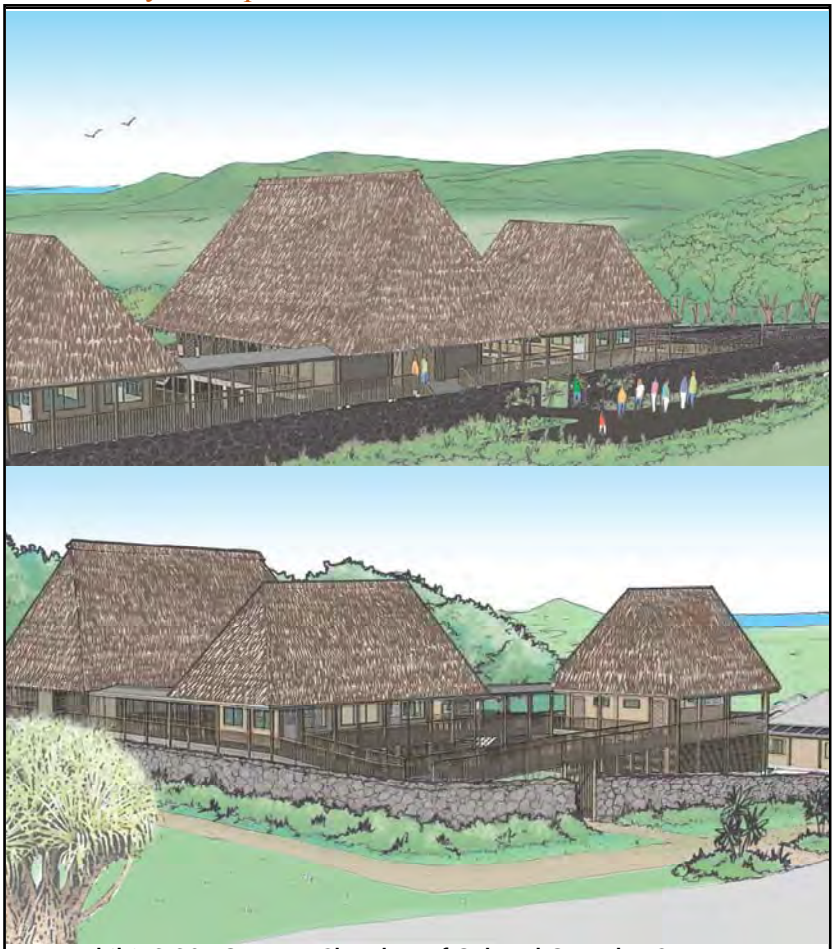

Exhibit 2.20. Concept Sketches of Cultural Complex Structures
Source: 'Ahahui Mālama i ka Lōkahi, Kailua Hawaiian Civic Club & Hālau Mōhala 'Ilima

shielded and utilize lower wattage bulbs, as practicable. Restoration of wetland areas along this site would also include creating taro lo‘i for cultural purposes. Wastewater generated by facility users would likely be processed through an individual septic system that would be designed in conformance with applicable State DOH regulations governing these systems. However, a self-contained facility utilizing green technology for treatment that is more efficient with regard to energy consumption and water utilization (discussed in Section 2.2.3) could also be utilized. Parking areas and other site improvements (e.g. pathways) could utilize a compacted gravel or other permeable surface to minimize storm water runoff. Other LID elements (e.g. bioswales, rain catchment systems) would also be incorporated improving sustainability.

The actual design would be developed in the future by the non-profit organization(s) selected, which would ~~and~~ be responsible for constructing and operating this complex. The selected organization would need to be qualified, and ~~would be~~ selected through a RFP, RFQ, or other applicable procurement process. Under Chapter 171, HRS, the State, through the Board of Land and Natural Resources (BLNR), is authorized to dispose of public land by lease, license, permit, and in fee simple. Therefore, the BLNR through their divisions, are permitted to issue permits or leases for use of public land. State lands are regularly allotted to both private owners, businesses, and non-profit organizations for various uses that in some cases exclude the general public, such as agricultural lands. The BLNR reviews and evaluates the use of such activities and circumstances involved with uses of State land. Therefore, use of this area for a cultural center would similarly be applicable and can be permitted by the BLNR.

Visitors may come into contact with endangered waterbirds during the construction and operation of these facilities. Development of these facilities would be coordinated with DOFAW to minimize adverse impacts to endangered waterbirds from facility construction and operation. Minimization ~~Mitigative~~ measures such as avoiding construction of facilities during waterbird nesting season would occur to ~~minimize adverse~~ avoid impacts.

Vegetation Processing Site: An existing green waste processing site located north of the Kapa‘a Cultural Center would be improved for use by DOFAW by constructing support facilities to support wetland restoration and upland reforestation efforts. The 14 acre site was previously permitted for use by the City for their vegetation processing activities at Kawainui. Composting green waste supports DOFAW’s management activities because it produces organic material that can be used to revitalize soil, promote healthy plant growth, and improve aeration/water retention. Composting would also reduce the amount of green waste that may be disposed of at the landfill.

Composting is a three month long process that does not produce harmful byproducts that could leach into the wetland and is generally odorless. The composting process consists of: 1) grinding material into smaller pieces to speed the process; 2) piling material into windrows to keep green waste moist, and building heat to kill weed seeds and pathogens; and 3) turning windrows every 3 to 7 days to keep green waste exposed to oxygen. The processing operations may be conducted

by DOFAW or by a third-party operator selected through a RFP, RFQ, or other applicable procurement process.

The vegetation processing site would have a locked gate to prevent vehicular access afterhours, and include a compacted gravel main access driveway from Kapa‘a Quarry Road. Additional compacted gravel routes for operational vehicles would be provided within the site. Facilities totaling about 5,000 square feet of ~~interior space~~ floor area would include a single-story office building for administration and operations, a maintenance building~~, and~~ that includes a ~~large~~ shed for supporting equipment storage, and other necessary operations support. The site would also require staging areas for receiving and disposing of green waste, areas for windrows, and other processing areas.

Research and DLNR Agency Support: A portion of the vegetation processing site could also be used to support short-term research activities conducted by the University of Hawai‘i or other institutions or organizations. For example, a butterfly research project is occurring at Kawainui. Research activities usually take place over shorter term timeframes (about 1 to 2 years) as part of programs or grants that contribute to the education, understanding, and management of these resources. Typically, storage containers (320 square feet) would be used for temporary office space during research activities, similar to containers used during construction projects.

Facilities at the vegetation processing site could also be used to support other State DLNR agency operations, such as DOCARE or other DOFAW-related programs. Office space would be provided in the form of storage containers, office space shared with the vegetation processing operation, or a separate single-story building. Support facilities for DLNR-related agencies or programs would increase the State’s presence in this area in conjunction with vegetation processing activities supporting stewardship and management of the area, especially if utilized by DOCARE officers.

2.2.4.3 Subarea C: Kapa‘a-Kalāheo-Levee

This subarea extends from north of the Model Airplane Park to the intersection of Kapa‘a Quarry Road with Mōkapu Boulevard, and extends another 900 feet east of this intersection. The subarea encompasses the upland area along Kapa‘a Quarry Road and a parcel adjacent to Kawainui Canal and also includes the 1.3 mile expanse of the levee. Most of this area is under the jurisdiction of DSP as the Kawainui SPR, Kapa‘a and Kalāheo Sections. Planning for the Kawainui SPR, Kalāheo site adjacent to the canal was conducted in the early 2000s by the City under a project known as the Kawai Nui Gateway Park. Figure 2.11 shows the following concepts for this section that are proposed by this project.~~:~~ It is noted that the project does not propose any new improvements to the Kalāheo park site than those already permitted by the prior approval of the Gateway Park proposal.

1. Continued upland reforestation work and drainage improvements along Kapa‘a Quarry Road.
2. ~~A recreational park which includes a canoe launch into Kawainui Canal and accessory facilities.~~

Kawainui State Park Reserve, Kapa‘a Section: Improvements in this section are primarily related to access management and vegetation maintenance. Due to unauthorized access into the area between the wetland and Kapa‘a Quarry Road by persons for off-road riding activities, fencing, a guard rail or other measures (e.g. large boulders) are proposed along the road. Gates for DSP and DOFAW access into the area with additional signage would be provided. Fencing is also planned along the mauka side of the road to restrict unauthorized access into the hillside leading up to Mōkapu Saddle Road.

The inland area between the road and wetland would be graded to reduce the larger piles of stacked fill material, and to create a more uniform topography. Landscaping improvements would replace invasive vegetation and diseased trees with native vegetation and grass. These improvements are intended to make it easier for DOFAW and DSP to mow and maintain vegetation in the open area.

A pedestrian trail was proposed along this section in the draft master plan (HHF, 2014) published in May 2014, but is not included under this document. Implementation of this trail segment is expected to occur well beyond the study timeframe for the proposed project.

Kawainui State Park Reserve, Kalāheo Section: The project does not propose any new improvements to this site. Therefore, only those improvements already approved in 2003 under the City’s Kawai Nui Gateway Park concept could occur without the project (Proposed Action). A conceptual site plan for the park site based upon the Gateway Park’s approved plans is shown on Figure 2.11. The main park components include an interpretive shelter, restrooms and showers~~, and a hale wa‘a (shelter for canoe storage) with additional space and lanai to support educational activities~~. The park would be open during daylight hours with a gated entry. A parking area to accommodate approximately ~~36~~ 25 stalls ~~and parking for some canoe trailers are also proposed~~ could occur already.

~~Proposed improvements include the construction of park facilities for interpretive and canoe-related activities adjacent to Kawainui Canal.~~ Canoe launching into the canal would only be allowed by DSP on a permit-issued basis to support school practices (e.g. Kalāheo High School and Le Jardin Academy)~~ and limited practice by canoe clubs. This would allow DSP to manage access into the canal while supporting recreation opportunities and traditional cultural practices related to the sport of canoeing.~~ To allow canoe launching, the embankment would be reinforced with grass to stabilize the slope. Design for the launch area would be refined based on consultation with the U.S. Army Corps of Engineers.

Kawainui - Hāmākua Master Plan Project

Figure 2.11 - Conceptual Plan Subarea C - Kapa'a and Kalāheo

Kailua, O'ahu

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A hale waʻa was initially proposed for this site in the DEIS, to support canoe-related activities, educational and cultural programs. However, DSP has since decided to eliminate this improvement from the project plans due to community and surrounding residents' concerns with increased public access and activities. The hale waʻa would have been about 3,600 square feet in size, and inspired by traditional Hawaiian architecture. ~~This secured building could accommodate up to six six-man canoes and equipment. It would include a small meeting room, and a large covered lanai to provide space for educational/cultural activities. The building could also be used for educational and cultural programs such as canoe/voyaging studies, canoe building or repair, celestial navigation, etc. in partnership with non-profit organizations, schools, and DSP. The facility could be constructed and operated by a school or non-profit organization, under a DSP lease or revocable permit.~~

Improvements for this portion of the subarea were previously proposed in the City Kawai Nui Gateway Park project (Helber Hastert & Fee, Planners, Inc., 2002). ~~Subarea improvements proposed in this project eliminate~~ DSP does not plan on implementing the pedestrian bridge spanning Kawainui Canal included under the City plan in acknowledgement of community concerns. Residents in surrounding areas were concerned with security due to increased potential public access to their homes, related to the bridge and other potential associated activities (e.g. noise). A pedestrian trail linking other areas of Kawainui to this Kalāheo site was also eliminated from the project. Therefore, the need to link this bridge with the levee is no longer a priority. Furthermore, DSP has other priorities to consider and program for implementation such as the education center, pedestrian trails in other areas of Kawainui, Ulupō Heiau, as well as improving this Kalāheo site. ~~The hale waʻa structure discussed in this project was not proposed in the Gateway Park project.~~

~~Exhibit 2.21 Example of interpretive shelter at Lapakahi State Historical Park (Source: DSP)~~

~~The interpretive center is envisioned as a wood-framed building of about 1,000 square feet. Exhibit 2.21 shows an interpretive shelter at Lapakahi SHP on Hawaiʻi Island. A similar but slightly larger structure is proposed for the Kalāheo site. The structure would include a ga- heringpace and small office in addition to the exhibits. The interpretive center could be operated by DSP staff or a non-profit organization, and would offer visitors and educational groups the opportunity to orient themselves to Kawainui-Hāmākua. The interpretive center could be a simple covered pavilion (shelter) if DSP determines it is not feasible to develop and operate it as an interpretive center. The parking lot and restrooms would be open during daylight hours, and locked at night.~~

Levee: Levee improvements are not proposed. The levee will continue to serve a flood control function with maintenance and operation responsibilities held by DOFAW. Dogs will continue to be prohibited on the levee. Motorized vehicles such as scooters and segways will also remain prohibited. Bicyclists currently utilize the levee and DOFAW will evaluate whether to restrict future bike usage of the levee.

2.2.4.4 Subarea D: Waiʻauia-Ulupō-Mokulana

This section is made up of three distinct areas identified as: 1) Waiʻauia; 2) Ulupō Heiau SHP; and 3) the Mokulana peninsula. Figures 2.12 to 2.14 include the conceptual site plans for each area.

Waiʻauia

Waiʻauia is a 16.5 acre area located along Kailua Road near the entrance to Kailua town. The site is under DOFAW jurisdiction, and bordered by the City's sewage pump station parcel (northeast), the levee on the southwest, and extends south along Kailua Road to the boundary with Ulupō Heiau SHP. About 3 acres are upland area with remaining area comprised of wetland. Figure 2.12 shows the concepts for the Waiʻauia section and southbound toward Ulupō Heiau SHP. The proposals for Waiʻauia include:

1. An area providing the opportunity to support native Hawaiian cultural practices with support facilities.
2. Open space supporting DOFAW restoration activities and a pedestrian trail connecting to the levee.

A burial preserve is currently being planned for native Hawaiian remains (iwi kupuna) that have been disinterred by construction projects in the Kailua ahupuaʻa. The burial preserve would be about 800 square feet in size and constructed by the City Board of Water Supply (BWS). ~~The remains would be reinterred at this site.~~ The Kailua native Hawaiian cultural descendant group Kailua Kau a Hoʻoilo (KKAH) or another organization will be entering into a Memorandum of Agreement with DOFAW for the long-term care of the reinterment site.

***Waiʻauia Cultural Center*:** A 1.3-acre site at Waiʻauia is designated for use by a non-profit organization for native Hawaiian cultural practices. Waiʻauia holds cultural significance in Hawaiian legends and traditional practices, and is noted to be the location where the waters of Kawainui once connected with the waters of Hāmākua. DOFAW is providing the opportunity for a non-profit organization to utilize this site to support cultural practices as a center for Hawaiian studies in performing and literary arts. It would be constructed and operated by a non-profit organization that would also support the long-term care and management of the burial preserve.

Kailua Town

KAWAINUI CANAL

Wai'auia Cultural Center
(Approx. 1 acre)

Levee

Reinterment Site

Hula Mound

Viewing Deck with Interpretive Signage

Hālau

14 Stalls

Future Hālau

C&C Sewage Pump Station

KAWAINUI-(ONEAWA) CANAL

C&C Property

KAINEHE STREET

Wetland Vegetation Buffer (typical)

Gated Maintenance Access

Pedestrian/Maintenance Trail

Kailua Sign

KAILUA ROAD

Foot Trail

KAILUA ROAD

WINDWARD BOAIS

Wetland Vegetation Buffer (typical)

Wetland Vegetation Buffer

Protective Fence

Wetland Vegetation Buffer

Wetland Vegetation Buffer

Vegetation Restoration Area

Ulupō Heiau State Historical Park

Vegetation Restoration Area

Kawainui Vista

Kailua Baptist Church

St. John Lutheran Church

Vegetation Restoration Area

Gated Maintenance Access to Levee

Boundary Fence

HANALE PLACE

KAILUA ROAD

Wai'auia to Ulupō

Location Map

Kawainui - Hāmākua Master Plan Project

Figure 2.12 - Conceptual Plan Subarea D - Wai'auia to Ulupō Heiau State Historical Park

Kailua, O'ahu

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Up to 7~~5~~,000 square feet of ~~space of interior space~~ floor area would be allowed, and concept plans would allow for three single-story structures. Structures would support administrative operations, classrooms, a hale for programs and performances, work areas for artisans, storage, meeting rooms, kitchen, and restrooms. Exhibit 2.21A includes a conceptual perspective view of these structures to provide information on general design character and scale. Structures would be single-story with taller pitched roofs and incorporate elements reflecting traditional Hawaiian architectural design.

Exhibit 2.21A Conceptual Perspective View of Cultural Center at Wai'auia (Source: WCIT Architecture)

Other features would include a hula mound and landscaping. Buildings would reflect traditional and sustainable design elements, and incorporate LEED concepts or other similar sustainable building guidelines. LID elements such as bioswales and bioretention areas would also be considered in the project's site design. A 14~~15~~-stall parking lot would be included with some stalls made available during certain times to the public. Vehicular access would be from the property's driveway entrance or possibly the City's sewage pump station driveway access.

Most activities would occur during the day, with occasional use at night for cultural activities or classes. DOFAW and DSP staff would be available to conduct educational or stewardship activities related to native Hawaiian cultural practices, in coordination with the non-profit organization. The non-profit organization would manage portions of the wetland boundary (vegetation maintenance) along this site, in coordination with DOFAW. The actual design of the facility would be developed by a selected non-profit organization in the future. The non-profit organization constructing and operating the complex would need to meet specific qualifications and would be selected through a RFP, RFQ, or other applicable procurement process.

Individuals may come into contact with endangered waterbirds during the construction and operation of Wai'auia Cultural Center facilities. Development of facilities would be coordinated with DOFAW to minimize adverse impacts to endangered waterbirds from development and

operation. For example, construction of facilities may create pools of standing water that endangered waterbirds may nest in if suitable habitat is not accessible. ~~Mitigative~~ M~~m~~easures to minimize the amount of time standing water is present would occur to ~~address adverse~~ avoid and minimize potential impacts~~ that may result~~.

Pedestrian Trail: As shown in Figure 2.12, a pedestrian trail utilizing an existing unpaved trail is proposed along Kailua Road. This trail would extend north from the ~~Hawaiian~~ cultural center at Waiʻauia to the levee. The trail would be about 10 to 12 feet wide, and consist of a permeable surface (e.g. gravel, Grasscrete) that would be determined during the design phase. The trail would be designed to provide vehicle access to support DOFAW wetland management and maintenance operations. An observation deck with interpretive signs is proposed to provide scenic views of Kawainui.

Levee to Ulupō Heiau State Historical Park

From the levee to the boundary with Ulupō Heiau SHP, there is a steep, rocky slope bordering the wetland. The 5-acre upland area under the jurisdiction of DOFAW abuts the St. John Lutheran Church and the Kawainui Vista subdivision as shown in Figure 2.12. A foot trail previously planned to link the levee with the Ulupō Heiau SHP area has since been eliminated from this project to address community concerns about public access.

~~A foot trail is planned to link the levee with the Ulupō Heiau SHP area. The foot trail would be about 4 to 6 feet wide. Fronting the Kawainui Vista subdivision, a boardwalk about 365 feet long would be required for the trail to cross over wetland, while providing a 100-foot buffer from the residences on top the bluff. The specific alignment and requirements for this trail section would be determined during a later design phase when DOFAW is ready for its implementation. Exhibit 2.22 shows the Keālia Coastal Boardwalk on Maui as an example of a type of boardwalk that could be utilized.~~

~~Exhibit 2.22 Example of Boardwalk (Keālia Coastal Boardwalk, Maui)~~

Ulupō Heiau State Historical Park Section

Most of the 28.9 acres of Ulupō Heiau SHP are located on the slope between the Kawainui wetland and developments along Kailua Road, including Kailua United Methodist Church, Windward YMCA, and the Kūkanono residential subdivision. DSP proposes the following improvements for the 9 acres adjacent to the heiau as shown on Figure~~s 2.12 and~~ 2.13:

1. Restoration of the cultural landscape around Ulupō Heiau that involves removing alien vegetation, creating and maintaining loʻi kalo, continued restoration of nearby wetland area, and replanting the area with native and Polynesian-introduced plants.
2. Constructing a small nursery consisting of wooden benches and sunscreens to facilitate the cultural landscape restoration.
3. Construction of a traditional pole and thatch hālau for cultural demonstrations and interpretive gatherings.
4. Developing a trail system through the park that connects ~~to adjacent sections~~ Ulupō Heiau SHP with DOFAW's management station.
5. Continued maintenance of Ulupō Heiau (removing vegetation).

The proposed improvements are based upon elements from a *Draft Ulupō Heiau Cultural Resources Management and Landscape Plan* (Orr, McNamara, Palama and Yent, 2011). This unpublished draft plan was prepared in 2011 by the curators of Ulupō Heiau (Kailua Hawaiian Civic Club and ʻAhahui Mālama I Ka Lōkahi) and DSP with input from the cultural community.

The overall concept for the area is to continue ongoing cultural landscape restoration, accommodate cultural protocol and access by cultural practitioners, and continue cultural and educational programs along with visitation by the public. The cultural landscape of Ulupō Heiau would be restored to reflect the pre-contact settlement and subsistence pattern of Kawainui and the Kailua ahupuaʻa. Recommendations include preserving and protecting archaeological and cultural sites, establishing buffers, and planting culturally appropriate native and Polynesian-introduced species to provide resources for programs and practitioners. Alien vegetation would be removed to enhance view corridors. Wetland restoration (by hand) would continue to involve clearing vegetation, expanding the open water area, and allowing native vegetation to grow.

Three areas consisting of several loʻi kalo have already been restored at the Ulupō Heiau SHP, and more could be created to perpetuate farming traditions and provide kalo for cultural programs. A number of cultivated crop plants are included around the loʻi. A garden of medicinal plants is proposed to provide a resource for practitioners of traditional healing, as well as an open area for educational and cultural programs. Plants for traditional crafts, such as lauhala for weaving and wauke for kapa making, would be planted. Some native Hawaiian and Polynesian-introduced trees and shrubs would be planted as visual buffers along residences and roadways, and to provide shade for program areas.

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Kawainui - Hāmākua Master Plan

Figure 2.13 - Conceptual Plan Subarea D - Ulupō Heiau State Historical Park

Kailua, O'ahu

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A traditional Hawaiian hālau consisting of a rock wall foundation, a pole-frame structure, and a thatched roof is proposed. At approximately 2,500 square feet in size, the hālau would serve as a gathering place for interpretive talks, demonstrations, educational programs, and cultural activities. The hālau could also house displays, exhibits, and interpretive panels. An open area adjacent to the hālau provides a gathering area for activities. A small kiosk with interpretive signs at the site's entry would provide an introduction to the site, an overview of the cultural history, and resource management messages. A plant nursery of about 2,500 square feet would support cultural landscape restoration activities. The nursery would contain a storage area and a wash basin with a water connection. Other amenities would include foot trails routed through the site. Fencing along the State's property line would be provided.

YMCA Coordination: The DSP is coordinating with the Windward YMCA to acquire about 3.5 acres of their property to provide an open space buffer around Ulupō Heiau. Consultation with the YMCA is ongoing, therefore, the project does not propose improvements for this privately-owned area. In the future, should the property be acquired, plans would be developed and necessary entitlements obtained for any proposed improvements.

The deed that transferred the 5-acre property to the YMCA in 1961 provides an easement over an existing driveway from Kailua Road, and provides for public use of the parking lot adjacent to the heiau. The YMCA's existing rear parking lot accommodates 16 stalls, of which five are set aside for heiau visitors. The driveway is presently gated at Kailua Road and public access is provided from the YMCA facility. No improvements are planned using the YMCA property or driveway from Kailua Road.

Pedestrian Trail: A foot trail from the Ulupō Heiau site to the DOFAW Kawainui Management and Research Station is shown on Figure 2.13. The foot trail would be about 4 to 6 feet-wide and unimproved (dirt or gravel). The trail would be routed along the base of the adjacent hillside approximately 250 to 300 feet away from the residences of the Kūkanono subdivision, and buffered by vegetation associated with the hillside. Near the restoration ponds, the foot trail ~~w~~could be routed along an existing fence used to protect the ponds that would provide additional separation from the Kūkanono residences from that shown on Figure 2.13. Fencing along the inland (southeast) side of this section of the foot trail would be provided to keep visitors along the trail and support DOFAW public access management efforts in this area. Some short segments of this foot trail may need to include a boardwalk to cross over drainage areas. The specific alignment of this foot trail section would be determined during a later design phase when DOFAW and DSP are ~~is~~ ready for its implementation. The trail will be routed to avoid impacts to archaeological sites in the area. Many of these sites are associated with agricultural activities in the 19th Century, including rock mounds and terraces.

~~A small viewing platform or pavilion with interpretive signage would be provided along the trail to provide viewing opportunities of Kawainui, the archaeological sites, the restoration ponds, and wildlife.~~ Some reforestation work along the foot trail would be implemented. Existing vegetation along the upper hillside would remain to serve as a buffer for the foreseeable future. Fencing would be added along the State's property line with the Kūkanono subdivision.

DOFAW Kawainui Management and Research Station

Figure 2.14 shows the location and facilities associated with DOFAW's Kawainui Management and Research Station, which supports their operation and management of Kawainui, as well as the agency's scientific, educational, and recreational mission and goals. The 15-acre site is bounded by the Maunawili Stream, Ulukahiki Street and Kalaniana'ole Highway on the mauka side. The site abuts Ulupō Heiau SHP to the north.

The location of the management facilities adjacent to the restoration ponds facilitates maintenance and management of the area and waterbird habitat. Kawainui's flood control capabilities are also managed from this station by maintaining flood control structures, monitoring the wetland's flood control capacities and water quality, and removing vegetation. The station would also support future educational and research programs to improve the community's knowledge of native wildlife resources.

Over the years, the research station has expanded through the addition of temporary offices and storage structures (e.g. office trailers and metal shipping containers). A few permanent structures totaling about 6,000 square feet include a building used for research activities, an office building, a small storage building, and a new storage building planned to replace existing shipping containers (about 3,500 square feet). As shown on Figure 2.14, an existing storage building and the future new storage building (replacing containers) already approved and permitted would remain. The existing buildings (office trailer/containers) used for office and research would be replaced with two new buildings by this project.

The proposed improvements would replace temporary structures with permanent facilities to more effectively support DOFAW operations. The DOFAW research station would be clustered within a 1-acre area of the site with facilities envisioned to accommodate up to 30 employees. About ~~3~~4,000 square feet of new floor area would be added with the two new office buildings bringing the total operational space to about ~~9~~10,000 square feet. New structures would include a building for operations, office supporting nursery operations, and a rest room with laundry building. The existing temporary office trailers and shipping containers would be removed. Covered parking is proposed for vehicles, and a perimeter fence would be installed around the operational portion of the site.

Kawainui - Hāmākua Master Plan Project

Figure 2.14 - Conceptual Plan Subarea D - DOFAW Management & Research Station and Mokulana Peninsula

Kailua, O'ahu

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Other improvements would include greenhouses (5,600 square feet) as part of a nursery program for propagating native Hawaiian wetland and lowland plants for restoration and reforestation efforts. An open-aired interpretive pavilion of about ~~350~~ 400 square feet with rest rooms near the restoration ponds would be used for interpretive displays, educational or stewardship instruction, and to provide shelter from the elements. Wooden decks about 10 to 15 feet in diameter would be provided for viewing waterbirds and scenic resources associated with the restoration ponds, Maunawili Stream, and Kawainui.

As shown on Figure 2.14, foot trails are proposed in proximity to DOFAW's management station. Trails would provide access to viewing ~~decks~~ areas and connect with the foot trail from Ulupō Heiau SHP. Separate areas are designated for employee parking, maintenance vehicles, and visitors. Gates would be provided to prevent vehicular access during closed hours. DOFAW may discuss with the City adding a gate to the lower half of Ulukahiki Street to secure entry and access to the DOFAW station.

A 1.5-acre area at the southwest end of DOFAW's station is proposed for passive outdoor recreation for the public. The area would provide open space for picnicking and/or birdwatching, and would ~~function as one of several trailheads for~~ support pedestrian access around this section of Kawainui. ~~A wooden shade pavilion of about 800 square feet would be provided along with~~ P~~p~~arking for 15 vehicles, including handicapped parking would be provided. Additional space using a trailer could be added at the site for other environmental research projects or grants (1 to 2 year programs) coordinated with DOFAW. From this area, the foot trail would continue west toward the Mokulana peninsula. A ~~pedestrian~~ bridge supporting DOFAW maintenance vehicles and operations would be required to cross over Maunawili Stream.

Mokulana Peninsula Section

The Mokulana Peninsula section encompasses an area of about 6.5 acres. Improvements at this location are intended to support educational and stewardship programs, particularly for the restoration ponds~~, along with passive outdoor recreational use~~. The site is presently overgrown with trees and other vegetation that would need to be cleared to create open space. Upland reforestation and lowland vegetation restoration along the wetland would occur at Mokulana to gradually replace invasive vegetation with native vegetation.

~~As previously shown on Figure 2.14, the foot trail from DOFAW's management and research station would continue along Kalaniana'ole Highway through this area. Two small pavilions are proposed along the trail to provide viewing opportunities of Kawainui and temporary shelter from the elements. The trail would continue west toward the Kahanaiki section of Kawainui.~~

Two existing driveway entrances serving this site would provide vehicular access. The entries would be gated to prevent access during closed hours. Pervious materials are proposed for parking areas and driveways along with bioswales to minimize surface runoff. A program staging area likely consisting of compacted gravel is proposed near the restoration pond. The

multi-purpose staging area could be used for activities such as: 1) loading/unloading of student groups for educational programming and service learning activities; 2) providing stewardship volunteers with an area to park their vehicles; and 3) collecting green waste from maintenance activities for transport to the vegetation processing area. A small shed would be located near the staging area for equipment storage along with a pavilion for educational and stewardship programs.

2.2.4.5 Subarea E: Hāmākua-Puʻuoehu

Figure 2.15 illustrates Subarea E which includes the Hāmākua Marsh State Wildlife Sanctuary and the Puʻuoehu hillside situated mauka of Hāmākua Drive. The subarea encompasses about 90 acres and is under DOFAW jurisdiction. The concepts planned for this section include:

1. Improvements to support DOFAW's management of the Hāmākua Marsh State Wildlife Sanctuary.
2. Upland reforestation of the Puʻuoehu hillside including a program trail to support maintenance operations.

Hāmākua Marsh State Wildlife Sanctuary

At Hāmākua, current wetland management and recovery efforts for endangered bird and plant species would continue, along with habitat improvement for migratory shorebirds. Management activities would include support for service-learning projects and other place-based educational programming with schools and non-profit organizations. Management activities, restoration activities, and programs occurring at Hāmākua would continue during daylight hours.

The existing wetland would be expanded up to 4-acres on the southern end to increase the area for waterbird habitat. Trees and vegetation would be removed and the mauka boundary would be excavated to lower the elevation so that water and wetland vegetation can expand. Wetland enhancement is proposed for about two acres along the remaining mauka boundary proceeding north, as shown on Figure 2.15.

Reforestation is proposed in upland areas outside the wetland to replace non-native invasive vegetation with native Hawaiian species. Areas would be mowed to clear vegetation, creating open grassed areas to support DOFAW management and operational activities as well as educational or cultural programs. An existing unpaved maintenance road routed along the wetland would be realigned further inland and extended to Wetland Basin D to support vehicle access for maintenance and management operations. The maintenance road could also function as a foot trail for educational programs and stewardship activities.

Enchanted Lake Residential Neighborhood
Property Boundary
Pu'uoehu Ridgeline
Program Trail
Vegetation Restoration Area
Restroom/ Storage
Vegetation Buffer (typ.)
Program Staging Area
Maintenance Access
Wetland Vegetation Buffer (typical)
Gated Entry
Delineated Wetland Basin A
Proposed Wetland Expansion
Existing Native Kou Trees
Utility Pole Relocation
Delineated Wetland Boundary (typ.)
HĀMĀKUA DRIVE
Delineated Wetland Basin B
Wetland Enhancement (Approx. 2 acres)
Hāmākua Marsh Wildlife Sanctuary
Prior Converted Wetland
Delineated Wetland Basin C
Delineated Wetland Basin D
Pu'uoehu
Protective Fence
Open Lawn Program Area
Mainlonance Access
Wetland Expansion
Wetland Vegetation Buffer (typical)
Ma ntenance Trail
Interpretive Signage
Boundary Fence
KAWAINUI (ONEAWA) CANAL
Vegetation Buffer (typical)
Windward Boats
HEKILI STREET
KAINEHE STREET
KAILUA ROAD
CAC Sewage Pump Station
KAWAINUI CANAL
Hāmākua & Pu'uoehu
Location Map

Kawainui - Hāmākua Master Plan

Figure 2.15 - Conceptual Plan Subarea F - Hāmākua and Pu'uoehu

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The existing unpaved area at the site's gated entrance would be improved to create a program staging area. The area would be leveled and a compacted gravel surface provided for vehicle parking. The area would be used for loading/unloading groups for educational programming, service learning activities, and program areas for stewardship volunteers. A locked ~~2~~4400 square foot rest room and storage facility for DOFAW equipment would be located within the staging area. Drainage improvements around the maintenance road are also proposed.

The Hawaiian Electric Company has two utility poles serving electrical sub-transmission lines along Kawainui Canal within the wetland. DOFAW prefers to have these poles relocated outside of the wildlife sanctuary, and will discuss the feasibility of their relocation with the utility company.

Pu‘uoehu Hillside

The Pu‘uoehu hillside functions as a watershed for Hāmākua, and improvements are intended to continue supporting this function. Upland forest restoration work is proposed over time to gradually replace existing non-native invasive vegetation with native vegetation.

To support reforestation efforts and management of this hillside, two foot trails are proposed. One trail would extend up to and along the summit of Pu‘uoehu while a second trail would extend about halfway up and along the hillside. The trails are intended to support DOFAW access along the hillside and for conducting reforestation activities. Trails could also be used for educational or stewardship program activities.

2.2.5 Programs and Visitor Activity Estimates

Proposed improvements will result in increased activity at Kawainui-Hāmākua in the form of employees, educational and cultural program participants, and visitors. Employees would include DOFAW and DLNR related staff operating at various sites within the project area. Educational participants would predominantly be students and teachers from local schools, and cultural program participants would attend activities at specific locations identified in the master plan guiding the project. General visitors to the area include persons participating in passive outdoor recreational activities or site-seeing in the area. Visitors would be comprised of Kailua residents, O'ahu-island residents, neighbor island residents, and out-of-state visitors.

2.2.5.1 Present Level of Activity

Operations and Programs

DOFAW staff presently operate out of their Makiki baseyard with equipment stored at the Kawainui management and research station, and conduct field work or maintenance activities within Hāmākua and Kawainui. Educational and cultural programs occur at Hāmākua, Kawainui's restoration ponds, Ulupō Heiau, Nā Pōhaku, and Pōhakea. Table 2.3 summarizes the present level of these activities by project subareas.

Table 2.3 Summary of Existing Staff and Programs Activity

Description of Activity and Area	Current Monthly Activity (Persons)	
	Persons By Category	Total Persons
A. DOFAW Related Operational Staff		**18**
1. Hāmākua-Pu'uoehu Subarea (Hāmākua Marsh State Wildlife Sanctuary)	1	**1**
2. Wai'auia-Ulupō-Mokulana Subarea (Kawainui Management & Research Station)		**~~18~~7**
a. DOFAW Staff	~~6~~5	
b. DLNR Related Staff	2	
c. Personnel with Other Programs	10	
B. Educational and Cultural Programs		**~~460~~ 520**
1. Hāmākua-Pu'uoehu Subarea (Hāmākua Marsh State Wildlife Sanctuary - DOFAW)	160	
2. Wai'auia-Ulupō-Mokulana Subarea		
a. Kawainui Management & Research Station (DOFAW)	80	
b. Ulupō Heiau SHP	170	
3. Kahanaiki-Nā Pōhaku-Kapa'a Subarea		
a. ~~(~~Nā Pōhaku o Hauwahine~~)~~	50	
b. Pōhakea	60	

DOFAW presently has about 18 employees working at Kawainui and Hāmākua on a regular basis. All DOFAW operations originate out of their Makiki baseyard on a daily basis before staff disburse to areas within Kawainui and Hāmākua to conduct activities. DOFAW presently has a biologist assigned to Hāmākua to implement management activities and accommodate educational programs. The 17 persons working at Kawainui include a biologist, equipment operator, forestry personnel, DOCARE officers, and personnel associated with other programs (e.g. O'ahu Invasive Species Committee) or research activities. There are presently no DSP staff operating on a regular basis within the project site.

About ~~460~~ 520 persons per month participate in educational and cultural programs within the project area on a monthly basis. DOFAW-based programs presently occur at Hāmākua and at Kawainui's restoration ponds. Educational and cultural program activities occur at Ulupō Heiau, Pōhakea and Nā Pōhaku. Currently, about 240 persons per month participate in DOFAW guided educational programs, with the majority of activity occurring at Hāmākua. Most of this activity takes place during the 10-month school year.

AML supports visits of roughly 50 persons per month participating in educational or stewardship/restoration programs at Nā Pōhaku. These activities similarly occur during the school year. AML organizational staff work on landscape restoration on a weekly basis. At Pōhakea, Ke Kahua O Kūali'i conducts landscape restoration, cultural and educational activities, and has periodic ceremonial and cultural celebrations. At Ulupō Heiau, the Kailua Hawaiian Civic Club in partnership with Hika'alani has a caretaker working on-site on a daily basis, and coordinates cultural and educational programs that have about 170 participants per month. In summary, about 2~~2~~80 persons participate in educational or cultural programs conducted by non-profit organizations each month.

Existing Visitor Activity

Nā Pōhaku o Hauwahine, Ulupō Heiau SHP, and the levee are the only areas within Kawainui that are currently open to visitation by the general public. Visitations to Nā Pōhaku and Ulupō Heiau SHP are predominantly associated the viewing of cultural and scenic resources. Visitors to the levee are predominantly residents using it for passive outdoor recreational activities (walking or jogging). A total estimated 2,500 visitors a month utilize these resources at Kawainui as shown on Table 2.4 below.

About 1,800 visitors are estimated to use the levee on a monthly basis (60-70 persons/day) for passive outdoor recreational activities, such as walking or jogging, based upon an informal day survey, field observations, and input from others. The majority of activity occurs during the early morning hours and late afternoon. The vast majority of visitors using the levee appear to be residents, likely from Kailua and nearby communities. Access onto the levee is primarily from the Kalāheo side using the Kawainui Community Park parking lot. There are no convenient parking areas available on the Hāmākua side of the levee for access.

Table 2.4 Summary of Existing Visitor Activity		
Description of Activity and Area	**Current Monthly Estimated Visitor Activity (Persons)**	
	Persons By Category	**Total Persons**
A. Educational and Cultural Sites Viewing		**700**
1. Waiʻauia-Ulupō-Mokulana Subarea (Nā Pōhaku o Hauwahine)	250	
2. Waiʻauia-Ulupō-Mokulana Subarea (Ulupō Heiau)	450	
B. Passive Outdoor Recreational Activity		**1,800**
1. Kapaʻa-Kalāheo-Levee Subarea (Levee)	1,800	
Total Visitor Activities		**2,500**

Current visitation to Nā Pōhaku o Hauwahine is estimated to be about 250 visitors a month based upon an informal day survey and field observations from various site visits. A higher number of visitors likely occurs on weekends, as compared to weekdays.

At Ulupō Heiau, the level of visitation is estimated to be about 450 visitors a month based upon an informal day survey, field observations, and input from a curator on the site. A Hawai‘i Tourism Authority survey of State park sites conducted in 2003 and 2007 estimated about 4,200 annual visitors to Ulupō Heiau SHP (OmniTrack Group, Inc., 2007). This visitation level of about 350 visitors a month is similar to the estimate of present visitation levels. The majority of visitors are associated with small tour groups, as opposed to independent visitors.

2.2.5.2 Projected Levels of Activity

Projected Operations and Programs

With the project, the level of activity related to operations and programs is projected to increase. Projected levels of activity by subareas are summarized on Table 2.5. DOFAW's operational staff is projected to increase to 30 personnel due to additional management and maintenance operations required at both Kawainui and Hāmākua. Educational and cultural activities are projected to increase to about 3,790 persons a month, including participants in cultural activities at proposed locations.

With continued restoration of wetland areas and improvements to waterbird habitat, DOFAW anticipates increased requests from schools, universities, and other organizations to accommodate educational programs and activities in the project area. It is estimated that DOFAW would accommodate about 8 to 10 educational programs each month at both Kawainui and Hāmākua predominantly during the school year that requires additional staff. Within Kawainui, the majority (66%) of educational activities are anticipated to occur around the restoration ponds with other activities mostly occurring at Kahanaiki. Further increases in program activity would be constrained by DOFAW's projected operational ability (staffing).

Table 2.5 Summary of Projected Staff and Programs Activity

Description of Activity and Area	Projected Monthly Staff and Activity (Participants)		
	Current Activity	Projected Activity	Increase in Activity
A. ~~DOFAW~~ DLNR Related Operational Staff	**~~18~~**	**~~30~~**	**~~12~~**
1. Hāmākua-Pu'uoehu Subarea			
a. Hāmākua Marsh State Wildlife Sanctuary	1	2	1
2. Wai'auia-Ulupō-Mokulana Subarea			
a. Kawainui Management & Research Station			
1) DOFAW Staff	5	10	5
2) DLNR Related Staff	2	5	3
3) Personnel with Other Programs	10	13	3
3. Pōhakea - Education Center (Non-Profit)	0	3	3
Total Operational Activities	**18**	**~~30~~3**	**1~~2~~5**
B. Educational and Cultural Programs			
1. Hāmākua-Pu'uoehu Subarea	**160**	**320**	**160**
a. Hāmākua Marsh State Wildlife Sanctuary	160	320	160
2. Wai'auia-Ulupō-Mokulana Subarea	**250**	**2,300**	**2,050**
a. Kawainui Restoration Ponds	80	320	240
b. Ulupō Heiau	170	250	80
c. Wai'auia Cultural Center	0	1,730	1,730
3. Kahanaiki-Nā Pōhaku-Kapa'a Subarea	**~~5~~110**	**1,070**	**~~1,02~~960**
a. Education Center, Pōhakea	0	500	500
b. Kauhale Complex, Pōhakea	60	100	~~10~~40
c. Nā Pōhaku o Hauwahine	50	70	20
d. Kapa'a Cultural Center	0	400	400
4. Kapa'a-Kalāheo-Levee Subarea	**0**	**~~10~~0**	**~~10~~0**
a. Kawainui SPR, Kalāheo ~~(Canoe)~~	0	~~10~~0	~~10~~0
Total Educational and Cultural Activities	**~~460~~ 520**	**~~3,790~~ 3,690**	**~~3,330~~ 3,170**

DSP and ~~a~~ non-profit organizations would support educational and cultural programs at Kahanaiki utilizing the education center and kauhale complex at Pōhakea. The education center would likely have a staff of 3 persons, and would be operated by a non-profit organization. These programs are projected to attract a combined total of about 600 persons per month typically as part of group visits about two to three times each week. It is likely that Ke Kahua O Kūali'i may continue to have DSP stewardship authorization for restoration, cultural, and educational programming activities in the future with the kauhale. A few larger cultural events (e.g. Makahiki) may occur at the kauhale twice a year, typically on a weekend.

Educational and cultural activities at Nā Pōhaku and Ulupō Heiau are expected to increase to a combined 320 persons a month. It is ~~assumed~~ likely that AML, Hika'alani, and the Kailua Hawaiian Civic Club ~~will~~ may continue to have DSP stewardship authorization for restoration, cultural, ~~efforts~~ and educational programming activities in the future. Continued cultural landscape restoration improvements at both these sites are anticipated to generate increased

interest from schools or other organizations that would be supported by these organizations ~~AML and the civic club~~.

Three new areas for non-profit organizations provide the opportunity to establish facilities supporting cultural activities and programs. Non-profit organizations would work in partnership with DOFAW and DSP to develop activities and programs that achieve the mission of the non-profits and fulfill agency goals. Any staffing at these cultural centers would be the responsibility of the non-profit organizations constructing and operating these facilities. These areas include: 1) Kapa‘a Cultural Center; 2) Wai‘auia Cultural Center; and ~~3) canoe-related programs at Kawainui SPR, Kalāheo~~ 3) Kauhale Complex at Pōhakea.

1. Kapa‘a Cultural Center. This complex at Kapa‘a would be constructed and operated by a non-profit organization and would not be open to the general public. Site users would include those associated with the non-profit organization or their guests/partners participating in cultural and educational programs and activities. A range of 300 to 400 persons are projected to utilize this center each month. This includes some staff managing the complex on a daily basis. Periodic events (three events a year) may have limited public attendance, or be private ~~(invitation only).~~ About 200 to 500 persons may attend these periodic functions.
2. Wai‘auia Cultural Center. This complex constructed and operated by a non-profit organization would not be open to the general public. Site users would include individuals associated with the non-profit organization or their guests/partners participating in cultural and educational programs and activities. About 1,730 persons a month are projected to use this cultural center for classes in the late afternoon (after 5:00 p.m.) and evenings. Weekend activities would generally start in the morning from 9:00 a.m., and run through early afternoon. Advanced artisan classes would accommodate up to four students during the week. Some periodic events (three events a year) would accommodate about 200 to 300 persons with limited public attendance.
3. ~~Kawainui SPR, Kalāheo. This park site would accommodate activities conducted jointly by community organizations related to the sport of canoe paddling, and may include educational programs, canoe repair work, etc. Activities are estimated to generate up to about 1,100 persons a month, likely occurring on weekends.~~
3. Kauhale Complex at Pōhakea. The kauhale complex would be constructed and operated by a non-profit organization, and would be open to the general public, as it is associated with the education center. About 100 persons a month are projected to visit this complex. Visitors would consist of monthly volunteer programs and events (e.g. clean-up, landscape restoration) for about 50 persons, and other cultural or education programs (50 persons) occurring either on a weekend or weekday (e.g. school program). A few yearly periodic events would accommodate about 200 to 300 persons.

Projected Level of Visitor Activity

Proposed improvements would address regulatory requirements for increased public access and outdoor recreational activities. As a result, the level of visitations and activity to occur at Kawainui is projected to increase with the project. Projected visitor activity is summarized on Table 2.6. These activities are related to nature-based outdoor recreational activity (viewing wildlife, scenic resources) and passive outdoor recreation (walking and jogging). This table has been revised to reflect the elimination of certain segments of the pedestrian trail (Waiʻauia to Ulupō Heiau, Mokulana) that would subsequently reduce the projected number of persons using the shortened trail. At Kawainui SHP, Kalāheo, no project proposed improvements would occur at this park site with elimination of the hale waʻa. Visitors to that park site would also be reduced with canoe launch restricted to only schools, and these activities are not part of the project.

Table 2.6 Summary of Projected Visitor Activity

Description of Activity and Area	Projected Monthly Activity (Persons)		
	Current Activity	Projected Activity With Project	Increase in Activity
A. Kahanaiki-Nā Pōhaku-Kapa'a Subarea			
1. Nā Pōhaku o Hauwahine, Education Center and Kauhale Complex at Pōhakea, Kahanaiki Area	250	6,000*	5,750
B. Wai'auia-Ulupō-Mokulana Subarea			
1. Ulupō Heiau SHP	450	450	0
2. ~~Wai'auia~~ Ulupō Heiau SHP ~~Mokulana~~ DOFAW Management and Research Station (Walking/Jogging)	0	~~500~~ 200	~~500~~ 200
C. Kapa'a-Kalāheo-Levee Subarea			
1. Kawainui SHP, Kalāheo (Park and School Canoe Practices ~~Related~~)	0 600[1]	~~1,200*~~ 600	~~1,200~~ 0
2. Levee (Walking/Jogging)	1,800	1,800	0
Total Passive Recreational Activities	**3,100**	**9,050**	**5,950**
* Note: Number includes visitors already traveling to Kailua for other reasons (e.g. beach)			
[1] Involves non-project related activities permitted			
~~**Total Nature-Based and Passive Recreational Activities**~~	~~**2,500**~~	~~**9,950**~~	~~**7,450**~~
~~* Note: Number includes visitors already traveling to Kailua for other reasons (e.g. beach)~~			

Based upon the revised table, about 3,100 persons a month are projected to continue visiting Kawainui even without the project. This includes the 1,800 persons presently using the levee, and about 600 new visitors using the Kalāheo park site for passive recreation and canoe practices by schools permitted. The project would generate an increase of less than 6,000 visitors (5,950) a month due to improvements primarily associated with the education center. With interim improvements (parking lot, restroom facility, and open pavilion) constructed at Pōhakea instead of the education center, the projected number of visitors would be significantly less because attendance would be based on proposed programs. It is estimated that only about 1,500 persons a

month would visit Pōhakea to view Kawainui and utilize foot trails within the Nā Pōhaku to Kahanaiki upland area similar to the level of activity along the levee. However, the levee provides a more walking and bike friendly path that is more visible to the public.

Permits authorizing commercial activities in the project area, such as commercial tours, ~~will~~ are not planned to be issued by DOFAW or DSP as part of this project. DOFAW is currently allowed to permit up to 100 commercial visitors a day within the wildlife sanctuary. DOFAW does not intend to issue permits for privately operated commercial tours within the wildlife sanctuary. However, activities at the proposed cultural centers that may require a fee charged by the non-profit organizations to support their operations (e.g. educational or cultural classes) would be considered a "commercial" activity. Only the cultural center at Kapa'a site is located within the wildlife sanctuary boundary. DOFAW would be allowed to permit up to 100 persons a day for this type of commercial activity associated with that cultural center.

Similarly, DSP does not intend to issue permits for private commercial tours within Kawainui. However, operation of an educational center by DSP or a non-profit organization would require entrance fees or concessionaire agreements (e.g. gift shops) to sustain the center's operation and maintenance. Such revenue generated would be a type of commercial activity, but it would support operation of the center by DSP or a non-profit organization, and any excess revenues could be used to fund further Kawainui restoration or maintenance activities. As a result, visitor activity projections do not assume an increase in visitors from ~~authorized~~ private commercial tour activities. General park visitors paying entrance fees or purchases at concessionaires are already accounted for in projected visitor activity.

Overall, the largest increase would be associated with visitors to the education center at Pōhakea as part of visitor orientation, nature-based activities tied to Nā Pōhaku, culture-based programs at the kauhale complex, and nature walks along pedestrian trails in the Kahanaiki area. ~~Visitors (residents and students) to the Kalāheo Section as part of canoe-related activities would have the next largest increase.~~ There would be some additional visitors using trails ~~at Kahanaiki to~~ between Ulupō Heiau SHP and DOFAW's management station for walking. No major changes to visitor activity at Ulupō Heiau SHP are projected with continued viewing of historic sites and service learning projects for educational and cultural groups. Project improvements (hale and greenhouse) at Ulupō Heiau would support activities already occurring and not significantly alter current visitation levels.

Visitor Activity at Kahanaiki-Nā Pōhaku-Kapa'a Subarea

Improved public access between Kahanaiki and Nā Pōhaku, including a new educational center, would increase the number of visitors to the area. Approximately 6,000 visitors a month (200 visitors a day) are projected to visit the education center for visitor orientation, cultural programs, and nature-based outdoor recreational activity (walking, wildlife viewing, and sightseeing). It is estimated that about 20% of the visitors to the education center would be traveling there as the primary reason for their visitation. The remaining 80% of the visitors

would already be traveling to Kailua and Windward Oʻahu for beach activities, shopping, etc. as part of their primary trip. Kawainui would be an incidental stop.

The visitation projection is based upon visitation data for similar areas such as: 1) Hoʻomaluhia Botanical Garden; 2) Hawaiʻi Nature Center (Makiki); 3) Kealia Pond National Wildlife Refuge (Maui); and 4) Kokeʻe State Park (Kauaʻi). A summary of visitor data for these areas is provided.

1. Hoʻomaluhia Botanical Garden. This 400-acre City park in Kāneʻohe is Oʻahu's largest botanical garden, and includes a network of hiking trails, a 32-acre lake used for fishing, camp grounds, picnic facilities, and a visitor center. This park had between 11,000 and 15,900 visitors a month between 2010 and 2015. About 30% of the visitors were associated with activities not available at Kawainui (e.g. camping, fishing). The majority of visitations (55%) occurred on weekends (Saturday/Sunday), and the majority are assumed to be residents.
2. Hawaiʻi Nature Center. The nature center had about 1,500 visitors a month in 2015, with school-related visitors making up about 88% of the total. This does not include those visitors accessing the nearby hiking trails.
3. Kealia Pond Refuge. The national wildlife refuge attracts about 3,000 visitors a month based upon 2015 U.S. Fish and Wildlife Service information on their national refuge system.
4. Kokeʻe State Park. The Kōkeʻe Natural History Museum at this state park estimates an average of about 6,000 visitors a month between 2012 and 2016.

Using these sources and DSP objectives, it was determined that visitation levels at Kawainui would be somewhere between Kealia Pond National Wildlife Refuge (NWR) and Hoʻomaluhia Botanical Garden (HBG). Visitation levels at Kawainui would be lower than HBG because: 1) it does not include the same level of recreational amenities, such as camping, fishing, and picnic facilities; and 2) Kawainui is intended to attract visitors for more of a wildlife viewing experience. A summary of the factors contributing to projected visitation levels and characteristics is provided.

1. Fishing, overnight camping, hiking tours, weddings and other special activities (reunions, birthday parties, etc.) occurring at HBG's visitor center accounted for about 30% of total visitors. These activities are not provided at Kawainui.
2. HBG has several large parking areas, open space, and provides several picnic facilities (benches, charcoal grills, pavilion, etc.) allowing visitors to spend most of the day on-site. This makes it an attractive picnic site for residents on weekends. Kawainui would not have such picnic facilities.
3. Visitation to Kawainui can be characterized as being nature-based outdoor recreational activity for viewing and photographing wildlife, natural scenery and historic sites which more closely resembles Kealia Pond NWR.
4. It is assumed that the majority of visitors (80%) who are not participating in educational and service learning programs are visiting Kailua and Windward Oʻahu primarily for beach-related activities, sight-seeing, or shopping. Kawainui would thus

be an incidental stop for most visitors already on their way to or from Kailua. Information documenting these characteristics is provided.

a. Hawai‘i Tourism Authority (HTA) data on visitor participation shows that beach and shopping related activities are very high compared to wildlife and nature-based activities (HTA, 2014). Kailua has several popular beaches attracting numerous visitors, and the town's evolving commercial area provides new and diverse shopping experiences.
   - U.S. visitor activity shows that 87% participate in recreational activities, with beach-related activities being the most popular (77%). Shopping activities were also high at 92%.
   - State parks and botanical gardens interest were lower at 37%, and scenic views and natural landmarks at 56%. Non-military historic sites (cultural activity) had only 26%.
   - For Japan visitors, participation in recreational activities was lower than U.S. visitors at 81%; 65% for beach activities; 10% for parks and botanical gardens; and 10% for non-military historic sites. However, shopping was higher at 98% (HTA, 2014).

b. A FWS visitor survey for Kilauea Point NWR on Kaua‘i found that only 7% of non-residents visited the refuge as the primary reason for their trip. Thirty-seven percent (37%) visited the refuge as an incidental stop, and 56% visited the refuge as one of other reasons for making the trip (e.g. traveling to north shore) (Sexton and others, 2011).

c. The majority of visitors to Kawainui are expected to be non-residents (90%) based upon visitor count data at the City's Hanauma Bay Nature Preserve.

Visitor Characteristics. On a daily basis, the education center would typically be open during daylight hours from 8:30 a.m. to 5:30 p.m. The center is intended to serve as a focal point for visitors to Kawainui and allow for the management of activities in this area. Visitor day trips would typically last between 1 to 2 hours because the majority of persons visiting are assumed to continue on to their main purpose for visiting the beach and shopping related activities in Kailua.

No camping areas are available for visitors that would encourage a longer stay. However, some benches with shelters at the education center and the Kawainui SPR Kalāheo Section would allow visitors to rest and picnic at the site. A typical visit to the education center would consist of the following:

1. Visitors browse through the education center, receive site orientation, materials, view displays, etc.
2. Visitors use the observation deck to view wetland, scenery and birds.
3. Visitors use foot trails to walk toward Nā Pōhaku o Hauwahine or toward the kauhale complex at Pōhakea to observe features, and continue on toward Kahanaiki.

Passive Outdoor Recreational Activity

Additional visitors would utilize improvements provided at Kawainui for passive outdoor recreational activity in the form of walking, jogging, and wildlife viewing. Existing areas already supporting such recreational activity include: 1) the levee; 2) Nā Pōhaku o Hauwahine; 3) Ulupō Heiau SHP; and 4) the already permitted Gateway Park concept at the Kalāheo site. The proposed project would improve outdoor recreation activity at the following locations: 1) upland area from Kahanaiki to Pōhakea and Nā Pōhaku; 2) foot trail connecting Wai‘auia to the levee; and 3) foot trail between Ulupō Heiau and DOFAW's management station. ~~Areas supporting these activities include: 1) the levee; 2) pedestrian trail connecting the levee to Ulupō Heiau SHP, Mokulana, and Kahanaiki; and 3) public use at the Kalāheo Section, particularly for canoe practices.~~ The majority of visitors using the Pōhakea to Kahanaiki upland area would result from the education center. ~~these~~ Other new improved areas for passive outdoor recreational activity are expected to be mainly used by residents, primarily from Kailua and Windward O‘ahu. Access to these areas and pedestrian trails would be available during daylight hours. A discussion of visitor activity within subareas is provided below.

Kahanaiki to Nā Pōhaku Subarea. Persons using the upland area between Kahanaiki and Nā Pōhaku o Hauwahine for wildlife viewing and passive outdoor recreation would be associated with visitors to the education center. The trails would be for pedestrian use only (walking and jogging). Dogs will be prohibited, and visitors are expected to primarily consist of non-residents. Access to this upland area would be from: 1) the education center at Pōhakea; and 2) the Kahanaiki parking lot near Kalaniana‘ole Highway intersection with Kapa‘a Quarry Road.

Wai‘auia-Ulupō-DOFAW Station~~Mokulana~~ Subarea. About ~~500~~ 200 visitors a month are projected to utilize the pedestrian trail created ~~from the levee (at Wai‘auia), to~~ between Ulupō Heiau SHP, and DOFAW's management station ~~Mokulana peninsula area~~. The majority of visitors using this trail are expected to be residents, mostly from Kailua and Windward O‘ahu. The trail would be for pedestrian use only (walking and jogging) and dogs will be prohibited. Visitors are expected to access this section of the trail from the following areas: 1) ~~Kahanaiki parking lot near Kalaniana‘ole Highway intersection with Kapa‘a Quarry Road; 2) Mokulana Peninsula parking lot, when available (e.g. on weekends); 3)~~ public parking area by DOFAW management station; and 2) ~~4)~~ Ulupō Heiau SHP~~; and 5) Wai‘auia parking area~~. The trail segment from Wai‘auia to the levee would be used by persons walking on the levee since this provides another access point.

Kapa‘a-Kalāheo-Levee Subarea. Current recreational visitor activity on the levee is about 1,800 persons a month. It is assumed the same level of activity currently observed would continue in the future. No project improvements would change the continued use of the levee for walking, jogging and bicycling. However, bicycling on the levee may be restricted in the future. DOFAW would continue to enforce rules prohibiting pets on the levee. With some parking stalls (6) being made available at Wai‘auia along with a pedestrian trail connection to the levee, some visitors may choose to access the levee from the Kailua Road end instead of from Kalāheo. It is assumed

about 200 visitors (11%) a month would access the levee from Wai‘auia with the remaining 1,600 visitors a month continuing to access it from Kawainui Neighborhood Park.

Visitors to the Kawainui SPR, Kalāheo Section would already occur without the project because this site has already received approvals, and the project (Proposed Action) is not proposing any new improvements to this site. Visitors are projected to be about ~~1,100~~ 600 persons a month, and consist of: 1) general visitors (400); and 2) canoe launch and practice activities by schools by permit (2~~7~~00). As a passive recreation park with views of Kawainui, restrooms, and a pavilion or interpretive shelter, the majority of general visitors (75% or 300 persons) are expected to be residents that may typically rest or have a short picnic at the site staying perhaps 1 to 2 hours. Remaining visitors (25% or 100 persons) would likely be non-residents stopping by the park on their way to other primary destinations in Kailua (sightseeing, beach, shopping) to view Kawainui or picnic, and would not stay very long (1 hour).

~~Canoe related activities are projected to generate the most activity and visitors to this park site.~~ DSP would issue permits to schools ~~and a few canoe clubs~~ to utilize this site to launch and conduct practices during the paddling season. It is estimated that ~~up to six (6)~~ one or two 6-man school canoe teams would be permitted to launch per day for practices. Therefore, visitors would consist of students, coaches, and parents, ~~and canoe club members~~ dropping off and picking up persons, and watching activities. Their stay would generally be about 2 to 3 hours long, and occur in the afternoon (after school~~ and after work~~). The park would be only be open during daylight hours, thus, canoe launch and practices would not occur in the early morning because the park will be closed.

Summary of Activity Levels

Overall, the project will accommodate increased activity at Kawainui-Hāmākua in the form of additional DOFAW employees, participants in educational and cultural programs, and visitors seeking an outdoor or cultural experience (walking, wildlife viewing, visiting a cultural site, and experiencing a wetland environment) due to proposed improvements and increased public access. Almost 35~~30~~% of the new visitation to the project area would be associated with educational and cultural programs. Passive outdoor recreational activity ~~would account for 25% of the visitation,~~ with general visitors comprising the remaining 6~~4~~5%. Most of these general visitors would be expected to visit the education center to receive an orientation to Kawainui and may then participate in some walking activities. The majority of persons visiting this project area would likely be residents, with many from Kailua. Out-of-State visitors would not likely be participating in educational or cultural programs, or outdoor recreational activities (e.g. ~~canoe launch,~~ levee walking). Table 2.7 provides an overall summary of ~~current and~~ new projected activity by subareas generated by project improvements. Current activity levels, including those already approved (Kalāheo park for Gateway concepts), were previously covered in Tables 2.5 and 2.6.

~~Table 2.7 Summary of Projected Activity~~			
~~Description of Activity by Subarea~~	~~Projected Monthly Activity (Persons)~~		
	~~Education / Cultural Programs~~	~~Recreational Activity~~	~~Visitor Activity~~
~~A. Hāmākua-Puʻuoehu Subarea~~			
~~1. Hāmākua Marsh State Wildlife Sanctuary Programs~~	~~320~~		
~~B. Waiʻauia-Ulupō-Mokulana Subarea~~			
~~1. Waiʻauia Cultural Center (Cultural)~~	~~1,730~~		
~~2. Kawainui Restoration Ponds~~	~~320~~		
~~3. Ulupō Heiau~~	~~250~~		~~450~~
~~4. Waiʻauia-Ulupō Heiau SHP-Mokulana Trail~~		~~500~~	
~~C. Kahanaiki-Nā Pōhaku-Kapaʻa Subarea~~			
~~1. Education Center, Pōhakea~~	~~600~~		~~6,000~~
~~2. Nā Pōhaku o Hauwahine~~	~~70~~		
~~3. Kapaʻa Cultural Center~~	~~400~~		
~~D. Kapaʻa-Kalāhoo-Levee Subarea~~			
~~1. Kawainui SPR, Kalāhoo (Canoe/Park)~~	~~100~~	~~1,100~~	
~~2. Levee~~		~~1,800~~	
~~Total Activities By Category~~	~~3,790~~	~~3,400~~	~~6,450~~

Table 2.7 Summary of New Project Generated Activity		
Description of Activity by Subarea	Projected Monthly Activity (Persons)	
	Education / Cultural Programs	Recreational & Visitor Activity
A. Hāmākua-Puʻuoehu Subarea		
1. Hāmākua Marsh State Wildlife Sanctuary Programs	160	
B. Waiʻauia-Ulupō-Mokulana Subarea		
1. Waiʻauia Cultural Center (Cultural)	1,730	
2. Kawainui Restoration Ponds	240	
3. Ulupō Heiau	80	
4. Ulupō Heiau SHP-DOFAW Management Station		200
C. Kahanaiki-Nā Pōhaku-Kapaʻa Subarea		
1. Education Center, Pōhakea	500	5,750
2. Kauhale Complex, Pōhakea	40	
2. Nā Pōhaku o Hauwahine	20	
3. Kapaʻa Cultural Center	400	
Total Activities By Category	3,170	5,950

2.2.5.3 Management of Public Access

Effective management of the resources at Kawainui and Hāmākua is a priority for both DOFAW and DSP that must to be in alignment with agency missions that require increased public access, support for native Hawaiian cultural practices and educational programs, and need to consider the broader statewide public interest in this resource. Managing public access is an important component for this project due to the large area under the state's jurisdiction. Effective management of areas open to public access requires cooperation and coordination among DOFAW, DSP, DOCARE and non-profit organizations operating at Kawainui to ensure appropriate supervision and monitoring of activities, and enforcement action, as warranted.

Public access would only occur within certain designated upland areas and along pedestrian trails. Public access would not be allowed within the wetland, which includes the vast majority of the project area, and Hāmākua and Pu'uoehu hillside would not be open for general public access except for DOFAW scheduled programs and activities. The Wai'auia Cultural Center and Kapa'a Cultural Center are under the jurisdiction of DOFAW and would not be open to the general public. Figure 2.16 shows areas that would be open to public access, which consist of trails and certain upland areas as identified below.

1. Public access along most of the trails, including the levee, would be restricted to designated areas.
2. The upland area from Kahanaiki to Nā Pōhaku would have public access as part of a trail system associated with the education center.
~~3. Mokulana peninsula allows public access as part of the pedestrian trail and observation areas, but can be restricted by DOFAW.~~
3~~4~~. A small park area below DOFAW's management station includes support facilities (e.g. parking~~, shelter~~) for public access.
4~~5~~. Ulupō Heiau SHP would continue to be open for public access where cultural landscape restoration is occurring. A foot trail extends from Ulupō Heiau SHP to the DOFAW Management and Research Station. Areas upland of this trail (e.g. area below Kūkanono subdivision) are not accessible to the public.
~~6. Kalāheo Section of Kawainui SPR would be a passive park open to the public.~~

The following management practices would be implemented to address public access: 1) phased approach in opening areas to the public; 2) restricting access; 3) designating trails that buffer and protect the resources; and 4) increasing stewardship partnerships.

Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 2.16 - Public Access Management Areas

Kailua, O'ahu

0 800 1,600 FEET

HHF PLANNERS places for people

Management Using a Phased Approach

DOFAW and DSP plan to implement a phased approach by incrementally opening up areas for public access, and will only allow such access of areas if they are able to manage them. Areas opened to the public will be monitored over time to assess the level of activity, identify any negative impacts to the resources, and evaluate modifications needed to better manage each area. If warranted, these agencies can refrain from opening up additional areas for public access until they are better able to manage existing areas. Based on management capabilities and impacts to the resources, areas may need to be closed or access may need to be more restricted. Most of the areas under DOFAW's jurisdiction at Kawainui are within the wildlife sanctuary. DOFAW is able to restrict public access under wildlife sanctuary regulations, if warranted.

In order to accomplish this phased incremental approach to public access, DOFAW and DSP will need support from DLNR and the Legislature to fund: 1) physical improvements supporting management activities; 2) additional DOFAW and DSP positions; and 3) permanent DOCARE officers assigned to Kawainui.

Physical and Operational Support for DOFAW and DSP. DOFAW and DSP would need funding support for both physical improvements and additional operational staff to effectively manage public access within Kawainui. These agencies would seek funding support from the Legislature or other sources (e.g. grants), however, their ability to increase public access would be dependent up the funding support provided. Otherwise, areas would continue to have limited or no public access. Physical improvements include the following:

1. Fencing along certain trail routes to manage public access keeping persons along designated routes, such as the section along the Kūkanono subdivision.
2. Perimeter fencing delineating areas under DOFAW and DSP jurisdiction as opposed to privately-owned or City property to support enforcement actions, if required.
3. Signage to inform the public of access restrictions, etc. and support enforcement action.
4. Clearing thick vegetation from various upland areas ~~(e.g. Mokulana peninsula)~~ to increase visibility, improve public safety, and monitoring of activities.

Management also includes the necessary daily maintenance of facilities to ensure they are safe, clean, and do not impact the environment. Therefore, DOFAW and DSP need funding support for daily maintenance activities such as the daily cleaning of facilities (e.g. restrooms), rubbish removal, etc. For areas under a lease to a non-profit organization, the non-profit is responsible for daily maintenance, but State may assist with repair and maintenance of buildings and roadways.

DOFAW would need funding to increase operational staff working at Kawainui in the form of wildlife biologists and forestry and wildlife workers. DOFAW's management and research station is programmed to accommodate up to 12 additional staff. However, the specific number

of additional personnel required incrementally as public access increases would need to be determined in the future by DOFAW based upon the level of restoration activities, programs, and other management activities occurring.

DSP intends to have non-profit organizations manage and operate the education center and kauhale complex at Pōhakea ~~and the hale wa'a and launch area at the Kalāheo park site~~. Non-profit organizations will continue to assist DSP with the management of Ulupō Heiau and Nā Pōhaku o Hauwahine under curatorship agreements. DSP will need a staff person to provide oversight and management over the operations of these various non-profit organizations along with the education center lease and operations. ~~DSP maintenance staff will also be needed for facilities and grounds in the Kalāheo and Kapa'a Sections of Kawainui SPR.~~

Permanent DOCARE Officers. Additional DOCARE officers would need to be funded to support security and enforcement of areas opened for public access. Currently, ~~only one~~ two DOCARE officer patrol~~s~~ Kawainui along with other areas of Windward O'ahu. With implementation of all public access areas proposed, ~~two~~ four DOCARE officers would be required to be permanently assigned to Kawainui. The addition of officers required would be incremental as public access increases, and would be determined in the future by DOFAW and DPS based upon the level of activities occurring.

Officers can be stationed at DOFAW's management and research station allowing them to patrol various areas at Kawainui and respond to issues arising. They would also work with non-profit organizations operating at Kawainui by responding to situations or enforcement incidents. Coordination among DOFAW, DSP and non-profit organizations with DOCARE officers would increase security and visitor safety within ~~of~~ the area and improve enforcement of regulations. As an example, increased monitoring of the area can address unauthorized commercial activities (i.e. commercial tour groups without permits).

Restricting Public Access

Within the wildlife sanctuary, DOFAW is able to restrict public access in accordance with regulations under Chapter 126, Rules Regulating Wildlife Sanctuaries, HAR. Within Kawainui, access in the wildlife sanctuary is restricted to the perimeter as marked by trails or roads. Therefore, public access at Kahanaiki~~, Mokulana,~~ and the levee can be restricted or limited if DOFAW believes this restriction is warranted. Such restrictions on public access can range from no access permitted to conditional access during established times (e.g. weekends only, or only through programs). As a result, DOFAW has the regulatory ability to effectively manage public access based upon their evaluation of the types of activities occurring (e.g. safety, unauthorized commercial tours) and level of visitation.

DSP has the ability to close or restrict public use of their jurisdictional areas when necessary for the protection of an area or for the safety and welfare of the public under Chapter 146, Hawai'i State Park System, HAR. Therefore, public access to portions of Ulupō Heiau SHP and the Nā

Pōhaku, Kapa‘a, and Kalāheo Sections of Kawainui SPR can be restricted or limited if DSP believes it is warranted. Public access restrictions to DSP managed LWCF lands will comply with LWCF reasonable public access requirements.

Restrictions on public access can range from no access permitted to conditional access during established times, such as posted visiting hours. If necessary, an option to manage visitor levels could be implementing a web-based program requiring visitors to sign-up before visiting. This approach could limit the number of visitors on a daily basis, if necessary. An average of about 200 visitors per day is estimated at Kahanaiki (about 30 to 40 visitors per hour), which should be manageable. DSP would coordinate with the non-profit organization operating the education center to evaluate acceptable visitation levels. DSP also has the regulatory ability to effectively manage public access based upon their evaluation of the types of activities occurring, level of visitation, and the impact of visitation on the resources. Commercial activities such as commercial tours are allowable subject to permit issuance by DOFAW or DSP. Permits for commercial activities in Kawainui and Hāmākua Marshes will not be issued in this project.

Stewardship Partnerships

Partnerships with non-profit organizations participating in stewardship activities within Kawainui is another important component to support DOFAW and DSP management of public access. Current non-profit organizations restoring and serving as curators at Nā Pōhaku, Pōhakea, and Ulupō Heiau already contribute to stewardship efforts for those areas, and also support monitoring public access and activities there in coordination with DSP.

Establishment of the cultural centers at Kapa‘a and Wai‘auia would allow non-profit organizations to support DOFAW with stewardship of those areas. This would entail participating in efforts to maintain vegetation growth in the area, supporting educational programs, and having a vested interest in assisting in the monitoring of activities. Pedestrian trails link Wai‘auia with the levee and the ~~Kapa‘a~~ Kahanaiki area with Na Pōhaku. Therefore, coordination with DOFAW would improve monitoring public access along these trails and in the area. Increasing partnerships with non-profit organizations serves as an “extension” of staff for both DOFAW and DSP that supports the monitoring of activities in the area. Input received by DOFAW and DSP from these organizations also helps in evaluating activities, visitation levels, potential impacts, and subsequent management decisions for the area.

2.2.6 Facility Maintenance Responsibilities

Effective maintenance and management of proposed facilities are essential for DOFAW and DSP to fulfil their missions and goals for the project. Non-profit organizations stewarding project subareas are responsible for the maintenance and management of facilities in their subareas.

DOFAW and DSP are responsible for the management and maintenance of facilities located in subareas under their jurisdiction. These organization are responsible for the maintenance of all facilities and parking lots under their jurisdiction. Maintenance of DOFAW and DSP facilities may be contracted out to a private organization. The security of these facilities is the responsibility of these organizations and DOCARE. Both organizations are responsible for the maintenance of vegetation in their subareas. Trash collection for organization subareas may be contracted to a private organization if deemed appropriate.

Non-profit organizations are responsible for facility management and maintenance in the subareas they oversee. Facility maintenance responsibilities involve the upkeep of subarea facilities and parking lots. Non-profit stewards could contract out these maintenance responsibilities if appropriate. Responsibilities also include oversight of all guests and onsite activities, trash collection, security, and vegetation maintenance. Non-profit stewards would develop a maintenance program for DOFAW or DSP that outlines their responsibilities. The DSP may provide management ~~and maintenance~~ support for non-profit managed facilities in their subareas if this support is required. Additionally, DSP may assist non-profit stewards with major facility repairs through the capital improvement project (CIP) program budget or the Grant-In-Aid program.

2.2.7 Preliminary Design Guidelines

Preliminary building and landscaping design guidelines have been developed for project improvements. ~~Finalized~~ Updated information on design guidelines would be included in the final master plan. The master plan serves as a framework for DOFAW and DSP to implement project improvements and would be the appropriate source to include ~~final~~ design guidelines. DOFAW and DSP would use these guidelines to orient the design of improvements to ensure unity of design and theme. The design guidelines could also be used to evaluate proposals and design plans submitted for proposed improvements. Preliminary design guidelines are discussed below.

Structures

A variety of structures are proposed in the project support an array of uses such as education, recreation, operation support, administrative, and community support functions. Preliminary general design guidelines are proposed to establish an overarching vision to unify the design of

project facilities given the diversity of functions required. In particular, structures should be sized appropriately so they do not detract attention from surrounding natural resources.

Single story, small scale structures are more appropriate for the project area than monolithic, multilevel structures. Materials and finishing used in the construction of structures should be natural in appearance to align with the natural character of the surrounding environment. Materials may include wood, stone, or CMU block covered with an appropriate finish if a more durable and utilitarian structure is needed.

Structures supporting operational functions would be sited away from important or sensitive natural resources in the subarea when possible. LID elements would be incorporated into design of structures and related site improvements. For example, all structures and related fenestration would be oriented to align with wind and sunlight patterns to allow for passive heating and cooling. Usage of bioretention areas and bioswales will allow any site runoff to be retained and channeled sustainably.

Accessory Structures

Accessory structures such as viewing pavilions should harmonize with the natural setting of the project area. These accessory structures should be smaller in scale so they do not obstruct views of surrounding natural resources. The structures would be constructed of natural materials to match the character of the surrounding environment. All interpretive elements such as educational signage would be situated within these structures at a waist level to focus visitor attention to project area natural resources. Architectural detailing on these structures would be minimal to encourage design that aligns with the surrounding environment.

Landscaping

Native vegetation would be utilized in the site landscaping of project improvements. Existing native plants would be retained and invasive vegetation would be replaced with native species appropriate to the surrounding area. Native plants selected would be chosen based on the existing vegetative and climatic character of the site. Hardscape elements should align with the natural character of the project area and should therefore be constructed of natural materials such as wood and stone. LID site design elements such as bioswales and bioretention areas should be incorporated to address runoff issues.

2.2.8 Project Phasing and Estimated Costs

Proposed improvements can be implemented when the environmental review process has been completed and necessary land use entitlements are obtained. Entitlements are projected to be completed before the end of 2019~~8~~. Other ministerial permits (e.g., building and grading permits) would be obtained as part of the design and construction phase as the various project components are implemented.

Project Phasing

Project concepts described and evaluated in this document are anticipated to occur over a -20-year timeframe. The selection and timing of improvements would be determined by DOFAW and DSP, subject to a number of factors. These factors include, but are not limited to, agency priorities given other projects and activities occurring statewide, staff requirements, and the availability of funding provided by the Legislature. Priorities may change over time as circumstances change or unforeseen opportunities arise.

Adaptive management will be implemented by DOFAW to provide continuous long-term management of wetland resources, restoration efforts, and waterbird habitat area. Kawainui and Hāmākua are natural resources influenced by various environmental conditions that change over time, and result in the need for adaptive management. This will require monitoring of vegetation growth, water flow into the wetlands from streams and upland areas, and waterbird nesting activities. DOFAW's and DSP's ability to manage this project area will also influence how much area is improved and the level of public access that can be accommodated. As previously discussed, other management initiatives also need to be funded to allow implementation of improvements.

Priority is being given to those areas that are already accessible to the public, and where the community has initiated restoration and educational programs, such as Ulupō Heiau SHP and Nā Pōhaku o Hauwahine. Other proposed project elements would be undertaken by non-profit organizations and community groups, such as the proposed kauhale complex and the Hawaiian cultural centers at Kapa‘a and Wai‘auia. Their ability to improve areas, construct facilities, and operate programs will be dependent on their ability to obtain funding and demonstrate their organizational capacity. It is anticipated that these improvements would also be implemented in phases.

Certain activities are occurring now, and would continue as long as deemed necessary. Other new activities and improvements planned are associated with the DOFAW's core priorities and mission, and would therefore be programmed to occur throughout the timeframe. Remaining activities and improvements are generally programmed to occur within either: 1) immediate to 10-year timeframe; or 2) 20-year timeframe. These activities are identified below.

Core Priority Activities Occurring Throughout Timeframe

- Wetland restoration and habitat enhancement
  - Wetland expansion and continued maintenance activities at Hāmākua
  - Wetland restoration and continued maintenance activities at Kawainui
- Upland reforestation
  - Reforestation of upland areas at Kawainui
  - Reforestation of lower areas of Puʻuoehu hillside
  - Maintenance activities of upland areas at Kawainui
- Native lowland forest restoration at Nā Pōhaku o Hauwahine
- Storm water runoff mitigation (e.g. culvert repair, drainage) of upland areas along Kapaʻa Quarry Road
- Perimeter boundary fencing at Kawainui
- Predator fencing around wetland at Kawainui
- Ulupō Heiau cultural landscape restoration with trails and wetland restoration
- Educational programs with schools and organizations at Kawainui and Hāmākua
- Stewardship programs with schools, volunteers, and organizations at Kawainui and Hāmākua

Immediate to 10-Year Timeframe

- DOFAW Management and Research Station to Mokulana
  - DOFAW management and research station improvements (support facilities)
  - Passive outdoor recreation improvements by DOFAW management station
  - Mokulana Peninsula program staging area and DOFAW maintenance access improvements
- Kahanaiki
  - Parking area
  - Accessory facilities (viewing platforms, shelters, etc.)
- Ulupō Heiau State Historical Park
  - Hale and greenhouse to support activities
  - Interpretive trails and devices within park associated with cultural landscape restoration
- Pedestrian Trails
  - Establish pedestrian trails within Kahanaiki area
  - Extension of trails from Kahanaiki to Pōhakea - Nā Pōhaku area
  - Pedestrian trail connecting Waiʻauia to levee
- Kapaʻa
  - Re-establish vegetation processing area for use
  - Cultural center
- Waiʻauia
  - Facilities for cultural center

- Nā Pōhaku Section, Kawainui State Park Reserve
  - Provide parking area for interim use (alleviate street parking used for Nā Pōhaku and support educational and cultural programs)
  - Provide interim restroom and storage facilities
  - Establish interim support facilities ~~educational center~~ (pavilion/rain shelter)
- ~~Kalāheo Section, Kawainui State Park Reserve~~
  - ~~Parking area~~
  - ~~Canoe launch site (use by DSP permit)~~
  - ~~Hale waʻa (canoe storage) structure~~
  - ~~Interpretive shelter with exhibits and restrooms~~
- Kapaʻa Section, Kawainui State Park Reserve
  - Guardrails or fencing along Kapaʻa Quarry Road (restrict off-road vehicle activities)
  - Low-maintenance landscaping (promote open space and view corridors)
- Hāmākua Marsh State Wildlife Sanctuary
  - Site improvements for program staging and parking area
  - Storage shed and restrooms

10 to 20-Year Timeframe

- DOFAW Management and Research Station to Mokulana
  - DOFAW management and research station improvements (build-out)
  - ~~Mokulana Peninsula site improvements, viewing areas, accessory improvements~~
  - Maintenance access from management station to Mokulana peninsula with bridge crossing Maunawili Stream
- Pedestrian Trails
  - Trail from levee to Ulupō Heiau to DOFAW management station
  - ~~Trail connecting DOFAW management station to Mokulana peninsula with bridge crossing Maunawili Stream~~
  - ~~Trail extension from Mokulana peninsula to Kahanaiki area with bridge crossing Kahanaiki Stream~~
  - ~~Trail extension from Nā Pōhaku to City model airplane park~~
- Kawainui State Park Reserve; Nā Pōhaku o Hauwahine to Pōhakea
  - Education center (build-out)
- Puʻuoehu
  - Maintenance trail (mid-level along hillside)
  - Maintenance trail (top of ridge)

Preliminary Order-of-Magnitude Cost Estimates

Preliminary order-of-magnitude cost estimates for the major components proposed by this project have been developed and are shown on Table 2.8 (2017 dollars). These estimates were developed using several sources such as prior bids for wetland restoration and upland reforestation work at Kawainui, bid information for other related construction projects (e.g. culvert repair, model airplane restroom), cost estimates from the DSP's DEIS for Hā'ena State Park (PBR, 2015), and other available sources. It should be noted that the actual costs for various improvements are subject to change and would be better determined after more specific project details are developed, design work is completed, and construction plans are developed for implementation.

The updated costs in Table 2.8 reflect revisions to the project which eliminate various components such as trails, update floor areas for facilities, and eliminate a bridge across Kahanaiki Stream. It also excludes the Kalāheo park site because the project does not include any new improvements to that site. In summary, the total order of magnitude costs for all major components would be in the range of $53~~67~~ million, which includes contingency and design fee factors (30% of total). State funding is planned for the majority of improvements. DOFAW and DSP would also look for potential grants from federal agencies and organizations. There are some improvements and facilities supporting education and cultural practices that would be constructed by a non-profit organizations (e.g. Kapa'a Cultural Center, education center). These complexes are included in the cost estimates, and are on the order of about $12.4~~13.5~~ million (about 2~~0~~% of total costs). Wetland restoration and upland reforestation activities accounted for about $26.3 million (~~3~~49%) reflecting the largest cost category. Restoration costs could also be reduced by DOFAW implementing portions of the work using their staff, simplifying restoration work (e.g. cutting vegetation only), or other methodology refinements.

Additional DLNR staff hired as part of programs and management activities over time would generate yearly costs associated with position salaries. The 12 additional staff projected for primarily DOFAW management activities is estimated to require about $840,000 in annual salaries (2018 dollars). Staffing would consist of biologists, wildlife and conservation managers, program coordinators, and DOCARE officers. If DSP operates the education center instead of a non-profit organization, annual salaries for three staff would be about $165,000 for an administrator and support staff. If a non-profit organization operates the education center, DSP could add another program coordinator to manage this and other activities occurring in the Windward district.

Permits authorizing commercial activities in the project area, such as commercial tours, ~~will~~ are not planned to be issued by DOFAW or DSP as part of this project. DOFAW is currently allowed to permit up to 100 commercial visitors a day within the wildlife sanctuary. DOFAW does not intend to issue permits for privately operated commercial tours within the wildlife sanctuary.

Table 2.8 Preliminary Order-of-Magnitude Cost Estimates

Description of Subarea and Major Activities	Estimated Costs by Subarea	
	Cost by Activities	Total Costs (2017 Dollars)
A. Kahanaiki Area		~~**$16,410,000**~~ **$16,390,000**
1. Wetland Restoration, Upland Reforestation, Drainage	$14,800,000	
2. Pedestrian/Foot Trails, Observation Deck, Parking, Fencing and a Restroom	~~$1,610,000~~ $1,590,000	
B. Pōhakea-Nā Pōhaku Area		~~**$16,020,000**~~ **$14,870,000**
1. Wetland Restoration, Upland Reforestation	$10,200,000	
2. Pedestrian and Foot Trails	$370,000	
3. Education Center, Parking, Kauhale	~~$5,450,000~~ $4,300,000	
C. Kapa'a Area		~~**$14,280,000**~~ **$8,040,000**
1. Wetland Restoration, Upland Site Clearing/Grading	$1,040,000	
2. Pedestrian Trail	~~$1,010,000~~	
3. Cultural Center	~~$7,870,000~~ $4,700,000	
4. Vegetation Processing Facility	~~$4,360,000~~ $2,300,000	
D. Kawainui State Park Reserve; Kapa'a Section		**$800,000**
1. Upland Site Clearing/Grading	$800,000	
E. Kawainui State Park Reserve; Kalāheo Section		~~**$2,380,000**~~
~~1. Upland Site Clearing/Grading, Parking~~	~~$630,000~~	
~~2. Halo Wa'a, Restrooms, Interpretive Center~~	~~$1,750,000~~	
F. Wai'auia Area		~~**$4,810,000**~~ **$5,330,000**
1. Wetland Restoration, Upland Site Clearing/Grading	$1,630,000	
2. Cultural Center, Parking	~~$2,430,000~~ $3,400,000	
3. Pedestrian/Foot Trail, Observation Deck	~~$750,000~~ $300,000	
G. Ulupō Heiau State Historical Park Area		~~**$1,300,000**~~ **$1,280,000**
1. Halau, Greenhouse	~~$630,000~~ $670,000	
2. Pedestrian/Foot Trail, Viewing Platforms along Kūkanono Slope	~~$670,000~~ $610,000	
H. DOFAW Management Station to Mokulana Peninsula Area		~~**$8,340,000**~~ **$4,400,000**
1. DOFAW Support Facilities, Greenhouse	~~$4,230,000~~ $2,300,000	
2. Pedestrian/Foot Trail, Staging Areas, Bridges	~~$2,900,000~~ $1,800,000	
3. Mokulana Maintenance Road~~/Trail~~, ~~Pavilions,~~ Storage	~~$1,210,000~~ $300,000	
I. Hāmākua – Pu'uoehu Hillside Area		**$2,380,000**
1. Wetland Creation, Upload Site Clearing/Grading	$880,000	
2. Maintenance Trail, Staging Areas	$1,740,000	
3. Restrooms, Storage	$370,000	
TOTAL COST ESTIMATE		~~**$66,720,000**~~ **$53,210,000**

Operation of the proposed cultural centers would be by the non-profit organizations constructing those facilities. Non-profit organizations would likely charge fees to persons participating in educational or cultural classes, programs, or activities that would support their operations and maintenance of facilities. In addition, the non-profit organization could also collect fees from other non-profit or community organizations that may use the facilities for meetings, educational and cultural programs, etc. Similarly, operation of an educational center by DSP or a non-profit organization would require entrance fees or concessionaire agreements (e.g. gift shops) to sustain the center's operation and maintenance. Such revenue would support the center, and any excess revenues could be used to further fund Kawainui restoration or maintenance activities. The fees for activities occurring at the cultural centers or education center would be determined by the non-profit organizations operating them.

Therefore, maintenance costs for the cultural centers and education center would not be State-funded. DSP could support maintenance costs for the educational center, if not operated by a non-profit organization. New State-responsible maintenance and repair costs generated by the project would thus be for remaining improvements proposed that would be fairly modest. These operational costs would be for: 1) DOFAW management station; 2) vegetation processing site; 3) a restroom and parking lot at Kahanaiki; 4) a greenhouse at Ulupō Heiau; and 5) pedestrian and foot trails that would only require minor maintenance costs.

Facility maintenance costs are dependent upon several factors, such as the type of facility, level of activities occurring, climate conditions, etc. Facilities proposed are not as intensive or complex as other types of facilities (e.g. medical centers, retail), and thus such maintenance costs should not be significant. Information from surveys of office buildings nationwide indicated that median annual repair and maintenance costs was about $0.11 per square foot. Thus, DOFAW's management station, the largest facility at about 10,000 square feet, would generate about $1,100 in annual costs. Costs for maintaining and repairing State facilities would be programmed as part of the department's operational budget.

Maintenance of pedestrian trails would likely consist of mowing to keep vegetation down, and occasional minor surface maintenance. A national study conducted by the Rails-to-Trails Conservancy determined that annual maintenance cost for trails was less than $2,000 per mile (Rails-to-Trails Conservation, 2015). This cost factor included maintenance costs for restrooms, vegetation, signs, parking lots, etc. Less than about 2.5 miles of new pedestrian and foot trails would be added under the project. Thus, about $5,000 in new annual maintenance costs would be generated from trails that would be accommodated within the department's annual operational budget.

2.2.9 Listing of Permits and Approvals

A listing of required discretionary land use approvals and ministerial permits for this project and their status is provided in Table 2.9. Some permits, such as the Department of Army Permit, would only be applicable for certain proposed improvements ~~(e.g. boardwalk across wetland)~~.

Table 2.9 Permits and Approvals

FEDERAL PERMITS AND APPROVALS	
Department of Army, Corps of Engineers	***STATUS***
Department of Army, Nationwide Permit	*Required if USACE consultation determines permit needed to implement improvements ~~(i.e. boardwalks)~~*
Section 106, National Historic Preservation Act consultation	*Compliance required if Department of Army, Nationwide Permit needed*
Section 7, Endangered Species Act consultation	
Coastal Zone Management federal consistency determination	
National Park Service	***STATUS***
Land and Water Conservation Fund Program	*Continued compliance with program requirements.*
Federal Emergency Management Agency	***STATUS***
Letter of Map Revision	*Required for implementation of Hāmākua marsh wetland expansion improvements*
STATE OF HAWAI'I PERMITS AND APPROVALS	
Department of Health	***STATUS***
Construction Noise Permit	*Required for implementation*
National Pollutant Discharge Elimination System (NPDES) Individual Permit - Construction Activities	*Required for implementation*
STATE OF HAWAI'I PERMITS AND APPROVALS (continued)	
Board of Land and Natural Resources	***STATUS***
Conservation District Use Permit	*Need for permit to be confirmed by DLNR OCCL during implementation of specific improvements*
Department of Land and Natural Resources	***STATUS***
HRS, Chapter 6E, Historic Preservation Review	*Required for implementation*
CITY AND COUNTY OF HONOLULU PERMITS AND APPROVALS	
Honolulu City Council	***STATUS***
Special Management Area Use Permit (Major)	*Required for improvements not covered under previously approved SMA permits.*
Department of Planning and Permitting	***STATUS***
Building Permits	*Required for construction of structures if requested by DOFAW or DSP*
Grading, Grubbing, and Trenching Permits	*Required for implementation*
Approval of Sewer Connection Application	*Required for implementation*

Design Phase Implementation

The conceptual project information included in this EIS provides an overall framework and sufficient detail to identify and assess environmental impacts, and if necessary, identify appropriate mitigative measures. Details such as the location of building sites and impact areas, size of structural improvements (e.g. building floor area), areas with accessory improvements (e.g. trails, observation decks), vehicular access locations, activity areas, and projected levels of activities, etc. have been provided. As with any project analyzed by this environmental review process, project information is included to address impacts. However, future design would develop specific project details and construction plans for implementation.

Therefore, as improvements are implemented over time, various design phases would be initiated that would allow for the specific design of site improvements, siting of buildings and accessory structures, vehicular access points, design of buildings and interior spaces, etc. Such design phases would be initiated by DOFAW, DSP, or non-profit organizations (e.g. cultural centers, education center), as appropriate. Improvements must comply with the descriptions and conceptual framework discussed in this EIS. In addition, any future requests for land use entitlement must be consistent with this EIS. Typically, design plans would be submitted to land use entitlement approving agencies (e.g. State OCCL, City DPP) for consistency review with applications. Furthermore, design plans would be subject to ministerial review and approval by jurisdictional government agencies during the process for permits identified in Table 2.9.

Design guidelines included in the final master plan would also serve as a framework for DOFAW and DSP to review project proposals when proceeding with improvement implementation. DOFAW and DSP would use these guidelines to ensure an appropriate level of unity in the overall theme and design of structures and other improvements within Kawainui and Hāmākua. The design guidelines could also be used to evaluate proposals and design plans submitted for proposed improvements.

2.3 ALTERNATIVES CONSIDERED

This section discusses alternatives to the proposed project improvements that were identified and considered, but eventually eliminated from further consideration due to several factors. Alternatives considered include the following:

1. No Action Alternative: This alternative involves not implementing proposed improvements that are not already entitled or already permitted as part of management and operations within the project area.
2. Resource Management Activities: This alternative involves implementing only improvements directly associated with just resource management activities. No improvements to public access or efforts supporting cultural practices would be included.

3. Variations in Public Access. This alternative includes modifications associated with the education center, the level of pedestrian trails and public access provided, and modifications to the level of cultural practices support facilities.

2.3.1 No Action Alternative

The No-Action Alternative would entail a continuation of existing activities within the project area along with implementation of DOFAW and DSP supported improvements that have previously received land use approvals. Therefore, ongoing resource management activities within Kawainui and Hāmākua as part of DOFAW's operations and maintenance would continue, which includes wetland and upland landscape maintenance and restoration, and educational programming. Within DSP jurisdictional areas, activities would include continued cultural landscape improvements and practices at Ulupō Heiau and Nā Pōhaku, and associated educational and cultural programs.

The No-Action Alternative was eliminated from consideration because it would not meet the purpose and need for the project, which is discussed in greater detail later. The No Action Alternative is used to represent a baseline of future environmental conditions without the proposed project. This baseline would be used to assess and evaluate probable impacts or changes resulting from the proposed project.

2.3.1.1 Does Not Meet Project Need and Objectives

The purpose for this project is to allow DOFAW and DSP to implement various improvements and provide opportunities for other activities under a master plan. These improvements are needed to address: 1) wetland restoration, habitat enhancement, and upland reforestation; 2) improve public access, outdoor recreational activities, and educational programming; and 3) provide the opportunity for non-profit organizations to establish a presence at Kawainui to conduct cultural practices, educational programs, and support stewardship opportunities.

The No-Action Alternative was eliminated from consideration because it would not meet the purpose and need for the project. Additional wetland restoration and upland reforestation improvements are needed beyond that already permitted to support DOFAW's mission, improve the function of Kawainui's wetland for flood protection, enhance waterbird habitat, and address overgrowth of non-native invasive vegetation. This alternative does not meet Section 6(f) LWCF requirements for improving public access and creating opportunities for outdoor recreational use of areas, or support DSP's agency mission. This alternative also conflicts with DOFAW and DSP missions to support Hawaiian cultural practices and educational programming that were expressed as an important need by organizations and the public. Further discussion of these factors are provided.

Doesn't Support Restoration and Habitat Enhancement. Although several areas of Kawainui's wetland are already approved for various types of restoration or maintenance work, additional areas need to be permitted to allow for proposed restoration (e.g. creating mudflats, open water). More intensive restoration work (e.g. mechanical activities via a contractor) would address the overgrowth of invasive vegetation on a larger scale, better support DOFAW's ability to maintain areas, improve the wetland's functional value, and support flood control. DOFAW's current approach to this restoration effort also reflects a modification to earlier plans initiated by the City by creating various types of habitat as part of wetland restoration to better support waterbirds in a more naturalized environment. Therefore, not allowing DOFAW to implement restoration plans under the No Action Alternative would negatively impact their ability to effectively maintain the wetland, and enhance habitat to better support waterbirds.

Upland reforestation is also needed for upland areas, particularly at Mokulana peninsula and between Kahanaiki and Nā Pōhaku, to replace the overgrowth of invasive vegetation that would impact DOFAW's ability to maintain areas if not permitted. Not including erosion control improvements under this alternative would continue allowing increased sediment and debris discharging into the wetland, and possibly undermining areas along Kapa'a Quarry Road. Therefore improvements, such as culvert repairs and broader drainage improvements, are needed to mitigate surface runoff from upland areas.

Improvements to DOFAW's management station are also needed to support their management and maintenance operations along with supporting increased staffing. Without this operational support under this alternative, DOFAW' ability to manage the project area would be constrained, and would also negatively impact and restrict their ability to implement educational programs, cultural activities, and expand stewardship opportunities.

Conflicts with Public Access and Outdoor Recreation Requirements. The No Action Alternative entails not increasing or improving public access or outdoor recreational opportunities from what is already allowed at Ulupō Heiau, the levee, and Nā Pōhaku. There would be no improvements supporting public access in the form of pedestrian trails, support facilities (e.g. restrooms, observation decks), or the education center. This conflicts with DOFAW and DSP agency missions that support public access. This alternative also does not meet LWCF 6(f) requirements that necessitate increased public access and outdoor recreational activities based upon DSP coordination with the National Park Service.

Without support facilities, DOFAW and DSP cannot increase and improve public access in areas because it would be difficult to effectively manage visitors and it creates concern with safety. As an example, the education center serves an important management function as the primary point of entrance and orientation for visitors to that area, allows for the management and monitoring of activities occurring, and provides parking access. If certain restrictions are needed on visitation activity, the education center would be a major component of its implementation. This alternative also restricts DOFAW and DSP's ability to continue and expand educational and cultural programs because support facilities, such as pedestrian trails and restrooms, are

important elements of public access along with passive outdoor recreation (e.g. walking, jogging).

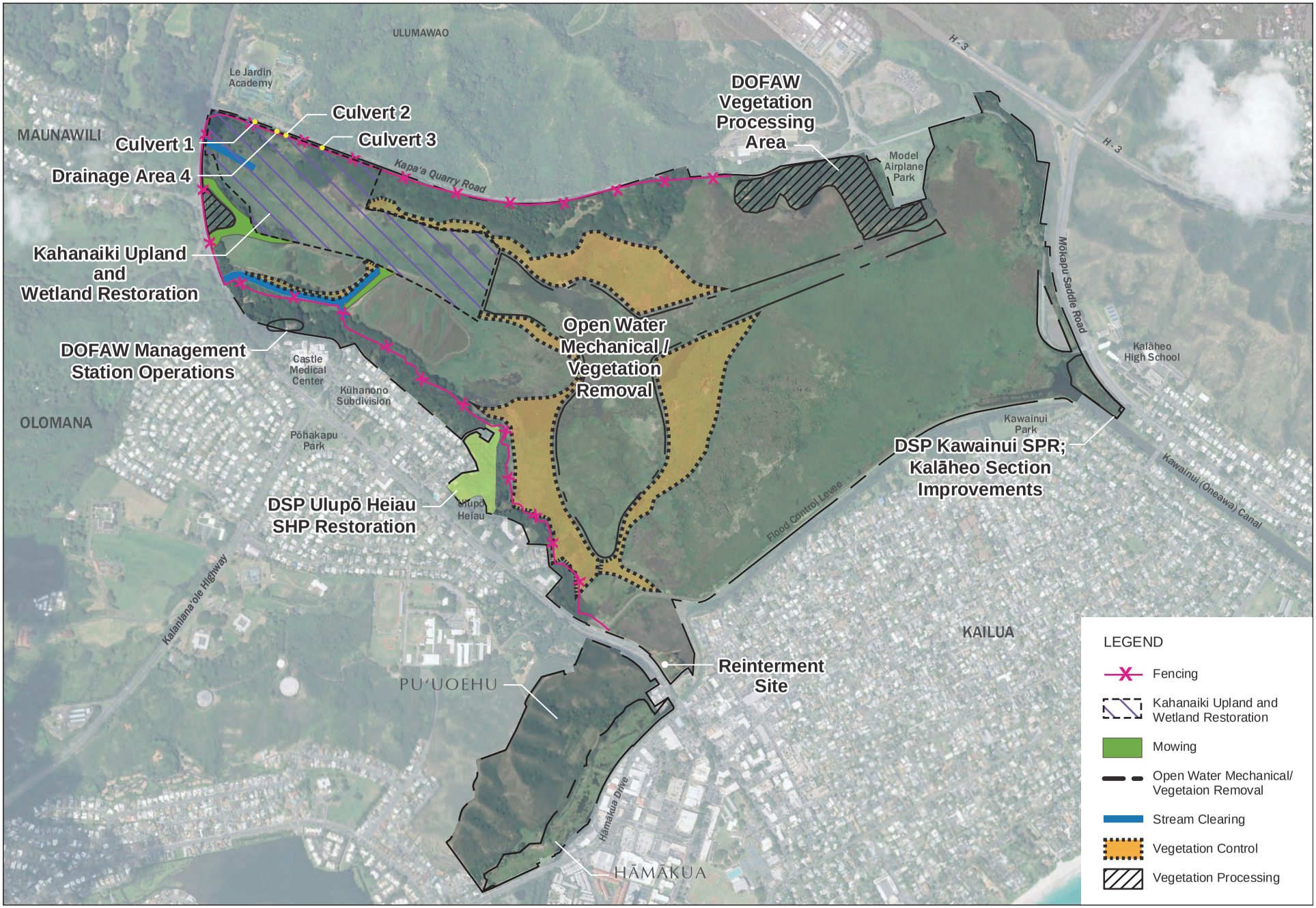
Prevents Opportunities for Cultural Practices and Stewardship. Kawainui-Hāmākua is culturally significant and important to native Hawaiians along with the public. Therefore, opportunities to establish a permanent cultural presence to support cultural practices, stewardship, and educational opportunities by non-profit organizations would be prevented under the No Action Alternative. This conflicts with both DOFAW and DSP core agency mission objectives for protecting and managing cultural resources. This alternative also does not support traditional and customary rights of native Hawaiian's for cultural purposes under Article XII of the State Constitution. Project initiatives are also intended to promote the utilization of this resource in a sustainable and managed manner by providing public access and opportunities for educational programs and stewardship consistent with the conservation and development of resources under the Public Trust Doctrine of the Hawai'i State Constitution.

Kawainui encompasses a large area, and DOFAW and DSP need support from non-profit organizations to help participate in stewardship opportunities for areas. Non-profit organizations involved in stewardship, curatorship, and other activities at Kawainui and Hāmākua for many years have been strong and committed partners with DOFAW and DSP. Restoration efforts, educational programs, and cultural programs already being conducted by non-profit organizations at Ulupō Heiau, Nā Pōhaku, the restoration ponds, and other project areas under curatorship agreements reflect their commitment, and are examples of successful stewardship partnerships with DOFAW and DSP. Therefore, additional partnership opportunities with non-profit organizations to support stewardship and management of Kawainui are important for the management and maintenance of this resource.

2.3.1.2 Activities Permitted Under No Action Alternative

Given the history of prior approvals associated with Kawainui and Hāmākua, there are several activities identified as part of proposed improvements that can already be implemented without the proposed project. The following activities are currently permitted and would continue within the Kawainui and Hāmākua project area under the No Action Alternative. These activities are based upon already authorized DOFAW and DSP management and operational activities and those improvements obtained under prior land use entitlements discussed in Chapter 1. Figure 2.17 graphically identifies some of the major improvements already permitted and included under the No Action Alternative. This alternative represents a baseline of future environmental conditions without the proposed project from which project generated impacts can be evaluated.

1. DOFAW Exempt Management Activities. This consists of operational and maintenance activities that are exempt from environmental review requirements under the State DLNR's exemption list, and do not require land use entitlement permits. These would typically include the following.



Source: State of Hawai'i GIS

Kawainui - Hāmākua Master Plan Project

Figure 2.17 - Activities Permitted Under the No Action Alternative

Kailua, O'ahu

0 800 1,600 FEET

HHF PLANNERS places for people

a. Fencing around property perimeter or around wetland areas as part of habitat management.
b. Removal of invasive vegetation and trees within wetland and upland areas as part of maintenance activities.
c. Repair, maintenance and minor upgrades or replacement of existing utilities and drainage systems.
d. Clearing, grading, and grubbing activities that don't require grading permits.
e. Activities related to planting or growing plants, trees or other agricultural purposes.

2. DOFAW Management Station Operations. DOFAW would continue use of their existing management and research station for operations at Kawainui. This includes continued use of temporary shipping containers for offices and operations.
   a. A new storage building approved (2015/SMA-52) would be constructed to replace several shipping containers now used for storage.
   b. If necessary, additional temporary shipping containers would be brought in for use as part of research grants, operations, etc.
3. DOFAW Kawainui Restoration Activity. DOFAW would continue wetland restoration and upland reforestation (including drainage improvements) within the Kahanaiki area (80 acres) as entitled and approved under the Kahanaiki Restoration project (HHF, 2012). Other management and maintenance activities would occur within the larger 680 acres of Kawainui in accordance with the 2000 Resource Management Plan. This includes vegetation clearing, fencing, and developing a maintenance and vegetation processing area. Other uses consistent with resource management included development of trails and interpretive areas, sediment basins, passive park use, cultural activity, and educational programs.
4. DOFAW Vegetation Processing Facility. DOFAW would proceed with developing a vegetation processing facility at the upland site adjacent to the City's model airplane park in accordance with the approved DLNR 2000 management plan for Kawainui. This site was previously used by the City as a vegetation processing site for their prior flood control project.
5. DSP Kawainui SPR; Kalāheo Section Improvements. Improvements already approved for this site under the Kawainui's Gateway Park project are very similar to that proposed under the project. Approved park improvements include a comfort station, parking lot with access road, educational pavilion and viewing platform, open space canoe storage area, canoe access to Kawainui Canal, and a pedestrian bridge over the canal. The only difference with the proposed action is the addition of a new hale waʻa, and eliminating the pedestrian bridge.
6. DSP Ulupō Heiau SHP Restoration. Cultural landscape improvements already occurring at Ulupō Heiau would continue because it involves activities by hand using the land for cultivating, planting, growing, and harvesting plants that are allowed under land use regulations. The only difference with the proposed action is the addition of a new hālau structure and plant nursery.

2.3.2 Resource Management Alternative

This Resource Management Alternative would consist of implementing improvements already entitled under the No Action Alternative, with the addition of expanded wetland restoration, upland reforestation, and improvements supporting DOFAW management activities. The intent of this alternative is to primarily just support continued resource management activities, which predominantly includes work that is conducted by DOFAW.

Improvements would consist of the six major improvements discussed under the No Action Alternative in addition to the following improvements.

1. Expanded Kawainui Restoration Activity. DOFAW would expand wetland restoration and upland reforestation activities beyond that under the 80-acre Kahanaiki restoration project area (HHF, 2012) and the 680 acres of Kawainui in accordance with the 2000 Resource Management Plan. This includes wetland restoration and upland reforestation improvements similar to that proposed under the project (Proposed Action).
2. Hāmākua-Puʻuoehu Restoration Activity. DOFAW would expand Hāmākua's wetland about 4 acres in size similar to that proposed under the Proposed Action. In addition, upland reforestation within the Puuʻoehu hillside would occur, which includes establishing management trails for activities. Improvements to the staging area, adding a restroom, and storage facility at Hāmākua's entrance would occur because this supports DOFAW's management activities.

This alternative does not include designating areas that can be developed as cultural centers for cultural practices, educational programs, and stewardship activities. Public access would continue to be restricted just to those areas now available, which are the levee, Ulupō Heiau, and Nā Pōhaku. The education center and structures supporting public access (e.g. restrooms, pedestrian trails) would not be implemented. The majority of these improvements being eliminated occur within DSP jurisdictional lands, and effect public access and outdoor recreation.

The Resource Management Alternative was eliminated from further consideration because it would not satisfy key elements of the project's purpose and need or adequately comply with regulatory requirements similar to that discussed for the No Action Alternative. This alternative also does not meet LWCF 6(f) requirements that necessitate increased and improved public access and outdoor recreational activities based upon DSP coordination with the National Park Service, and would not support DSP's agency mission. There would be no improvements supporting public access in the form of pedestrian trails, support facilities (e.g. restrooms, observation decks), or the education center.

This alternative conflicts with DOFAW and DSP core missions to support Hawaiian cultural practices and educational programming that were expressed as an important need by organizations and the public. Opportunities to establish a permanent cultural presence to support cultural practices, stewardship, and educational opportunities by non-profit organizations would be prevented. This alternative also does not support traditional and customary rights of native Hawaiian's for cultural purposes under Article XII of the State Constitution.

2.3.3 Variations in Public Access Alternatives

Alternatives considering variations in public access were considered. Such alternatives considered were intended to address community concerns with visitors to Kawainui that would be accommodated by public access. Public access needs to be improved and supported by proposed improvements because it is part for the purpose and need for this project.

2.3.3.1 Public Access Without Education Center

This alternative evaluated allowing public access without having an education center and kauhale complex at Pōhakea and two public parking lots planned along Kapa'a Quarry Road. Under this alternative, the public would be permitted access within the Kahanaiki to Nā Pōhaku upland section and along proposed pedestrian trails. The purpose for this alternative was to evaluate the feasibility and practicability for which public access could be reasonably accommodated without certain key support facilities.

An important issue with the project by some organizations and members of the community is allowing public access in the first place. Therefore, concerns and opposition to important public access support facilities are viewed as measures that would eliminate public access. As discussed under the project's purpose and need, along with the No Action Alternative, public access needs to be improved and supported under this project.

This alternative was eliminated from further consideration because it would allow unrestricted and unmanaged public access within upland areas, with no monitoring or supervision. This does not support the project need to provide reasonable and managed public access, and would create opportunities to cause adverse effects on the environment and result in public safety concerns. Minimal facilities are already proposed under the project to support and improve public access; therefore, eliminating certain key support facilities prohibits the effective management of areas.

Without an education center, DSP or a non-profit organization would not have sufficient facilities to operate at Kawainui, and no staffing would thus be provided on a daily basis. There would be no facility to provide visitor orientation, education, guidance on rules and restrictions, and monitoring of visitor activities in the area. Visitors would be free to roam the area without restrictions or supervision. Visitor parking would occur along Kapa'a Quarry Road creating increased congestion and pedestrian safety concerns through crowded sections. Unauthorized

commercial tours could occur because there would be no monitoring or operational management of areas. Homeless encampments, illegal activities, or access into restricted areas could also occur without daily supervision, visitor education and guidance, and monitoring of the area. Consequently, community concerns with having unmanaged areas overtaken by visitors with no restrictions could result under this alternative.

2.3.3.2 Variations in Accessory Support Facilities

Variations in the amount of accessory support facilities (e.g. restrooms, trails) proposed for public access was considered, but eliminated from further consideration because they would result in minimal changes to environment impacts already likely under the proposed project. These variations would also have no significant change to projected visitors to the project site or the type of activities occurring, such as wildlife viewing. Such improvements are also typically exempt from environmental review under DLNR's exemption list because they are accessory support and minor facilities that do not generate significant impacts.

Restrooms (e.g. vault toilets) would be appropriately designed, would not have a significant impact on the environment, and are commonly provided at state and city parks. Such amenities are important for both visitors and students participating in educational programs. Eliminating restrooms would deprive the public of basic and reasonable conveniences, and may have a negative impact on the environment and create sanitary issues with visitors having to relieve themselves in open areas.

Pavilions, shelters, and observation areas similarly would not have a significant on the environment, and are common at state and city parks. These minor structures provide rest and shelter from the elements and can support educational programs, especially for students. Eliminating these structures would deprive the public of basic and reasonable conveniences. These improvements would also not change the level of visitors or educational programs projected to occur. The reasons visitors travel to Kawainui would be for viewing wildlife, interest in this resource, educational benefit, and not because the availability of pavilions, shelters, or observation areas.

Reducing or eliminating sections of the pedestrian trail at Kawainui would not eliminate public access or prevent visitors from coming to the area. Visitors to Kawainui would visit this site for the factors previously discussed (e.g. viewing wildlife), and not because of the extent of pedestrian trails available in making this decision. Visitors would utilize available trails, and the trails planned within the Kahanaiki to Nā Pōhaku section are anticipated to be the most popular.

The project already includes management activities to address concerns with visitors using trails, such as opening up new areas (e.g. trail sections) only if DOFAW or DSP are able to effectively manage areas. Therefore, eliminating trail sections would not prevent public access, but trails do serve an important passive outdoor recreational benefit.

2.3.3.3 Variations in Hawaiian Cultural Presence

Concerns expressed with areas designated for the establishment of cultural centers by non-profit organizations should not be related to public access issues for two of the three centers because these centers would not be open to the general public. Therefore, these centers would not attract tourists and day visitors because it would only be for guests participating in programs and activities conducted by the non-profit organizations. Organizations managing these centers would not be allowed to accommodate commercial tours.

There are only two areas designated for cultural centers under this scenario which are at Waiʻauia and Kapaʻa. Therefore, an alternative considered to eliminate one of these centers would not influence issues with public access and visitor concerns because they are not open to the public. An alternative to consolidate buildings would also not effect public access or visitor issues. The number of buildings eventually constructed would be dependent upon the programs and activities planned. These alternatives were thus eliminated from further consideration.

The two centers proposed are intended to support different areas of cultural practices and educational programming as discussed in this chapter. This would create more diversity and opportunities to support a variety of educational and cultural programs for the community in partnership with DOFAW and DSP. Having these two sites also increase stewardship opportunities for those areas that support DOFAW's ability to more effectively manage larger areas, conduct maintenance of vegetation growth, and monitor activities occurring within the area.

The kauhale complex at Pōhakea would be open to the public because it serves as an interpretive cultural component with the education center. This Pōhakea area would be open to the public and include pedestrian trails through the area connecting with Kahanaiki. This kauhale complex would also be developed and used for cultural practices by a non-profit organization.

Consequently, the number of structures proposed for the kauhale complex could be reduced or consolidated to minimize the extent of this development as an alternative. However, modifications to the number of structures should have minimal influence on the number of visitors to the area and one's reasons for visiting the area. Consolidating buildings at the kauhale complex as an alternative was subsequently eliminated as well because it should not have minimal affect on public access or visitor issues. Furthermore, the number of buildings eventually constructed would be dependent upon the programs and activities planned by the selected non-profit organization.

2.3.4 Other Alternatives Considered

Alternative plans have been suggested by certain organizations for consideration instead of the proposed project concepts. These alternatives were considered, but have been eliminated from further consideration because of various reasons such as they do not support the project's purpose and need or were not feasible and practicable to implement. The alternative plans generally support wetland restoration and upland reforestation improvements proposed under the project. However, alternatives differ in the area of public access and cultural practices. In summary, the common theme proposed under these alternatives was eliminating most if not all reasonable public access and support facilities within the project site, and providing minimal support for cultural practices. These suggested alternatives are summarized.

~~Kailua Neighborhood Board Recommendations~~ Kawainui Marsh Restoration Plan, Priorities, Protocols, and Participation

The Kailua Neighborhood Board (KNB) Planning, Zoning and Environment Committee supported a Kawainui Marsh Restoration Plan, Priorities, Protocols, and Participation plan they refer to as "The Community Plan" ~~proposed their version of a plan~~ as an alternative. This ~~version of the~~ plan was adopted by the Committee in October 2013, and received the Board's support at their November 2013 meeting. Exhibit 2.23 includes the map of ~~their~~ this alternative plan showing all facilities instead proposed.

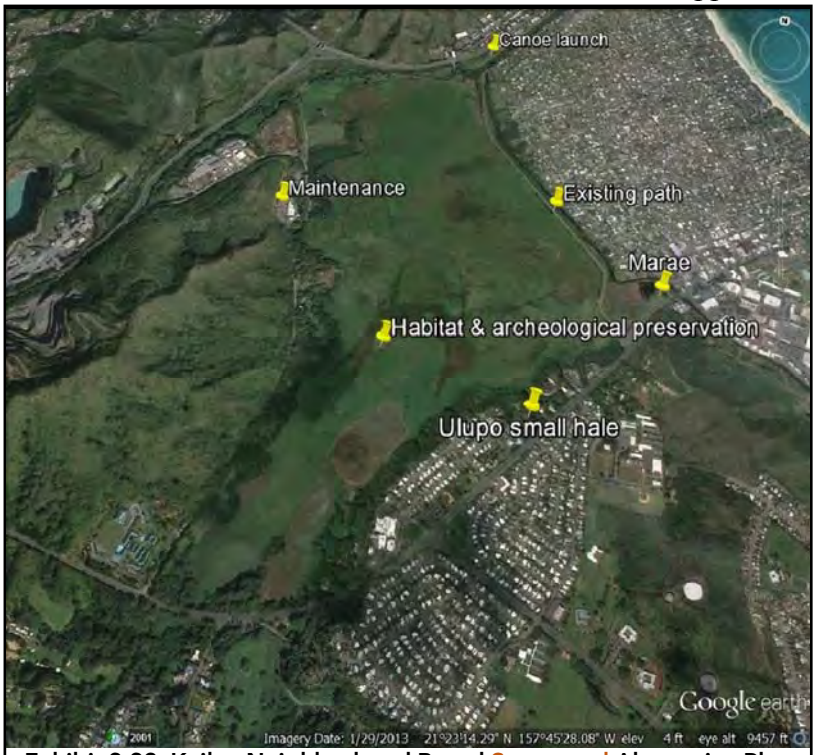


Exhibit 2.23 Kailua Neighborhood Board Supported Alternative Plan ~~Proposed~~

The plan was prepared by some Kailua and Waimanalo residents, including the President of the Kailua Hawaiian Civic Club (at the time) and the Chairperson (at the time) of the KNB. However, it is noted that The Community Plan has never been supported by the Kailua Hawaiian Civic Club up to today. The KNB has explained that this plan was first presented to certain community organizations that included the Lani-Kailua Outdoor Circle, the Audubon Society, Keep It Kailua, and Hawaii's Thousands Friends. Only after these organizations endorsed The Community Plan, did the KNB review and endorse it.

The~~ir~~ alternative plan recommendations addressed four main topic areas.

- Programs and Operations;
- Resource Management and Restoration;
- Interpretive Facilities; and
- Support Features.

Recommendations under the programs and operations, resource management and restoration, and support features topics are generally consistent with the proposed project, which are related to wetland restoration, removal of alien species, preserving historic sites, and habitat enhancement. However, there are significant differences with their interpretive facilities and support features recommendations as reflected in Exhibit 2.23, and pertinent actions are summarized below.

Interpretative Facilities

- No kiosk and parking at the intersection of Kalaniana‘ole Highway with Kapa‘a Quarry Road for protection of native endangered waterbirds.
- Concealed iw‘i kupuna vault at Wai‘auia site.
- Marae hula mound (nominally 10x20 feet) and adjacent small hale (nominally 15x20 feet) at the Wai‘auia site for occasional mana‘o-sharing and parking for about 20 cars.
- Small hale (nominally 10x15 feet) at Ulupō Heiau and parking for 5 to 10 cars.
- Small interpretative signage adjacent to Hāmākua wetland.
- Canoe storage and launch at Kawainui SPR, Kalaheo site.
- Limited parking at Nā Pōhaku for cars only.
- No structures for cultural practices at Pōhakea site.

Support Features

- Maintenance facility for DOFAW relocated to the City’s Kapa‘a transfer station.
- Nursery support to be shared at Bellows Air Force Station.

This ~~The Kailua Neighborhood Board’s~~ alternative was eliminated from further consideration because it does not meet key elements of the project’s purpose and need for improving public access and outdoor recreation. As shown on their plan and listing of facilities, there is essentially no accommodation proposed for any reasonable public access. There is already limited parking at Nā Pōhaku for cars. Canoe storage and launch at Kawainui SPR, Kalaheo would require site improvements such as vehicle parking, and no other accommodations are suggested at this site for public access or activities such as restrooms.

Without support facilities, improving public access would be very difficult to accommodate in a reasonable and safe manner for the public, and this situation makes it impractical for DOFAW and DSP to effectively manage visitors. There would be no staff or non-profit organization present to operate a facility or education center to serve an important management function along with a point of entrance and orientation for visitors to that area. Monitoring of activities occurring would not be possible, and there would not be accommodations for parking access. This alternative also restricts DOFAW and DSP’s ability to continue and expand educational and cultural programs because there are no support facilities.

There would be no improvements supporting public access in the form of pedestrian trails, support facilities (e.g. restrooms, observation decks), or the education center. This alternative creates a situation conflicting with DOFAW and DSP agency missions that support public access. This alternative also does not meet LWCF 6(f) requirements that necessitate increased and improved public access and outdoor recreational activities.

In addition to not supporting public access, this alternative plan provides no reasonable or practicable support for cultural practices. For example, a proposed marae hula mound and small hale at Waiʻauia to accommodate "occasional" activities do not support establishing a long-term and permanent cultural presence to support cultural practices, stewardship, and educational opportunities by non-profit organizations and cultural practitioners. Such a mound and hale only accommodate temporary use for activities, and are more appropriate for being components within a more appropriate cultural center. Reasonable represents having fair, sensible, and logical judgement in determining what is appropriate. The Community Plan does not include facilities to support a permanent presence for cultural practices at Kapaʻa, Waiʻauia, and Pōhakea, and is consequently not fair, sensible or logical as an alternative for that component of the project.

These superficial accommodations proposed for cultural practices do not provide a reasonable alternative to truly and practicably support a long-term and permanent presence for cultural practices. Comments from other organizations and individuals, particularly from the native Hawaiian community, have criticized this ~~neighborhood board's~~ alternative plan. A particular area of their criticism is on the appropriateness of such a plan supported by the KNB ~~this board~~ to be ~~dictating~~ determining for ~~to~~ the native Hawaiian community what type of facilities should be provided to support their traditional cultural practices. Based upon the KNB's comments, the plan was not presented to native Hawaiian community organizations for their input prior to being adopted by the KNB. Organizations that the plan was presented to have long established their opposition to the proposed project, increasing public access, supporting visitors, and cultural centers. This alternative conflicts with both DOFAW and DSP core agency mission objectives for protecting and managing cultural resources. It also does not support traditional and customary rights of native Hawaiian's for cultural purposes under Article XII of the State Constitution.

Hoʻolaulima Recommendations

Hoʻolaulima prepared a document titled *Interpreting Kawainui-Hāmākua Recommendations for the Kawainui Master Plan Update* (July 2012) to provide DOFAW and DSP with their suggestions as part of the master plan's development. Hoʻolaulima believes that interpretation can be used to heighten awareness and understanding, and develop better stewardship of the Kawainui-Hāmākua area. After a series of community meetings held, the organization identified the following alternatives related to the siting of the education center as shown on Exhibit 2.24. These alternative locations consisted of the following.

1. Sites that would involve displacing existing commercial businesses along Hāmākua Drive, a commercial building, and a boating business.
These alternative sites were not feasible or practicable because they are privately-owned properties, and the project is intended for State-owned properties under DOFAW and DSP jurisdiction. Using those sites proposed would involve the displacement of existing commercial businesses which is not justifiable as a prudent and practicable alternative for DSP. These sites are also separated away from Kawainui and would not support the education center's purpose to provide visitor orientation, guidance of restrictions, etc. These sites would not allow DSP or a non-profit organization to monitor activities occurring at Kawainui significantly impacting effective management of areas. The site proposed within Kawainui for the education center would be more reasonable and practicable, and meet project objectives for management, stewardship, and visitor orientation.

Exhibit 2.24 Alternative Sites for Education Center Proposed by Hoʻolaulima

b. Site across Kawainui on a slope near the Mokulana Boulevard off-ramp.
This alternative site was evaluated, but determined to be not feasible or practicable for the education center because it would be physically cut off from Kawainui by Kapaʻa Quarry Road, is located on a steep slope, does not have sufficient space due to the highway right-of-way, would not support pedestrian paths, and would not provide a suitable experience for visitors. It would not support management and monitoring of visitor activities within the Kawainui area, particularly along the Kahanaiki to Nā Pōhaku corridor.

c. City-owned remnant parcel along Hāmākua Road.
This alternative site was evaluated, but determined to be not feasible or practicable because it consists of a remnant wetland that has negative environmental effects if filled and developed. It is also property owned by the City, would be physically cut

off from Kawainui by Kapa‘a Quarry Road, and would not support pedestrian paths nor provide a suitable experience for visitors. It would not support management and monitoring of visitor activities within the Kawainui area, particularly along the Kahanaiki to Nā Pōhaku corridor.

Lani-Kailua Outdoor Circle Alternative Plan

The Lani-Kailua Outdoor Circle (LKOC) proposed an Alternative Plan (Alternative Plan) to the project as described in their October 24, 2016 comment letter on the EISPN. A response letter was provided to the LKOC addressing this alternative plan. These letters were included in Appendix A of the DEIS. Some of the themes proposed by this Alternative Plan are consistent with major components of the proposed project, such as wetland restoration, upland reforestation, and enhancing habitat for endangered waterbirds. However, other suggestions do not practicably support important components of the purpose and need for the proposed project, the State’s missions, and the need to provide reasonable public access for all. Nor do they support Ramsar objectives. Consequently, these other components of the Alternative Plan were considered, but eliminated from further consideration.

It should be noted that Ramsar supports sustainable tourism, recreational use, and cultural practices within designated international wetlands of importance. Ramsar views sustainable tourism as maintaining a high level of visitor satisfaction, ensuring a meaningful experience, and raising awareness about sustainability issues.

Several elements of the LKOC Alternative Plan do not support project objectives. Instead the plan proposes restricted, limited, and superficial access for the public. The justification for smaller scale improvements is to avoid negative impacts on the Kawainui and Hāmākua wetlands, watershed, waterbird habitat, and archaeological sites. However, the analysis in the DEIS shows proposed improvements would not have an adverse effect on these areas. The proposed project does not provide privately-owned, for-profit commercial operations or activities for visitors. Commercial tour buses are not accommodated by the proposed project.

Although the Alternative Plan supports preservation of historic and cultural resources, it does not provide many suggestions which support reasonable and practicable opportunities for non-profit organizations to establish a permanent presence to conduct cultural practices, educational programs, and participate in stewardship of the area. The Alternative Plan suggests that “modern buildings,” trails, pavilions, and other structure additions are not needed to meet project objectives. However, “modern” buildings are not viewed as being detrimental to the environment. Such buildings would include tool sheds, plant nurseries, restrooms, and parking shelters to support restoration work, public access, educational programs, and cultural practices. The more important consideration of proposed structures relates to their purpose and the type of activities they support. The suggested form of public access in the Alternative Plan also does not support LWCF requirements for public access and outdoor recreational opportunities for all.

The details by areas suggested in the Alternative Plan are addressed below. Several of the suggested details are already proposed by this project.

1. Kawainui-Hāmākua. Wetland restoration and upland reforestation improvements are included in the proposed project. Commercial for-profit activities for visitors are not included as part of project improvements.
2. Kahanaiki. Educational programs, cultural practices, community service learning projects are supported by proposed improvements. However, allowing only a once a year opportunity for the general public to visit this area under staff-led tours does not support reasonable public access, LWCF requirements, and project need and objectives. A parking lot at the south end of the Kahanaiki area is needed to provide reasonable access for the public, and would support educational programs. The proposed bridge crossing over Kahanaiki Stream has been eliminated along the section of pedestrian trail connecting Kahanaiki with Mokulana.
3. Nā Pōhaku (Pōhakea). Suggestions for this site do not support reasonable public access because the kauhale complex would not adequately serve the purpose of the education center for visitors. The Draft EIS discusses the purpose for this education center. Overall, the size and footprint of this education center would not have a significant impact on the environment. However, based upon comments received during the DEIS comment period, DSP may instead implement a facility on a smaller or interim scale that includes parking, restrooms, and a pavilion, as discussed in Section 2.2. The project's proposed parking lot is sufficient to accommodate projected visitor levels, whereas a 15-stall parking lot would not be adequate, and provides only minimal and superficial support for public access.
4. Nā Pōhaku o Hauwahine. The only improvements proposed at this site by the proposed project would connect foot trails from Pōhakea to this site. Existing structures are not planned to be replaced with a new covered pavilion because these structures were built by a non-profit organization for educational and cultural programs conducted under a curatorship agreement. Public access at this site is already allowed, and DOFAW would address wetland access restrictions as part of their ongoing management activities. There are no 10 to 12 foot wide pedestrian trails proposed at Nā Pōhaku, since existing foot trails would continue to be used. There is not enough space at the present trail head entrance to Nā Pōhaku to accommodate a 10 car parking lot. The parking lot proposed at Pōhakea is intended to satisfy this need, and would provide a safer area with vehicles located further away from the roadside. Restrooms proposed at Pōhakea would provide better facilities to serve the public instead of portable toilets.
5. Hawaiian Cultural Center. This site is proposed to allow construction of a cultural center by a non-profit organization to support cultural practices, stewardship opportunities, and educational programs. Based upon prior studies of Kawainui, there are no known hazardous waste issues associated with this site. The non-profit organization developing this site can conduct soil tests, if necessary. Reforestation of this area with native vegetation is included.

6. Vegetation Processing Site. Facilities proposed for this site are needed to adequately support vegetation processing activities and operations.
7. Kapa‘a Stream, Ditches, Culverts. The drainage ditches along Kapa‘a Quarry Road near the City Model Airplane Park are owned by the City. Therefore, any maintenance or vegetation clearing for them would need to be performed by the City. Pedestrian trails or boardwalks from Nā Pōhaku o Hauwahine, toward the Model Airplane Park, and toward Kalāheo have been eliminated from the proposed project. Improvements from the bend in Kapa‘a Quarry Road to Mōkapu Boulevard consist of wetland restoration and upland reforestation improvements that would not contribute to increased long-term traffic along this roadway.
8. Kawainui State Park Reserve (SPR). Improvements shown for the Kawainui SPR, Kalāheo Section (park site) are already permitted and entitled. The hale wa‘a initially proposed has been eliminated from the proposed project. Therefore, the project does not propose any new improvements to this site.
9. Levee. DOFAW is planning to restrict dogs from the levee, and will be taking steps to enforce this prohibition in the near future.
10. Wai‘auia and Center for Hawaiian Studies. Wai‘auia needs wetland restoration and does not provide important habitat for endangered waterbirds. Only a pedestrian trail and observation area are proposed here to provide a connection with the levee. The site for the cultural center is culturally important, which supports locating the center there and management and maintenance of a proposed reinterment site. There are no known historic sites present within this upland area. A suggested alternative of a hale or pavilion located here instead would be inappropriate and does not support cultural practices and other activities. Such a structure provides superficial support for temporary access and does not adequately support the project need. The cultural center would not have significant impacts to view planes of Kawainui. Landscaping would provide further visual buffering.
11. Ulupō Heiau and State Historical Park. The pedestrian and foot trail linking the levee with Ulupō Heiau is no longer included with this project to address public access concerns. The other program-related elements, buffers, and restriction of commercial activity proposed by the Alternative Plan are generally included by the proposed project or are presently occurring (e.g. educational programs). The project does not include using the gated driveway from Kailua Road to the Windward YMCA’s rear parking lot to serve Ulupō Heiau. The final design of the foot trail along the Kūkanono subdivision hillside would be routed to avoid impacting existing historic sites in this area that predominantly consist of terraced walls.
12. DOFAW Management Station. The replacement of DOFAW’s temporary structures with permanent modern buildings and program-related elements supported by the Alternative Plan are already proposed under this project. Educational and research programs, etc. are presently occurring within this area in coordination with DOFAW. Commercial activities are not proposed at the passive outdoor recreational area west of DOFAW’s management station. A restroom facility suggested can be considered

for this area, both on an interim and permanent basis using an individual treatment system.

13. Mokulana Peninsula. Both driveway accesses to this peninsula are planned to be gated and available only for management activities, and educational and cultural programs, etc. coordinated with DOFAW. The other components suggested for this site are already incorporated in project plans. Dogs would not be allowed within these areas. This area would not be open at night. A bridge crossing over Maunawili Streams would not be constructed within the wetland, and is intended to support DOFAW management access within areas.
14. Hāmākua Marsh. Educational programs, cultural programs, and community service learning projects are already permitted and occurring within Hāmākua. The proposed project does not change this condition. Improvements proposed at the gated entrance are needed to support maintenance activities, serve as a staging area, and accommodate programs occurring.
15. Pu'uoehu Hillside. Proposed trails on Pu'uoehu would not be open to the general public because they are intended to support DOFAW management and reforestation activities. However, DOFAW may permit occasional community service learning projects or day events for the public to visit this area, learn of the resource and activities, etc.

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