



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

RECEIVED

00 MAR 29 P3:17

Ref.: PB:THE

MAR 28 2000

OFF. OF ENVIRONMENTAL
QUALITY CONTROL

File: Mgt. Plan for Kawai Nui Marsh

MEMORANDUM

To: Genevieve Salmonson, Director
Office of Environmental Quality Control

From: Dean Y. Uchida, Administrator *[Signature]*
Land Division, Department of Land and Natural Resources

Subject: Final Environmental Assessment (EA)/Finding of No
Significant Impact (FONSI) regarding our Department's
Management Plan for the Kawai Nui Marsh, Kailua, Oahu

The Department of Land and Natural Resources has reviewed the comments received during the public comment period that began on September 23, 1998, and was extended until November 23, 1998 (providing a total of 60 days). We have determined that this project will not have significant environmental effects, and have therefore issued a FONSI. Please publish this notice in the April 8, 2000 OEQC Environmental Notice.

We have enclosed a completed OEQC Bulletin Publication Form, a revised project summary on disk, and four copies of the Final EA for the project. The summary of this project has been amended from that noted for the draft EA, primarily in that the referenced educational center is not being proposed for current implementation.

Please contact Tom Eisen of our Planning Branch at 587-0439 if you have any questions on this matter.

Enclosures

cc: Chairperson's Office
Oahu Board member
ODLO/Engineering Br./DOFAW

2.16 Regional Land Use Plans

Two proposed uses adjacent to Kawai Nui Marsh are currently under consideration. The first is a proposed driving range at the former Kailua Drive-In site at the corner of Kailua Road and Kapaa Quarry Road (see Figure 2-15). The second proposed use is a City and County of Honolulu landfill, identified as the Kapaa Sanitary Landfill Site No. 1. This landfill would encompass approximately 60 acres in the valley south of the existing Kapaa Sanitary Landfill and adjacent and west of Kapaa Quarry Road and the marsh. According to the City and County of Honolulu Department of Public Works, Division of Refuse Collection and Disposal, no decision has been made at this time to use the site for a landfill, but it remains a potential alternative site.

A proposed Kailua Gateway housing development borders the master plan area boundary just mauka of the Pu'u O Ehu wetland. The landowner Kaneohe Ranch has applied to the City and County of Honolulu Planning Department for an amendment to the Ko'olaupoko Development Plan to permit the development of a lifecare retirement community, elderly affordable housing, community center, and the expansion of an existing commercial area in Kailua. The proposed development would include a total of 403 dwelling units, improvement and expansion of the existing commercial area along Kailua Road, and improvements to the wetlands on the makai side of the project, along Hamakua Drive.

A second 18-hole golf course, designated the Royal Hawaiian Country Club Phase II, is planned for the area mauka of the Maunawili Estates subdivision. The property is in the Agricultural District which allows golf course use.

APR 23 2000

FILE COPY

2000-04-23-OA-FEA-

(**MANAGEMENT PLAN FOR KAWAI NUI MARSH**)

Final Environmental Assessment

**Department of Land and Natural Resources
Land Division**

March 2000

MANAGEMENT PLAN FOR KAWAI NUI MARSH

Final Environmental Assessment

**Department of Land and Natural Resources
Land Division**

March 2000

TABLE OF CONTENTS

SUMMARY INFORMATION

EXECUTIVE SUMMARY

<u>SECTIONS</u>	<u>PAGE</u>
Section 1.	Identification of Proposing Agency.....1
Section 2.	Identification of Approving Agency.....1
Section 3.	Identification of Agencies, Citizen Groups, and Individuals Consulted.....1
Section 4.	Description of the Proposed Actions.....1
4.1	Kawai Nui Marsh Maintenance Facility.....1
4.2	Wildlife Habitat Restoration Project.....4
4.3	Kawai Nui Education Center. (PROPOSAL DELETED) ...9
4.4	Other Proposed Actions Recommended in the 1994 Kawai Nui Marsh Master Plan.....9
4.4.1	Management Actions.....10
4.4.2	Vegetation Removal.....11
4.4.3	Water Quality Monitoring Program.....12
4.4.4	Sediment Basins.....12
4.4.5	Predator Control.....13
4.4.6	Powerline Relocation.....13
4.4.7	Fire Management.....14
4.4.8	Kawai Nui Education Center/ Visitor Center.....14
4.4.9	Cultural Park.....15
4.4.10	Ethnobotanical Gardens.....15
4.4.11	Agricultural Areas.....16

4.4.12	Scenic Parks.....	16
4.4.13	Trail System.....	17
4.4.14	Aquatic Fauna Migratory Habitat.....	18
4.4.15	Implementation Schedule.....	18
Section 5.	Summary Description of the Affected Environment.....	18
Section 6.	Identification and Summary of Alternatives Considered, Potential Impacts, and Mitigation Measures.....	19
6.1	Flood Control Maintenance Facility.....	19
6.2	Environmental Restoration Project.....	20
6.2.1	General Environmental Consequences.....	20
6.2.2	Physical Setting.....	21
6.2.3	Biological Resources.....	21
6.2.4	Archaeological and Cultural Resources.....	23
6.2.5	Water Quality.....	24
6.2.6	Hydrologic and Hydraulic Conditions.....	25
6.2.7	Drainage and Flooding.....	26
6.2.8	Wetlands.....	26
6.2.9	Land Use.....	27
6.2.10	Aesthetics.....	27
6.2.11	Hazardous, Toxic, and Radioactive Wastes (HTRW).....	27
6.2.12	Solid Wastes.....	28
6.2.13	Socio-Economic.....	28
6.2.14	Recreational Opportunities.....	28
6.3	Kawai Nui Education Center. (PROPOSAL DELETED) .	28

6.4	Other Components of the Master Plan.....	28
Section 7.	Proposed Mitigation Measures.....	29
Section 8.	Anticipated Determination.....	30
Section 9.	Findings and Reasons Supporting the Anticipated Determination.....	30
Section 10.	Agencies to be Consulted in the Preparation of an Environmental Impact Statement.....	33
Section 11.	List of All Permits and Approvals Required.....	33
Section 12.	Comments and Responses re: Early Consultation	.33
Section 13.	Comments and Responses re: Draft EA	34

REFERENCES

EXHIBITS 1 - 12

APPENDIX Site Analysis from the 1994 Kawai Nui Marsh Master Plan

SUMMARY INFORMATION

Chapter 343, Hawaii Revised Statutes (HRS)
Final Environmental Assessment

Applicant: Land Division, Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Contact Persons: Tom Eisen and Lauren Tanaka
Planning Branch, Land Division
(808) 587-0386; (808) 587-0385

Approving Agency: Land Division, Department of Land and Natural Resources

Proposed Actions: 1) Kawai Nui Marsh Maintenance Facility;
2) Wildlife Habitat Restoration Project;
~~DELETED 3) Kawai Nui Education Center; and~~
4) Other Recommendations as Discussed in the 1994 Kawai Nui Marsh Master Plan

Description of Projects: 1) Construction of a maintenance facility and associated improvements to support field personnel in operations and maintenance of flood control facilities;
2) Restoration of ponds and mudflats, installation of fencing, and implementation of a trapping program to restore waterbird habitat in the marsh;
~~DELETED 3) Development of the Kawai Nui Education Center proposed by The Hawaii Audubon Society, in conjunction with Ahahui Malama i ka Lokahi, Conservation Council for Hawaii and Kawai Nui Heritage Foundation; and~~
4) Other proposed actions described in the 1994 Kawai Nui Marsh Master Plan.

Project Location: Kawai Nui Marsh, Kailua, Koolaulupo, Oahu

EXECUTIVE SUMMARY

Act 314, 1990 Session Laws of Hawaii, Hawaii State Legislature, authorized the Department of Land and Natural Resources to manage, operate, and maintain the economic, ecological, historic and cultural resources of Kawai Nui Marsh as provided in the 1983 Kawai Nui Marsh Resource Management Plan.

The 1983 Resource Management Plan specified objectives, policies and a comprehensive list of recommended actions to characterize and manage the primary use of the Marsh as a flood control facility, and its secondary use as a natural heritage area to be acquired, zoned, and utilized for its intrinsic recreational, cultural/archaeological, religious, educational, open space, wildlife and economic values.

In July, 1994, the Kawai Nui Marsh Master Plan was formulated by the Kawai Nui Marsh Advisory Committee and staff from the Divisions of Forestry and Wildlife, former Water and Land Development, and State Parks. The master plan supplemented the conceptual framework outlined in the resource management plan with site-specific recommendations for implementation of proposed actions to preserve, protect, and enhance the ecological and historic/cultural resources of the marsh.

By mid-2000, the Department of Land and Natural Resources expects to assume responsibility for the operations and maintenance of all of Kawai Nui Marsh when the right, title, and fee simple interest in the lands, identified by TMK: 4-2-16: 01, are transferred from the City and County of Honolulu to the State of Hawaii (Exhibit 1).

This responsibility is appropriate as nearly all the resource values and management actions described in the master plan are related to issues, programs, and projects various divisions of the Department of Land and Natural Resources must address regarding resource and environmental management. These actions include flood control, public lands management, management of wildlife preserves, protection of endangered species, preservation of historic and cultural properties, development and management of State parks and recreational facilities, and the protection and development of water resources.

Kawai Nui Marsh is primarily a flood control basin and this use is the Department's first priority for the effective management and operations of the flood control facilities. The designated lead agency within the Department of Land and Natural Resources for flood control management is the Land Division.

The Land Division will also coordinate and initiate the implementation of the recommendations in the 1994 Master Plan consistent with the objectives and policies in the 1983 management plan for the protection and enhancement of the marsh resources.

It should be noted that the planning process for the master plan recommendations is an ongoing effort subject to revisions in response to changing conditions, new information, and the availability of funds.

A major function of the Master Plan is to ensure the continued preservation of the Marsh's resource values, while pursuing its enhancement for public use and appreciation. With one division assuming the responsibility for coordinating the implementation of projects, continuity will be assured from the planning phase through the development phase. A multi-divisional approach is required to manage the economic, ecological, historic and cultural resources of the Marsh.

To this end, the Department of Land and Natural Resources seeks to achieve the following objectives:

1. to provide a comprehensive and coordinated management plan for existing and future land and water uses;
2. to protect, maintain, and enhance wildlife species, their habitats, and related ecological systems; and
3. to protect, preserve, and enhance cultural, educational, and recreational values at Kawai Nui Marsh.

(Source: Department of Planning and Economic Development, March 1983, Resource Management Plan for Kawainui Marsh.)

The purpose of this document is to describe the Department's management actions and projects regarding:

1. Our statutory responsibilities for the management, operations, and maintenance of the marsh's flood control facilities;
2. The required project applications for a Conservation District Use Permit and a Special Management Area Permit;
3. Compliance with Chapter 343, Hawaii Revised Statutes; including disclosure, discussion, and mitigation of environmental impacts stemming from the implementation of the Master Plan's recommendations; and
4. The ongoing planning process required to initiate the Department's actions to carry out the objectives and policies of the 1983 Resource Management Plan and to implement the 1994 Master Plan recommendations while providing for the preservation, protection, and enhancement of the natural and cultural resources of the Marsh.

Section 1. IDENTIFICATION OF PROPOSING AGENCY

The Department of Land and Natural Resources is the proposing agency for the actions described in this document.

Section 2. IDENTIFICATION OF APPROVING AGENCY

The Department of Land and Natural Resources is the approving agency for the actions described in this document.

Section 3. IDENTIFICATION OF AGENCIES, CITIZEN GROUPS, AND INDIVIDUALS CONSULTED

Federal, State and County Agencies

The U.S. Army Corps of Engineers, Pacific Ocean Division; the State of Hawaii Department of Land and Natural Resources, Division of Aquatic Resources, Division of Forestry and Wildlife, Historic Preservation Division, Land Division, and Division of State Parks; the State Office of Environmental Quality Control; and the City and County of Honolulu, Department of Planning and Permitting (formerly the Department of Land Utilization).

Citizen Groups

The Hawaii Audubon Society, Ahahui Malama i ka Lokahi, Conservation Council for Hawaii and the Kawai Nui Heritage Foundation.

Individuals

Mr. Martin Knott, Mr. Mike Gibson, and Mr. Roy Teves.

Section 4. DESCRIPTION OF THE PROPOSED ACTIONS

4.1 Kawai Nui Marsh Maintenance Facility

The primary use of Kawai Nui Marsh is flood control and the Department is committed to the effective operation and maintenance of the Marsh as a flood control facility. Priority will be given to long-term maintenance activities to assure the protection and enhancement of the Marsh's flood control aspects that will include regular maintenance of its flood control structures and monitoring of its flood storage capacities, vegetation removal, and water quality monitoring.

To augment the operations and maintenance of the existing flood control facilities, the construction of a maintenance facility to support a base of operations is proposed. The facility will

provide office space including conference, restroom and employee areas, and secure storage areas for chemicals, equipment, and construction materials. Also proposed is a parking area for trucks and other heavy equipment vehicles used to maintain the marsh.

The maintenance facility will be located to the south of the City and County of Honolulu's Model Airplane Field and makai of the Kapaa Transfer Station. The facility will be built on an existing knoll of filled land with ground elevations varying from 16' to 20' above mean sea level, and cover an approximate area of 23,250 square feet (sf) or .054 acres, not including the access road. A 30' wide x 110' long asphaltic concrete roadway will provide access to the marsh maintenance facility from the existing Kapaa Quarry Road (Exhibits 2, 3, & 4).

Formerly a sanitary landfill, the site has been used as a staging area for the channel clearing and vegetation maintenance activities performed by the City and County of Honolulu. A launching ramp leading into the dredged channel will enable a barge or maintenance equipment such, as an "Aquamoq", to access the central open water areas of the marsh. The site also has an area for drying the vegetation prior to its disposal and may be used as a green waste processing site. For these reasons, the site is ideally suited for the purpose of efficiently controlling the marsh vegetation.

The proposed baseyard will consist of the following improvements:

1. A 6' perimeter chain link fence with barbed wire, approximately 630 linear feet (lf) with a 32' chain link double drive gate at the entrance.
2. An asphaltic concrete parking lot and internal access road totalling approximately 6,200 sf, which will be able to accommodate eight (8) cars and/or trucks. One of the 8 parking stalls will be accessible by vans with an adjacent walkway in accordance with the guidelines established by the Americans with Disabilities Act.
3. A 2,000 sf office building constructed out of concrete, masonry, and wood. The proposed office building will include office space, a conference area, toilet and shower facilities, locker room and secured storage area.
4. A 2,500 sf prefabricated metal storage building consisting of sheet metal roofing and sides which cover a structural steel frame anchored to a concrete slab on grade. The proposed metal building will store maintenance equipment and/or construction material. Both

the office building and metal storage building will be designed and constructed in accordance with the Uniform Building Code including amendments and updates by the City and County of Honolulu Building Department.

5. Seven 8' by 20' metal storage containers will be placed on the proposed project site for the purpose of storing chemicals, equipment, and construction materials.

Two of the seven metal storage containers will be located adjacent to the metal storage building and covered by a roof. The roofing system will be comprised of pre-engineered wood trusses, wood blocking and plywood sheathing covered by a asphalt shingle type or metal roofing system.

6. The entire maintenance facility within the perimeter fencing, excluding the office and metal storage buildings will be covered with an eight-inch thick layer of untreated basecourse (gravel).
7. The waste disposal system will consist of a 1,000 gallon septic tank, distribution box and soil absorption bed. The waste disposal system will be designed and constructed in accordance with Chapter 62 of the Department of Health's Administrative Rules.
8. The water system will consist of a 1-1/2" copper water lateral, a concrete meter box with a steel cover, a reduced pressure principle backflow preventer. Located within the easement for utility purposes and adjacent to the baseyard's entrance will be a fire hydrant. The water system will be designed and constructed in accordance with the Uniform Plumbing Code, including amendments and updates by the City and County of Honolulu Building Department and/or Water System Standards and Standard Details.
9. Electrical improvements will consist of the installation of one or more utility poles within the utility easement and/or baseyard site or by underground conduit to provide electrical service to the office and metal storage building and perimeter security lighting on light poles. The electrical improvements will be designed and constructed in accordance with the National Electrical Code and/or Hawaiian Electric Company's requirements.
10. Telephone service will be provided to the office and metal storage buildings.

Due to funding constraints, the baseyard will be constructed in phases. The first phase will consist of improvement nos. 1, 2, 8, 9, and 10. The other improvements described above will be completed in future phases when funding becomes available.

Special funds in the amount of \$297,500 have been approved by the Governor for expenditure to plan, design and construct the baseyard maintenance facility.

The construction of the baseyard facilities was not originally included in the 1994 Master Plan. That plan proposed use of this site only as a boat staging area and for drying dredged vegetative material before disposal. The development of this facility is needed to provide a base of operations for the equipment and manpower that will be involved in the management and maintenance of the marsh. The baseyard facilities will provide the needed security and protection from the elements for the sizeable investment of equipment that will be used to maintain the flood control structures and functions of the marsh, and the other maintenance and management needs of the marsh.

4.2 Wildlife Habitat Restoration Project

The Division of Forestry and Wildlife (DOFAW), in conjunction with the Corps of Engineers, Pacific Ocean Division (Corps) proposes to restore waterbird habitat to the Kawai Nui Marsh Flood Control Project.

The project will involve the creation of 70.7 acres of mudflats and shallow ponds, restoration of riparian wetland habitat along 2,800 lineal feet of Maunawili and Kahanaiki Streams, clearing vegetation from 17 acres, predator trapping, and installation of 16,200 lineal feet of fencing (Exhibits 5 and 6).

The waterbird habitat will be located at the south side of the marsh where the shallow mudflats and controlled ponds would primarily benefit the endangered Hawaiian stilt, Hawaiian moorhen, and migratory shorebirds and also provide habitat for the Hawaiian coot and the koloa.

Nesting areas would be located in the mudflat/shallow pond system. Water level controls should prevent flooding of nesting islands during the breeding periods, restrict access by predators, and allow access for maintenance.

Improvements for riparian habitat will begin at Kailua Road and extend 2,100 feet downstream on Maunawili Stream and approximately 700 feet downstream on Kahanaiki Stream.

Approximately 16,200 lineal feet of fencing to reduce access to the marsh by predators will be installed from the levee to Kailua Road, to Kapaa Quarry Road and end at the vegetation processing area.

Implementation of the project will be contingent on approval of the project by ACOE Headquarters' and receipt of federal funding. ACOE Headquarters' has asked for further justification for construction of Pond System A because of its higher per-acre unit-costs. As a result of this review, Pond System A has been dropped from the Army Corps final project. This Pond System is being retained in the DLNR Final EA because it may still be implemented in the future (as a State add-on to the project) if funding from other sources becomes available.

The final ACOE Project may also incorporate changes in the engineering specifications of the ponds and water delivery system. Engineering changes that will be considered include: building fewer internal divisions in the ponds (i.e. larger basins), and water delivery systems using stream diversions where applicable and pumping ground water only where necessary (to minimize long-term maintenance costs). The specifics and details will be worked out during the ACOE Plans and Specification stage of the project. An Operations and Maintenance Agreement for the project will also be developed by the ACOE and the Local Sponsor-DLNR during this phase. The Department's intent is to develop a project that will require the least amount of operations and maintenance costs, while providing the desired services.

Certain facilities, located at the Knotts Ranch headquarters, will be used for operations and maintenance of the project. These existing facilities include the caretaker's residence and grounds, division office, animal pens, corrals, workshops, storage areas, and fencing. Facilities presently used by the Knotts for existing ranching activities may be relocated to other areas around the marsh.

Facility use over the long term will include minor expansion or reconstruction of existing facilities and the addition of covered work areas, plant nursery facilities, animal care facilities and visitor amenities such as signage, viewing blinds, trails, and boardwalks.

Department staff, other federal and state agency operators, partner agencies and organizations, project cooperators, ranchers, private contractors, and volunteers from the public will enter and use the

project area to assist in operating and maintaining the wildlife habitat restoration project. These same individuals will also conduct routine maintenance on buildings, structures, ponds, water control structures, dams, dikes, roads, trails, fences, signs, and other man made structures or equipment necessary to operate the project.

The Department of Land and Natural Resources, Division of Forestry and Wildlife will be the lead agency responsible for the long-term management of the wildlife habitat restoration project once constructed. Ducks Unlimited (DU) and the U.S. Fish and Wildlife Service have committed to provide technical assistance for future operations and maintenance. DU has expressed interest in developing a cooperative wetland management crew partially funded by DLNR and DU to provide manpower to manage wetlands on Oahu, including Kawai Nui. Diamond K Ranch has committed to working cooperatively with DLNR to manage cattle for weed control around ponds. Kawai Nui Heritage Foundation, Hawaii Audubon Society, Ahau Malama I Ka Lokahi and Conservation Council for Hawaii have expressed an interest in providing volunteers for wetland management projects such as weed control, outplanting of native plants, bird surveys, educational tours, a docent program, experimental taro production, and guided nature walks. DLNR will seek other cooperators and volunteers to participate in the future as needed and available.

Major components of the restoration project will involve vegetation control and maintenance; predator control; vegetation disposal; open water vegetation management; taro cultivation and native plant restoration; and pond management.

Vegetation in the pond areas will be managed to provide appropriate habitat for waterbirds. Weedy trees, shrubs and grasses in areas outside the ponds will be controlled to provide habitat for wildlife and scenic enhancement in the marsh area (Exhibit 7).

The methods that will be used to control vegetation are grazing, mowing, and spraying. The existing small cattle and horse operations will be maintained under revocable permit for the purpose of managing and controlling weeds and vegetation. Livestock will be controlled by fencing and proper management to ensure that the ponds, structures, or natural resources will not be damaged or degraded. The perimeter of the ponds will be fenced with cattle or electric fencing to exclude livestock. Cattle grazing areas will be located on the mauka side of the pond areas, and may require development of additional livestock holding pens.

The Department's plan is to continue indefinitely a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for, controlling vegetation in areas outside of the planned habitat restoration project. This use is anticipated to be long-term, but its tenure is contingent on that operation providing the expected benefits without serious negative impacts to the other resource values being managed. Livestock will be controlled by fencing and proper management to protect and exclude them from ponds, water delivery structures, facilities, public use areas and other important resources, such as archaeological sites. This limited cattle grazing operation will provide benefits of 1) controlling grass and weeds in upland areas and areas outside ponds and developed facilities, 2) providing short grass feeding areas for waterbirds in areas near to ponds, and 3) providing additional security in the area and assistance with management activities.

A livestock management plan will be developed and periodically updated in cooperation with the Natural Resources Conservation Service and Diamond K Ranch to address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. Management practices developed under the plan will be implemented and followed to reduce potential negative impacts of cattle grazing and keep them in balance with the positive benefits of vegetation control, production of short-grass bird-habitat, and management assistance that a cattle grazing operation contributes to the project.

Level areas within the habitat restoration project will be maintained by mowing with a flail-tractor to be purchased with federal funds. Cut vegetation will be fed to livestock or trucked to the green wastes processing site next to the marsh maintenance facility.

Herbicides will be used to control weeds, grasses and other undesirable plants in the areas where cattle and mowers cannot be used or are ineffective. Registered herbicides approved for wetlands will be used.

To prevent losses of adults, chicks and eggs of waterbirds, live traps will be used inside the perimeter fence to control feral cats and dogs. Both snap traps and toxicants will be used to control mongoose, rats and mice. Only registered toxicants approved for use in wetlands and forested areas will be used.

The initial construction phase predator removal program will be contracted out to USDA-ADC and operational procedures are described in the attached letter. Control of rats, mice and mongoose will begin before initiation of pond construction. Removal of feral

dogs and cats will begin after fence construction. After the initial construction phase, predator control will continue on a maintenance level with an increase in effort prior to the breeding season. Live traps will be checked every 48 hours and records will be kept on the number of animals removed.

Vegetation removed from the marsh, rivers, and pond areas will be trucked to the green waste processing site located next to the marsh maintenance facility. The vegetation will be chipped, if necessary, dried to reduce water content and mixed with soil or other green wastes to produce a recyclable product. The recycled green biomass will be sold or given away, or trucked to other state or county job sites for use as needed, to remove it from the site. The operation of the green waste processing site will be done by personnel from the Department, or by a private company for profit through a lease with the State.

Weedy vegetation and portions of the floating mat will be cleared by the use of an aquamog in the open water areas in the central portion of the marsh and along access waterways. The vegetation removed will be boated to the boat ramp and green waste processing site to be dried and processed for recycling (Exhibit 7).

Taro and other native wetland plants will be outplanted in ponds to re-establish a native wetland community as techniques and plant stock becomes available. Volunteers will be recruited to assist in removing existing non-native plants and weeds, replacing the areas with taro and other native species, and maintaining plantings once they are established. Replacement plantings will begin on a trial basis in the upper ponds of the habitat restoration area, and if successful in providing appropriate waterbird habitat, will be expanded to additional areas.

After construction of the wildlife restoration project, taro will be planted on an experimental basis in increments up to 1 acre in size and evaluated for its wildlife habitat contribution. If it does not provide adequate habitat, its use would be discontinued in restoration project areas. Dependent on availability of manpower, taro plantings will be tried on an experimental basis in pond area B. Hand tools and community volunteers including members of Ahaui Malama I Ka Lokahi will provide the labor to prepare beds, plant and maintain the taro. Taro and taro cultivation methods are considered a compatible wetland land use for endangered birds. It provides weed control, open shady water and food sources for stilt, gallinule and coot. Potential impacts would be from human presence in pond areas as they cultivate the loi. Endangered birds on Kauai do eat taro, but those impacts may be mitigated with alternative food sources. Volunteers at Kawai Nui will be instructed that

production of habitat for the endangered birds is the priority action for this project and to mitigate and avoid activities that would be detrimental to the birds.

Water levels in the ponds will be managed to provide for a combination of nesting, loafing, and feeding areas for the endangered and migratory waterbirds. Weedy vegetation and excessive grass growth will be managed by periodically draining individual ponds, usually during the dry season, and mowing or spraying to control unwanted vegetation and pest animals such as introduced tilapia fish. Other maintenance activities such as maintaining or repairing banks and water control structures will also be performed during the dry season or as needed.

4.3 Kawai Nui Education Center

The coalition of non-profit organizations proposing this project at the Diamond K Ranch site decided to withdraw this element, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. Upon re-submittal, this proposal will require a separate environmental assessment; any comments and concern with the proposal can be addressed at that time.

4.4 Other Proposed Actions Recommended in the 1994 Kawai Nui Marsh Master Plan

As discussed earlier, one of the purposes of this document is to present those proposed actions recommended in the 1994 Master Plan that the Department of Land and Natural Resources may implement in the future.

Priorities and funds are for the development of the maintenance facility first, followed by the wildlife habitat restoration project. To understand the long-range management goals and objectives that the Department envisions for Kawai Nui Marsh in the years to come, a general discussion of other improvements that may take place has been included.

The improvements consist of developments within the marsh that will help the public to learn about, appreciate, and enjoy the marsh, while ensuring preservation of the marsh through increased public awareness of its resource values.

Master plan improvements take the form of additional management actions and measures for the effective operation and maintenance of the flood control facilities, visitor center, cultural parks, ethnobotanical gardens, agricultural areas, passive parks with

scenic views that overlook the marsh, and a trail system. Each component is discussed in terms of its objectives.

4.4.1 Management Actions

Management actions are long-term maintenance activities needed to ensure the continued protection of the marsh's preservation values. Management actions include maintenance of flood control structures and capacities, vegetation and predator removal, water quality monitoring, sediment basin construction, if warranted, powerline relocation, and fire management.

The raising of the levee by the Army Corps of Engineers was completed in 1997. The improvements, consisting of a 4-foot concrete floodwall on top of a raised levee, are designed to provide increased flood storage capacities for the 100-year storm event.

To ensure the integrity of the flood control improvements relative to the proposed master plan, a modeling study prepared by RCE, Inc. For the 1994 Kawai Nui Marsh Master Plan was undertaken to simulate several in-marsh alternatives of the master plan. (Refer to Appendix F of the 1994 Master Plan for a complete discussion of the Two-Dimensional Numerical Modeling of Kawai Nui Marsh). The following is a general summary of the analysis.

Baseline conditions included the levee raise improvements and were modified to include the open water channel cleared by the City and County of Honolulu in the west central area of the marsh. The several alternatives analyzed included:

- Ultimate master plan acreages of open water and waterbird habitat enhancement areas, with both the City channel and the existing emergency ditch (alongside the levee) in place.
- Same project conditions as above, but removing the emergency ditch.
- Same project conditions as above, but removing both the emergency ditch and the City channel.

With the additional open water and enhanced habitat areas, modeling results indicate that the flood attenuation effects of the marsh are preserved. For all project condition alternatives, peak storm water outflows to the Oneawa Canal are less than the baseline conditions. The net effect of creating additional open waters and edges is to slightly increase the effective storage capacity of the marsh.

Under the second project condition, removal of the emergency ditch alongside the levee would reduce peak outflows by about 20 percent from baseline conditions. This would suggest that the ditch plays a significant role in facilitating storm discharges from the marsh. Peak outflows under the third project condition was about the same as the second, indicating that removal of the City channel has little additional effect on the storage effects of the marsh.

The Corps of Engineers flood control improvements do not rely on the continued maintenance of the emergency ditch or the City channel. Preliminary indications from the modeling analysis, however, are that the emergency ditch in particular would be beneficial in facilitating storm discharges and lessening water surface elevations along the levee during severe storm events.

The master plan recommendation is that the State should continue to maintain the emergency ditch along the levee. The City channel should also be maintained if possible since it assists in more effectively distributing the storm water flows through the marsh. The channel also provides a waterway access for maintaining the open water ponds in the middle of the marsh.

4.4.2 Vegetation Removal

Vegetation maintenance is essential in maintaining the flood storage capacity of the marsh basin. In April 1992, the City and County of Honolulu completed an open waterway project in the northwestern interior of Kawai Nui Marsh to increase the capability of the marsh to distribute and store stormwater runoff. If the open waterway is to be maintained, vegetation maintenance will continue to be required periodically due to the rapid intrusion of plant growth.

Vegetation maintenance is also necessary to preserve and enhance wildlife values in the marsh. Primarily, this means retaining open water areas and sloped mud flats from being overrun by California grass and water hyacinth. The marsh is also being overrun by undesirable exotic species, such as Australian paperbark and Egyptian papyrus, which if left alone, will hasten the marsh's transition to a swamp. As the long-term objective is to keep an open wetland and marsh, it is imperative that any woody or wood-forming plants that sprout from base be removed immediately to prevent the marsh from transitioning to a swamp and woodland.

The 1983 Resource Management Plan states that desirable terrestrial vegetation should be promoted in recreation and park areas, agricultural lands, buffer zones, and ethnobotanical gardens. Encroachment of undesirable species into these areas will need to

be controlled. Species diversity could be promoted by introducing native and Polynesian plants to the marsh, which has been overrun by California grass and other exotics.

4.4.3 Water Quality Monitoring

The purpose of the water quality monitoring program is to provide quantitative data concerning the flood control aspects of the marsh, as well as data describing sediment transport and water quality. A water quality monitoring program was developed by Resource Consultants & Engineers, Inc. (RCE), for the 1994 Master Plan. The main components of the recommended monitoring program consist of:

- Stage measurements within the interior of the marsh
- Water level recorders in the marsh to define inflow from streams
- Grab samples for analysis of water quality
- Sediment samples

Three water level recording gages are currently situated on the southeast end of the levee, at the launching ramp near the proposed maintenance facility and in the central marsh open water. In addition, it is recommended that water level recorders be installed on Maunawili Stream and in Oneawa Canal. These recorders combined would provide a complete picture of water flow and surface elevations in the marsh.

Characterization of water quality entering and leaving the marsh can be accomplished by the collection of grab samples for on-site measurements and laboratory analyses. Periodic grab samples are commonly taken during and after heavy rainfall for best results. Sampling is recommended to be conducted quarterly as well as once or twice annually during peak storm events.

The sampling program should be coordinated with the Corps of Engineers monitoring program (required in conjunction with the construction of flood control improvements), supplementing the specific locations and parameters of water quality assessment as needed.

Sediment sampling in Maunawili, Kahanaiki, and Kapaa Streams, as well as Oneawa Canal, is recommended to define sediment discharge rates at each inflow point to the marsh. The timing of the sediment sampling should coincide with periods of heavy rainfall.

4.4.4 Sediment Basins

The provision of sediment basins would reduce the inflow of sediment into the marsh and improve the quality of water of streams entering the marsh. One or more sediment basins or ponds could be established on the Maunawili side of the marsh to trap and detain sediment-laden runoff and debris.

The accumulation of sediment reduces the flood storage capacity of the marsh, contributes to water quality degradation, and hastens the transition of the marsh towards a meadowland.

The Kapaa Stream also discharges substantial sediment to the northwest corner of the marsh (estimated 1,666 tons per year). In view of the surrounding landfill, quarry, and industrial operations, this drainage basin could pose long-term problems for the marsh.

A single sediment basin is recommended in the 1994 master plan along Maunawili Stream. However, cost-benefit analysis for this basin may not prove favorable based on the sediment detention estimates prepared by RCE.

The proposed basin encompasses 3 acres of land with a detention capacity of 15 acre-feet. The basin could be expected to retain only about 5 percent of the total load being transported to the marsh, at an estimated cost of between \$1.0 and \$1.75 million. The implementation of land use practices that minimize erosion (best management practices) would be more cost effective in the short term and should be pursued.

As many as three sediment basins at Maunawili Stream and one basin at Kahanaiki Stream were proposed under other alternatives. However, based on the above discussion of cost-benefit and relationship to the retention of a significant percentage of sediment, this alternative was not recommended.

4.4.5 Predator Control

Predator control is an on-going activity to be performed in conjunction with the wildlife habitat restoration project. The objectives of predator control are to protect existing and newly created waterbird habitat from mongoose, rodents, and feral animals. Some degree of predator control can be accomplished through establishment of buffer zones which could consist of open water moats. Otherwise, trapping methods and other means will be necessary to ensure the success of habitat creation and nesting pairs.

4.4.6 Powerline Relocation

An alignment of existing 46-kV transmission lines strung along utility poles crosses the southwestern portion of the marsh, north of Knotts Ranch. Due to its visual impact and potential conflict with waterbird habitat enhancement, it is recommended that a study be conducted to determine if the poles can be relocated out of the wetland. Relocation of the poles is possible if HECO obtains easement rights along Kailua Road.

4.4.7 Fire Management

Fire has been a factor in the evolution of marsh vegetation at Kawai Nui, as certain vegetation types such as sawgrass and paperbark trees and seedlings have spread in the aftermath of fires. On August 3, 1975, a fire reportedly started by spontaneous combustion burned approximately 700 acres of the marsh. In this fire, approximately 69 percent of the entire wetland burned, of which 24 percent was a complete and clear burn with no vegetation left standing. (City FEIS, June 1990).

Relative to public safety, with the exception of the south and southeast sides of the marsh, most of the marsh is surrounded by roads or by the flood levee and adjacent emergency ditch, which provide fire break protection. The levee is especially important for protection of the adjacent Coconut Grove subdivision. The areas next to the south side of the marsh are comprised mostly of residential and public facilities and are vulnerable to fire. However, these areas are not located in the direction of normal tradewinds, and are thus less susceptible to fires.

A fire management plan for the area will need to be prepared for the marsh in accordance with appropriate rules and regulations governing fire management administered through the Division of Forestry and Wildlife.

4.4.8 Kawai Nui Education Center/Visitor Center

The 1983 Resource Management Plan specifically recommended development of interpretive educational programs and centers that demonstrate the interrelationship of early Hawaiian cultural, agricultural, recreational and social systems.

It is envisioned that this objective will be fulfilled by programs carried out both in the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and in one or more constructed facilities adjacent to the Marsh, and that the programs and facilities will be developed by various partnerships involving community and government.

4.4.9 Cultural Park

The cultural park is envisioned as a center of activity for the collection and expression of the Hawaiian cultural traditions of Kawai Nui Marsh and the Ahupua'a of Kailua. Within the context of Kawai Nui Marsh and the surrounding geography, the area is rich in pre-contact Hawaiian legends, especially with respect to Ulupo Heiau and Pahukini Heiau.

Culturally and historically, the heiaus both functioned as part of the larger area of Kawai Nui Marsh. As part of the settlement of Hawaiians who lived along the edges of Kawai Nui Marsh in the late prehistoric period, these two heiau were constructed. Although there is an uncertainty as to how the Ulupo and Pahukini Heiau functioned in the early socio-political context of Kawai Nui Marsh, their respective size indicates they were important centers for the ceremonial and ritual practices and traditions of the Kailua area.

Based on these interpretive themes, the objectives of the cultural park are to: 1) increase public awareness about Ulupo and Pahukini Heiau, and the historical/cultural significance of Kawai Nui Marsh as the "piko" of the Ahupua'a of Kailua; 2) foster a sense of respect and reverence for Hawaiian cultural traditions within the marsh; and 3) integrate the culture, history, and legends of Mount Olomana, Maunawili Valley, Kapaa Valley, Pu'u O Ehu, and surrounding areas into Kawai Nui Marsh interpretive themes.

The cultural park would augment any interpretive programs which may be conducted at the Kawai Nui Education Center. Creation of a cultural park is recommended in the 1983 Resource Management Plan to develop secluded areas where ceremonial practices and performances can be conducted.

4.4.10 Ethnobotanical Gardens

The ecological environment of Kawai Nui Marsh provides a unique opportunity to create an ethnobotanical garden which could include a mix of native and Polynesian introduced plants of the wetland and dryland food and medicinal varieties from the pre-contact period. This would be consistent with the interpretive theme of the marsh wherein the early Hawaiians developed a wetland agricultural system around the fringes of the marsh.

During the late pre-historic period, Kawai Nui Marsh was used as both a fishpond and an agricultural area for the cultivation of taro. Dryland crops were grown around the marsh, including sweet potatoes, gourds, wauke, bananas, and sugar cane. Trees in the area included coconut, hala and kukui.

The primary objective of the ethnobotanical garden would be to establish a garden of native and Polynesian introduced wetland, food and medicinal plants for display and educational purposes. As a policy stated in the 1983 Resource Management Plan, to promote and accommodate desirable terrestrial vegetation in recreation/park areas, agricultural lands, interpretive centers, educational displays and scenic/aesthetic resources, is clearly recommended.

4.4.11 Agricultural Areas

Kawai Nui Marsh was once a major Hawaiian fishpond and agricultural site for growing taro and later rice. Archaeological surveys and ethnographic descriptions suggest that the wetland taro lo'i were concentrated in the marsh along Kahanaiki and Maunawili Streams, as well as north of Ka'elepulu Pond and in the northwest portion of the marsh where Kapaa Stream is located.

The 1983 Resource Management Plan recommended that wetland agricultural uses of the marsh should be encouraged where it would serve to promote historic restoration or improve the waterbird habitat. The restoration of early Hawaiian taro patches in the areas near Ulupo Heiau and between Maunawili and Kahanaiki Streams were specifically recommended.

Currently, there is renewed interest in taro production due to a number of factors including: a resurgence in interest in Hawaiian culture, a growing Mainland market composed of new Asian and Pacific Island immigrants, a growing snack food market, and a new recognition of the value of taro by the medical community. The cultivation of taro in Kawai Nui Marsh would have the benefit of restoring this culturally significant use of the marsh while providing for a commercially viable agricultural product.

4.4.12 Scenic parks

The planning objectives of park space within Kawai Nui Marsh are to provide outdoor green space for relaxation and aesthetic enjoyment, and to provide the opportunity to explore and learn about the wetland environment. The recreational purpose differs from active-use City parks, with an emphasis instead on passive activities such as picnicking and walking.

An identified recreational policy in the 1983 State Resource Management Plan, the establishment of passive recreational opportunities, including picnicking will bring people to the edge of a natural setting and provide opportunities to explore. The

parks are envisioned to become integrated with wildlife study and viewing areas for interpretive purposes.

4.4.13 Trail System

The primary planning objective for trails is to provide access along the marsh fringe and to interpret resources for educational purposes. Recommended actions encourage the creation or establishment of safe hiking paths and jogging trails in perimeter areas of the marsh; the establishment or creation of access routes, trails, and facilities for nature studies; and the establishment of trails and overlook systems to connect principal cultural features such as heiau, and interpretive centers with wildlife overlooks. The trails could link park space, an education/visitor center, the ethnobotanical garden, cultural sites, and other master plan components in a contiguous manner.

In addition to being a recreational asset, the trails would be of educational value by allowing access to natural areas for group hikes. It is envisioned that the trails would serve school groups of all ages, providing them access to the marsh fringe. However, the trails should also be capable of serving the unaccompanied public via signage and interpretive displays.

Ideally, trails should eventually link the following features within the marsh periphery. Priority features are marked with an asterisk: education/visitor center*; Ulupo Heiau*; Kukanono historic sites*; Na Pohaku O Hauwahine*; Oneawa Canal footbridge*; flood control levee*; Kalaheo parcel; ethnobotanical garden; ITT site; and Mokulana peninsula.

Primary trail linkage is necessary between the place of orientation (education/visitor center) and the natural areas and overlooks within the marsh. Ulupo Heiau is envisioned as one segment for trail activity on the southeastern slope of the marsh, especially since it contains a majority of the cultural features. Na Pohaku O Hauwahine is envisioned as the focus on the western slope since it offers the best overlook of the marsh open waters.

In the long-term, trail connection should be provided from the perimeter trail at Kawai Nui Marsh to the Mount Olomana trail to link the Kawai Nui and Maunawili Valley trail systems. This would require either a lease agreement, cooperative agreement, or easement grant between the Department and respective private landowners.

The trail system in the master plan is a perimeter trail. This was supported by community participants despite concerns about safety

and security, and the cost of footbridges or boardwalks across the wetland. However, the primary segments continue to be from Ulupo Heiau to Kukanono slope, along the Kapaa Quarry Road slope, and along the flood control levee. Construction of the remaining trail segments to complete the perimeter trail is envisioned as a long-term project.

4.4.14 Aquatic Fauna Migratory Habitat

With expansion of the open water areas for waterbird habitat enhancement, there is also the potential to encourage the natural recovery and passage of native migratory species. Native diadromous species such as the endemic goby *o'opu nakea* and native shrimp *opae kalaole* require early development in the ocean and later migrate into fresh waters to complete their lifecycles. Native aquatic fauna are found in Oneawa Canal but in 1994, a spot survey found only small numbers of gobies and native shrimp in the upstream Maunawili areas. Indications are that restoration of a migratory route through the marsh would lead to a significant increase in numbers.

A path for migratory aquatic fauna could be established by interconnecting the open water and ponding areas in the central portion of the marsh with the emergency ditch which runs from Oneawa Canal alongside the entire length of the levee. Such a path would assume that the emergency ditch will be maintained on a long term basis to facilitate flood water movement through the marsh. The waterbird ponds in turn would be linked to the Maunawili and Kahanaiki Streams to enable the upstream migration of aquatic fauna.

4.4.15 Implementation Schedule

A proposed implementation schedule for Management Plan projects and activities is included as Exhibit 10.

Section 5. SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT

The numerous reports and research papers prepared on Kawai Nui Marsh about the flood control project and facilities developed by the U.S. Army Engineer District and the City and County of Honolulu, and the natural, physical, historic/cultural, and ecological resources of Kawai Nui Marsh form the basis for much of the knowledge of the marsh environment.

Attached as an APPENDIX is "Chapter 2. Site Analysis" from the 1994 Kawai Nui Marsh Master Plan, which best describes the existing

environment and is used to satisfy the requirement under section 11-200-10 (5), Hawaii Administrative Rules.

Section 6. IDENTIFICATION AND SUMMARY OF ALTERNATIVES
CONSIDERED, POTENTIAL IMPACTS, AND MITIGATION
MEASURES

For each of the project's major elements, this section will discuss: 1) the range of alternatives considered, 2) the associated impacts potentially caused by the various alternatives, and 3) proposed measures to mitigate the likely adverse impacts of the recommended alternatives.

6.1 Flood Control Maintenance Facility

The alternatives considered for this crucial project element include 1) no action, 2) various alternative locations, and 3) the proposed plan.

The no action alternative would not provide for the essential flood control activities, and was therefore not selected as a viable alternative. Various other sites were considered to locate the flood control maintenance facility (such as sharing the small area at Knotts Ranch that will be used by DOFAW for their limited maintenance facilities for the Environmental Restoration project, or locating it somewhere near the old auto junkyard at the north end of the marsh [near Mokapu Blvd.]). However, none of these sites offered the operational efficiencies of being located adjacent to the existing boat ramp and vegetation processing site.

The proposed site will be able to take full advantage of these existing facilities to maximize the efficiency of the necessary flood control operations. Potential impacts of locating a maintenance facility at this site, and proposed mitigation measures, include:

- 1) Visual and aesthetic impacts, which will be mitigated by using existing or newly planted vegetation to screen the facility from view. In addition, the security lights will be deflected downward to minimize both light pollution and the effect upon wildlife.
- 2) Impacts from flooding, which are minimized by locating the facility on previously filled land elevated above the regulatory flood height.
- 3) Polluted runoff, caused by leakage or spills from equipment or materials stored within the facility. To mitigate this

potential impact, the site will be underlain with a layer of geotextile fabric, and then covered with an eight-inch thick layer of gravel; this will help to contain and, if necessary, to remove any spilled or contaminated material. Also, the facility will have an action plan ready for implementation in case of any serious incident. Further, best management practices, such as detailed in the Coastal Zone Management Polluted Runoff Control program document, will be implemented.

- 4) Construction-related impacts will be mitigated by clearing, grubbing and grading only the minimum amount necessary for preparing the site. Additionally, typical and other appropriate best management practices will be implemented.

6.2 Environmental Restoration Project

In the Alternatives chapter of the Corps draft environmental assessment for this project, two alternatives were finally advanced: the No Action alternative and the Recommended Plan. The no action alternative was considered non-responsive to the problems and needs identified in the study, and thus was not considered for recommendation.

The Recommended Plan was considered to be the most responsive to the problems and needs of the marsh, and was thus selected as the Federally recommended plan. This alternative meets the goals and objective of the project, which is to provide the maximum habitat unit output within the project affordability range. The proposed action would create 70.7 acres of mudflats and shallow ponds, purchase a flail mower and clear vegetation from 17 acres, restore 2,800 lineal feet of riparian habitat along Kahanaiki and Maunawili Streams, install 16,200 lineal feet of fencing, and implement a trapping program.

Following is a discussion of the potential impacts to various resources of both the No Action and Recommended Plan alternatives, along with proposed mitigation measures. This material was excerpted from the March 1997 draft environmental assessment (NEPA document) prepared for the project.

6.2.1 General Environmental Consequences

No Action Alternative:

Soil erosion and deposition, nutrient loading, and invasive alien plant species are major problems that have the potential to adversely impact fish and wildlife resources. The degradation of the marsh's habitat value will continue to worsen as seen in the

low population densities as compared to other wetlands on Oahu. Without the project, interior flow within the marsh will be further restricted by increasing vegetation growth and sedimentation. Public perception that Kawai Nui Marsh is an unused area of little value would continue to be perpetuated.

Recommended Plan:

Plans and Specifications for this project would require the successful contractor to prepare and implement an environmental protection plan to prevent environmental pollution and damage caused by construction operations. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual aesthetics, noise, solid waste, and hazardous materials and pollutants.

6.2.2 Physical Setting

The no action plan would result in sedimentation and vegetative growth turning marginal wetlands into upland communities. Vegetation growth in and around the streams will continue to clog the waterways.

The proposed improvements would replace upland and marginal wetland areas with shallow ponds and mudflats. Elevations in some areas will be reduced by up to 2 feet. In the pond areas, low berms will be placed to enable the wildlife manager to control water levels for wildlife.

6.2.3 Biological Resources

Under the no action alternative, waterbird habitat would continue to decline due to lack of suitable habitat and predator control. Vegetation growth and sedimentation will continue the trend of vegetative communities changing from wetland to upland. Species that rely on wetland habitat would be consolidated into a shrinking wetland until they are forced to find other suitable habitat. Trees along the streams will continue to spread and riparian habitat will cease to exist in these areas. Vegetation will continue to fill the streams and obstruct the migratory paths used by amphidromous species.

The recommended plan will restore biodiversity to the marsh by restoring wetland and aquatic habitat. Creating the shallow mudflats/ponds and restoring riparian wetland habitat will produce habitat for aquatic species such as crustaceans and fish. The combination of favorable water depths and increased food source will increase waterbird foraging and nesting habitat, particularly

for the Hawaiian stilt. Vegetation is impacting the natural conditions of the marsh and management of vegetation is beneficial and necessary to maintain wetland functions.

Avian botulism is a disease observed in waterbirds or shorebirds caused by ingestion of foods containing a toxin produced by the bacterium *Clostridium botulinum*. This bacterium occurs naturally in Hawaiian wetlands and throughout the world. With the no-action alternative, the potential for avian botulism is not affected.

The recommended plan will enable management of any outbreaks of avian botulism and the ability to modify conditions to eliminate or reduce the risk of avian botulism. In their letter dated June 27, 1997, the USFWS recommended three measures to prevent outbreaks of avian botulism as recommended by the USFWS: (1) a water management plan will be implemented to prevent high water temperatures, anaerobic conditions, and excessive decaying of protein and vegetable matter; (2) immediate collection of dead birds; and (3) immediate notification to the Biological Services Division of the U.S. Geological Service whenever dead birds are found. All three measures will be incorporated into the project.

The adverse impacts from the project are primarily associated with construction activities. Noise levels, emissions, and turbidity may temporarily disturb or displace wildlife, including endangered species. Construction equipment will be required to meet federal and state emission control standards. Construction impacts are not all bad as birds are known to follow construction equipment, waiting to gobble up the worms, insects, and other organisms exposed by clearing and grading. While providing temporary food sources, this also has the adverse effect of drawing birds into hazardous areas during construction.

The USFWS *Hawaiian Waterbirds Recovery Plan* identifies predation (along with disturbance and unstable habitat conditions) as a primary factor limiting waterbird production and recommends predator control for breeding areas. Fencing and removal of predators (cats, dogs, and cattle egrets) will have positive impacts on the waterbird population. The traps themselves could cause unintentional capture and death of avian species or pets. The traps will be checked regularly to reduce the potential for harm to accidentally trapped fauna. Vegetation controls will remove cover used by predators. Water levels within the ponds will be regulated to create stable conditions that will reduce flooding and predators. Rodenticides will also be used during construction to control rodents leaving the marsh. Aquatic species may be disturbed or displaced during construction of a low weir structure that will divert water into the ponds. A

low flow notch will be designed to ensure pathways for migratory species. Disturbing the bottom could result in exposure to high levels of exposure to suspended sediments and debilitation or death of sedentary organisms. However, impacts will be temporary in nature and the organisms are expected to re-colonize in the disturbed areas. Additionally, the project will create more aquatic habitat and clear overgrown stream areas. Increased open water should provide positive impacts by supporting the growth of plant, invertebrate and vertebrate foods used by waterbirds and aquatic species.

Vegetation will be removed and destroyed. The removal of intrusive alien species will slow the succession of plant communities from upland to wetland. Vegetation in the areas to be impacted are primarily introduced species which are rapidly choking the marsh. In areas that will not be covered with water, vegetation is expected to recover.

Removal of tree species along Maunawili and Kahanaiki Streams and flattening the stream banks will allow wider wetted areas within the stream. Emergent vegetation is expected to replace the exotic forest community. Together, the plant transition and the flatter slopes will provide riparian habitat that will be used by the koloa and moorhen.

The recommended plan is being developed in cooperation with the ACOE, in accordance with the methods and procedures outlined in the ACOE FEA for the project. The comments and recommendations contained in the U.S. Fish and Wildlife Service's (FWS) FWCA Report are incorporated into this FEA by reference. The ACOE has committed to incorporate the 17 recommendations of the FWS into the implementation plans for the project. DLNR will, to the maximum extent practicable, do so likewise. Reporting of any incidental take of endangered species during the course of operations and management will be done under, and in accordance with, requirements in the Endangered Species Act--Section 6 Cooperative Agreement between the FWS and DLNR.

6.2.4 Archaeological and Cultural Resources

The proposed undertaking may have two primary potential effects on archaeological resources located at "Site 7": 1) buried agricultural features might be destroyed by excavations for the waterbird habitat, and 2) the restoration of waterbird habitat may alter the character of the agricultural system's original setting by introducing large open-water areas that differ from the system's design, which incorporated terraces approximately an acre and a half in size.

Consultation with the State Historic Preservation Office to ensure that there will be no adverse effect to Site 7 has identified several procedures to be followed: 1) prior to excavation, individual plot boundaries will be established and clearly marked by archaeologists from the Corps and DLNR working in conjunction with staff from DLNR's Division of Forestry and Wildlife (DOFAW) and with representatives of Kawai Nui Heritage Foundation; 2) excavation will generally be to depths between 1 and 2 feet, with excavation depths for individual plots to be established prior to excavation by archaeologists; 3) all excavations will be monitored by an archaeologist from the Corps or DLNR or by DOFAW personnel; and 4) maintenance procedures established by DOFAW will be provided to SHPD and Kawai Nui Heritage Foundation for review and comment.

Additional review and comment of these procedures will be elicited from interested public interest groups and native Hawaiian organizations such as the Kailua Hawaiian Civic Club, who are curators of Ulu Po Heiau, and the Office of Hawaiian Affairs.

6.2.5 Water Quality

As indicated in the State of Hawaii's *Kawai Nui Marsh Master Plan*, Maunawili Stream drains a 5.58 square mile watershed, while the Kahanaiki Stream watershed is approximately 1.92 square miles. The streams travel beneath Pali Highway at Maunawili with a confluence approximately 2,800 feet downstream of the highway. Historical photographs show that downstream of Pali Highway, Maunawili Stream has been straightened and altered. Kahanaiki Stream becomes a meandering waterway shortly past the highway.

Downstream of the confluence, the stream becomes undefined as it sheet flows into the marsh. During storm runoff conditions, the levee creates a backwater effect due to the restriction of flow towards Oneawa Canal. Hydraulic modeling for the levee raise project showed that during the 100-year storm, the entire marsh would become flooded between the levee and a short distance upstream of Pali Highway.

During construction, grading activities will bring sediments into suspension and raise turbidity levels for construction activities in the streams or in flooded areas. Most of the ponds would be constructed in areas that are seldom flooded. To reduce the impacts of turbidity, the outer walls will be constructed first to contain runoff from exposed graded areas of the ponds. Upon completion of the proposed modifications, the increased depths will increase the sediment holding capacity of the marsh and reduce the sediment load on downstream areas. Wastewater directly derived

from vegetation processing activities will not be allowed to enter water areas.

The plans and specifications for the project will include a requirement that a traffic control plan be prepared for the job site. The plan will focus on reducing erosion of temporary roadbeds by construction traffic, especially during wet weather, and reducing the amount of mud transported onto paved public roads by motor vehicle or runoff.

Both a Water Quality Certification and NPDES permit will be applied for. In conjunction with these permits, water quality monitoring will be conducted prior to, during and after construction to ensure compliance with State water quality standards.

Although they will not be used during construction, controlled burning and herbicide may be used to control vegetation during maintenance and operation of the project. Application of herbicides such as Rodeo® are not anticipated to have any long term effect on water quality as it is adsorbed onto soil particles in the water or sediment where it is degraded by microorganisms into its natural components. Glyphosate, the active ingredient in Rodeo®, is non-volatile and does not bioaccumulate. Rodeo® was applied to nearly 90 acres at Kawai Nui in 1988. On the day of the spraying and at four-day intervals thereafter (for twenty days), all water samples in Oneawa Canal were found to contain less than the laboratory detection limit of 0.01 ppm. Widely accepted, Rodeo® is used in wildlife refuges in Hawaii and across the nation.

6.2.6 Hydrologic and Hydraulic Conditions

The initial goals in developing the conceptual plan were to provide water through a series of ponds, managed at variable water depths, to create mudflats and allow for maintenance. The ponds or mudflats were designed so as not to impede flood flow, allow for surface flow during wet periods and to allow complete drawdown for vegetation manipulation. Other considerations included avoiding hardened structures, using "low tech" or low cost structures, and following the general layout of historical *lo'i* walls in the marsh. The final layout, size, depth and method of providing water (gravity feed or pumping) will be determined from a more accurate survey of the land and identification of the exact location of the *lo'i* walls.

Limited hydrologic analysis was performed based on discussions with the design engineer for the Corps' Kawai Nui Marsh Flood Control Project. Those discussions indicated that the very limited size of the area affected compared to the watershed and the minimal

expectation for backwater effects would have a negligible effect on the area or the flood control project.

The low elevation of diversion structures and berms to retain water in the mud flats would not increase the flood stage level and would not have an impact on the flood control structure. Other hydraulic impacts included a small increase in floodwater storage in the ponds during small storm events and an insignificant impact during larger storm events.

Considerable attention and effort have been put into determining the water budget for the marsh in previous studies. The numbers vary for inflow, transpiration, and discharge. For this environmental assessment, it is not necessary to identify the quantities, only to identify the impacts of the project on the water budget.

It is important to note John Mink and George Yuen and Associates in their 1994 assessment of the Maunawili Stream-Kawai Nui Marsh system noted no additional diversions should be allowed unless the same volume of water was returned to the marsh. Any diversions of Maunawili Stream inflow away from the marsh would diminish its ecological utility.

It is anticipated the project will have no impact on the inflows to the marsh. The diversion of the water for the mudflats will take place within the confines of the marsh, all water will stay within the marsh, and all water diverted from either Maunawili or Kahanaiki Streams will be returned to the marsh. The mudflats will only temporarily reroute and impound the water before returning it to the stream and any water that percolates into the ground would enter the marsh groundwater system. The increased water surface area of the mudflats is too small to affect transpiration rates and adversely affect the marsh.

6.2.7 Drainage and Flooding

Increasing depths and removing sediment and vegetation will increase flood storage capacity of the marsh. Clearing vegetation and decreasing stream slopes will improve flood carrying capacities in these areas. The proposed improvements will have a positive impact on flooding but is small compared to the overall hydraulic conditions within the marsh. The improvements are consistent with the flood control project.

6.2.8 Wetlands

Exhibit 9 overlays the wetlands over the proposed ponds. Of the 70.7 acres of ponds, approximately 29.6 acres are wetlands, while 41.1 acres would not be considered wetlands. In Pond A, most of the area is normally wet as this area was not filled. Ponds B and C are predominantly non-wetlands with approximately 4 of the 18 acres being wetlands. In Pond D, 26.2 of the 42.9 acres are nonwetlands. Of these 26.2 acres, approximately half of this area exhibited weak signs of hydrology and is wet only following periods of prolonged rain.

Mowing will have a beneficial effect on the flood storage capacity and waterbird habitat functions of the wetland. The stream clearing will allow a wider band of seasonally wet riparian wetland habitat and will also improve the flood carrying capacity of the stream. The ponds will replace 29.6 acres of wetlands and 41.1 acres of non-wetlands with shallow ponds and mudflats. The ponds and mudflats will provide much better habitat for water birds and will have a small positive impact on flood storage capacity. Overall, the wetland functions of the area would be improved and increased by the proposed ponds.

6.2.9 Land Use

Flood control is the primary function of the marsh and the proposed modifications will not adversely affect the marsh's use as a flood storage basin. Agricultural activities, such as cattle grazing, may be relocated from where they presently occur. Vegetation control will improve access and enhance opportunities for viewing wildlife. An increase in wildlife production may lead to increased recreational activities including bird watching, hiking, fishing, and gathering.

6.2.10 Aesthetics

Excavating ponds will bring the area closer to the estuarine condition that Kawai Nui Marsh enjoyed in the past. The creation of additional open water should improve the aesthetics of the marsh. Since no large structures will be constructed, the natural setting of the marsh will be retained.

6.2.11 Hazardous, Toxic, and Radioactive Wastes (HTRW)

There will be no HTRW impacts resulting from the project. Fencing would reduce the possibility of HTRW and solid waste dumping on the fringes of the marsh. As part of the environmental protection plan, the contractor will be required to take measures to prevent spillage of HTRW materials during dispensing and to collect any HTRW wastes in suitable containers for proper disposal.

6.2.12 Solid Wastes

The solid wastes from this project will consist almost entirely of soil and vegetation. Soil will be removed from the project site and will likely be used as fill for other construction projects. A county ordinance restricts disposal of commercial refuse with more than 25% green waste at the existing landfill and H-power plant. The contractor for this project will be required to prepare a plan on handling and recycling solid wastes as part of the Environmental Protection Plan.

6.2.13 Socio-Economic

The project will create jobs during the construction period. Overall, the proposed improvements are not expected to create new job opportunities. The expected increase in habitat and wildlife should improve the community's interest and awareness of the natural values of the wetlands. It is hoped that community interest generated by habitat restoration will lead to further improvements indicated in the Kawai Nui Marsh Master Plan.

6.2.14 Recreational Opportunities

The no-project condition hinders opportunities for recreation due to the inaccessibility of much of the marsh. Waterways are clogged preventing travel by boat. The alternative is to walk through the marsh, which is deep in some places and has stands of saw grass making access extremely difficult. The opportunity for recreational activities, such as fishing, boating, and bird watching, will be improved by removing vegetation to clear waterways. Vegetation control will also provide better access for foot traffic at the edges of the marsh.

6.3 Kawai Nui Education Center

As noted previously, the coalition of non-profit organizations proposing this element at the Diamond K Ranch site decided to withdraw this project, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. Upon re-submittal, this proposal will require a separate environmental assessment; any comments and concern with the proposal can be addressed at that time.

6.4 Other Components of Master Plan

Another important purpose of this document is to incorporate the various recommendations for enhancement and management proposed in the 1994 Kawai Nui Marsh Master Plan. These recommendations are proposed in three areas:

- 1) Preservation actions, such as the creation of a wildlife sanctuary within the marsh and Hamakua wetland, the listing of Kawai Nui Marsh on the National Register of Historic Places, the acquisition of contiguous wetland areas mauka of Kailua Road, and the reclassification of land use designations of acquired areas to conservation or preservation status;
- 2) Master Plan Improvements, which would consist of developments within the marsh to help the public learn about, appreciate, and enjoy the marsh, such as a visitor center, cultural parks, ethnobotanical gardens, commercial taro lo'i, waterbird enhancement, passive parks, trails, and overlooks; and
- 3) Management actions, which are long-term maintenance activities needed to ensure the protection of the marsh's preservation values, such as the maintenance of flood control structures and capabilities, vegetation removal, water quality monitoring, predator removal, and possibly sediment basin construction and powerline relocation.

The 1994 Master Plan document provides details on these numerous recommendations, noting various alternatives considered and illuminating measures to mitigate potential impacts. The document also describes the planning process undertaken to develop the Master Plan, which included numerous public meetings and workshops, monthly meetings of an advisory committee, and consultation with government agencies, special interest groups, and interested individuals. To limit the bulk of this environmental assessment, the 1994 document (and the detailed discussion it contains) is incorporated by reference into this EA. The reader is advised to review this referenced Master Plan if further information is desired.

As noted in the Master Plan, a long-term, phased implementation program is proposed. Obviously, during that time period, the recommendations may be altered to adapt to changing information, needs, and circumstances. In fact, the two project elements detailed in this present EA (the flood control maintenance facility and environmental restoration project) are further refinements of recommendations from the 1994 Master Plan.

No other modifications to the Master Plan's recommendations are currently anticipated, and implementation is expected to proceed pursuant to availability of funding, receipt of necessary permits and approvals, and status of prioritization. However, should the recommendations be significantly altered prior to their implementation, then further disclosure through the environmental review process may be necessary.

Section 7.

PROPOSED MITIGATION MEASURES

Since all proposed mitigation measures are addressed in Section 6 of this document, this section heading is included solely for consistency with the environmental assessment content requirements, pursuant to Section 11-200-10, HAR.

Section 8. ANTICIPATED DETERMINATION

Based on the information described herein, the proposed project is not expected to result in significant social, economic, cultural, or environmental impacts. Consequently, a finding of no significant impact is anticipated, pursuant to the provisions of Subchapter 6 of Chapter 11-200, HAR.

Section 9. FINDINGS AND REASONS SUPPORTING THE ANTICIPATED DETERMINATION

The anticipated Finding Of No Significant Impact (FONSI) to the environment is supported by the following discussion of "significance criteria," pursuant to Section 11-200-12, HAR:

- 1) The project does not involve an irrevocable commitment to loss or destruction of any natural or cultural resource.

No losses or destruction of any such resources will be involved; in fact, the entire project represents the State's commitment to protect and enhance the natural and cultural resources within Kawai Nui Marsh.

- 2) The project does not curtail the range of beneficial uses of the environment.

Instead of curtailing the range of beneficial uses of the marsh environment, the project elements will expand these uses in numerous ways. The Flood Control Maintenance Facility project will allow for the marsh to more effectively play its crucial role in minimizing the flood hazard to the Kailua community, while the Environmental Restoration project will re-establish a viable waterbird habitat within the marsh environment.

- 3) The project does not conflict with the state's long-term environmental policies or goals and guidelines, as expressed in Chapter 344, HRS and any revisions thereof and amendments thereto, court decisions, or executive orders.

Rather than conflicting with the environmental policies, goals, or guidelines of the State, the project aims to further the State's efforts to fulfill these important responsibilities.

- 4) The project does not substantially affect the economic or social welfare of the community or State.

While no such adverse effects will occur, the Flood Control Maintenance Facility element of the project may have an indirect positive effect on the welfare of portions of the Kailua community by minimizing the risk of serious flooding, and consequential social and economic hardship, to the area.

- 5) The project will not substantially affect public health.

Similarly, the project may have an indirect positive effect on public health by minimizing the health risks associated with flood events.

- 6) The project does not involve substantial secondary impacts, such as population changes or effects on public facilities.

While the marsh will be managed by the State essentially as a public facility, primarily to reduce the risk of flooding, the project is not expected to create "secondary" impacts that will emerge later in time or will be removed in distance from the project's actions.

- 7) The project does not involve a substantial degradation of environmental quality.

One element of the project, the Environmental Restoration project, aims to substantially improve the existing, degraded waterbird habitat within the marsh; similarly, the Flood Control Maintenance Facility element will serve to facilitate the clearing of the vegetative overgrowth that has fouled the water courses within the marsh.

- 8) The project does not have a cumulative effect upon the environment, or involves a commitment for larger actions.

The various project elements have been considered in their entirety, rather than as segmented pieces, to ensure that no adverse cumulative effects will occur. Further, although the project entails a commitment by the State to responsibly manage the resources of the marsh, by collectively considering the project elements during this assessment, no larger actions are expected to be necessary to fulfill the State's management responsibilities..

- 9) The project may substantially affect in a positive manner rare, threatened or endangered species and habitats.

The Environmental Restoration project elements aims to substantially improve the degraded marsh habitat for a number of endangered waterbirds. Consequently, positive effects to the birds are expected to result from this restoration project and the associated management activities (such as vegetation clearing) that will follow. Additionally, any security lights within the flood

control baseyard will be deflected downward to minimize any potential effect upon the waterbirds.

- 10) The project will not detrimentally affect air or water quality or ambient noise levels.

The flood control and habitat restoration elements of the project are expected to improve water quality by clearing and maintaining open water courses within the marsh. While more active water circulation within the marsh may result, no changes to the total inflow or outflow are expected. No air or noise pollution above ambient levels is expected from the proposed on-going maintenance activities due to their relatively small scale, and to the proximity of the nearby Kapaa Refuse Transfer Station.

- 11) The project is located within an environmentally sensitive area (i.e., in a fresh-water flood plain).

However, the flood control element is the mainstay of the project. It is designed to effectively improve the marsh's natural flood control capacity to reduce the risk of flooding in the residential areas downstream of the marsh. Further, the environmental restoration element is specifically designed to improve the habitat for the waterbirds that use this freshwater environment.

- 12) The project does not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.

While Kawai Nui Marsh has been identified as a significant vista and viewshed, the project is not expected to substantially affect this scenic quality in an adverse manner. More open watercourses should result from the proposed vegetation management activities; this, along with the expected increased number of waterbirds within the area should produce a more "natural" and aesthetically pleasing effect. To reduce the visibility of the proposed flood control baseyard, it will be screened with vegetation, and any security lights will be deflected downward so they will not be visible from around the marsh.

- 13) The project does not require substantial energy consumption.

In fact, various elements of the project have been designed to maximize efficiency and to minimize energy use. The Flood Control Maintenance Facility will be located adjacent to the existing boat ramp/vegetation processing area within the marsh to provide for a more efficient operation and to eliminate the need to drive the heavy equipment to and from the area. Additionally, the vegetation cleared from the water courses will be solar-dried at this processing area so no energy will have to be consumed by hauling or drying this material.

Section 10.

**AGENCIES TO BE CONSULTED IN THE PREPARATION
OF AN ENVIRONMENTAL IMPACT STATEMENT**

Not Applicable, because the preparation of an Environmental Impact Statement is not anticipated for this project.

Section 11.

LIST OF ALL PERMITS AND APPROVALS REQUIRED

The separate elements of the Master Plan will require various permits and approvals, depending primarily upon the geographic location of each element.

The Flood Control Maintenance Facility will require 1) a Special Management Area (SMA) Use Permit from the City and County of Honolulu, since the project is considered a "development" within the boundaries of the SMA; and 2) a Conservation District Use Permit (CDUP) from the Board of Land and Natural Resources (BLNR), since the project is a "land use" within the Conservation District.

The Environmental Restoration Project will likewise require both an SMA Use Permit and a CDUP. In addition, the authorization by the U.S. Army Corps of Engineers to discharge fill material into the marsh will trigger a requirement to obtain a federal consistency determination by the State's Office of Planning/Coastal Zone Management (CZM) Program, and a Section 401 Water Quality Certification from the State's Department of Health (DOH). Further, a National Pollutant Discharge Elimination System (NPDES) permit will be required from DOH.

The Education Center will require the following approvals from the City and County of Honolulu: Use (zoning) Variance, SMA Permit, Building Permit, Grading Permit, Sewer Connection, and Water Connection (from the Honolulu Board of Water Supply). In addition, the proposed eventual development of taro loi and a boardwalk within the actual marsh would require a CDUP from the BLNR.

At this time, it is premature to list the permits and approvals potentially required for the other projects conceptually or generally described in the 1994 Kawai Nui Marsh Master Plan document. Prior to the implementation of these recommended projects, application materials or environmental disclosure documentation prepared as appropriate will note the necessary permits and approvals.

Section 12.

COMMENTS AND RESPONSES OF EARLY CONSULTATION

Attached as Exhibit 11 are comments and responses regarding the early consultation provisions of sections 11-200-9(a)(1). The following agencies, citizen groups and individuals were consulted during the preparation of this document:

Federal, State and County Agencies

The U.S. Army Corps of Engineers, Pacific Ocean Division; the State of Hawaii Department of Land and Natural Resources, Division of Aquatic Resources, Division of Forestry and Wildlife, Historic Preservation Division, Land Division, and Division of State Parks; the State Office of Environmental Quality Control; and the City and County of Honolulu, Department of Planning and Permitting (formerly the Department of Land Utilization).

Citizen Groups

The Hawaii Audubon Society, Ahahui Malama i ka Lokahi, Conservation Council for Hawaii and the Kawai Nui Heritage Foundation.

Individuals

Mr. Martin Knott, Mr. Mike Gibson, and Mr. Roy Teves.

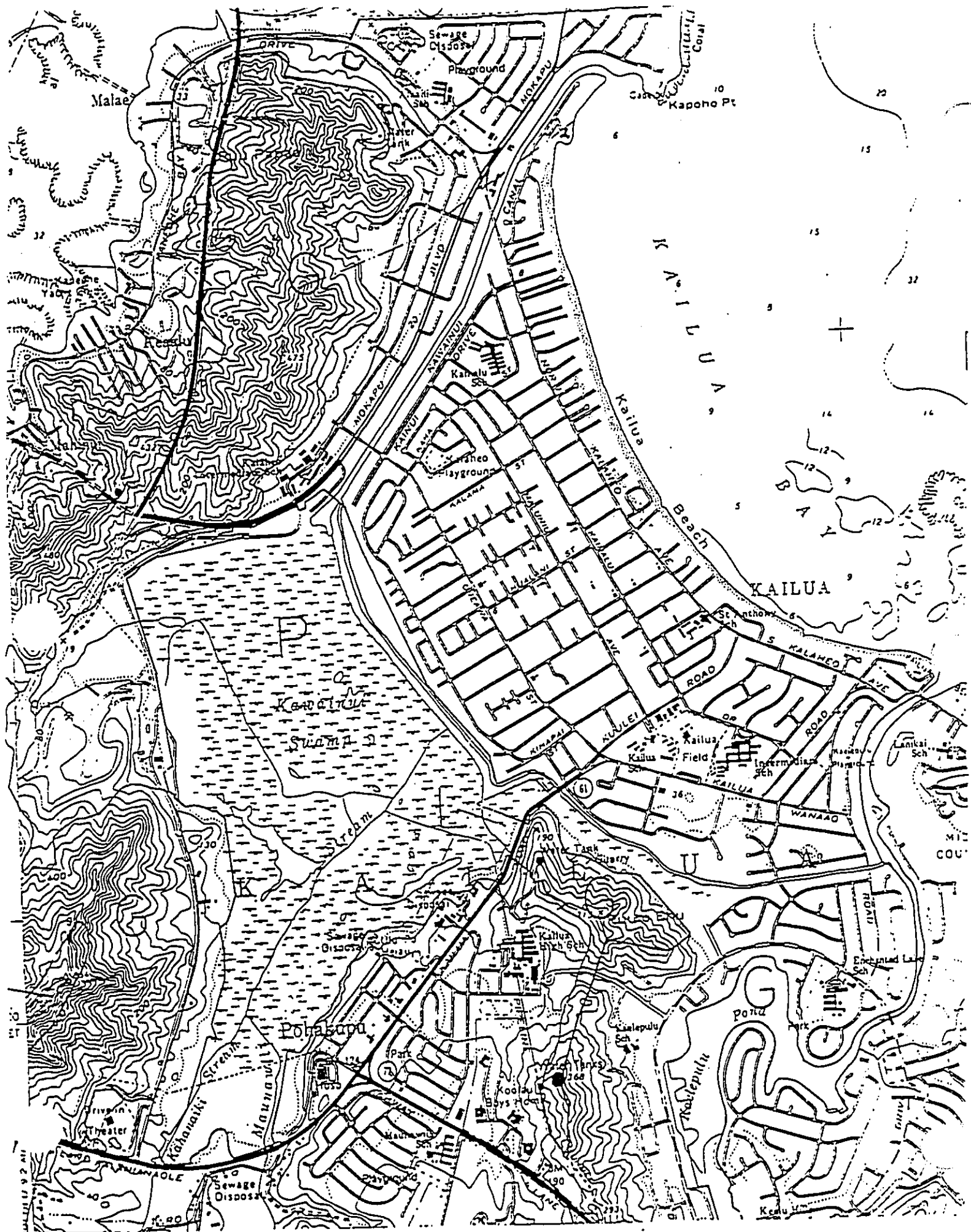
Section 13. COMMENTS AND RESPONSES Re: THE DRAFT EA

Attached as Exhibit 12 are the written comments received during the extended (60-day) public comment period for the project's draft environmental assessment, and the Department's responses to these comments.

REFERENCES

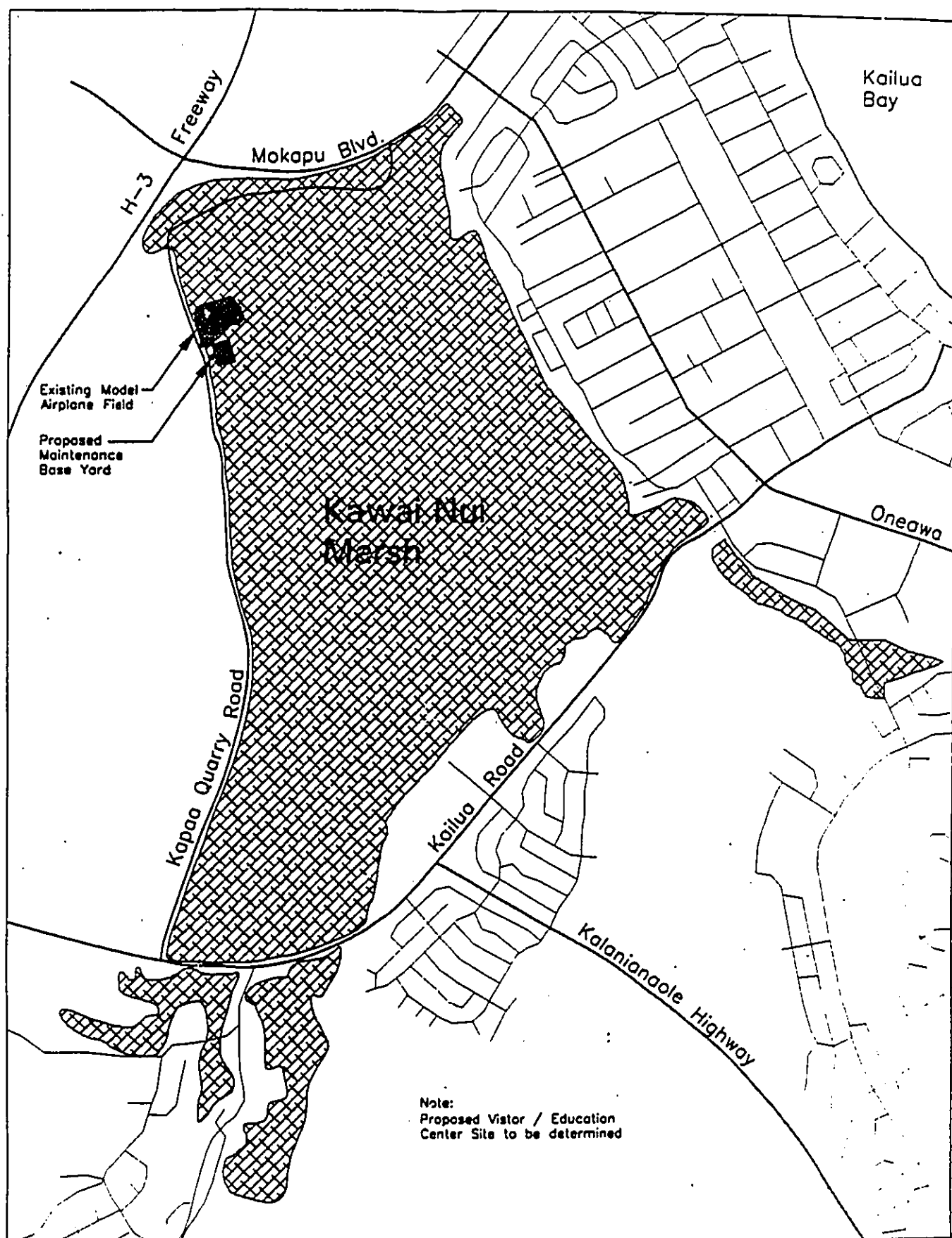
- Armstrong, Warwick R. Atlas of Hawaii. Second Edition. 1983
- Hawaii Audubon Society in cooperation with Ahahui Malama i ka Lokahi, Conservation Council for Hawaii, and the Kawai Nui Heritage Foundation. Environmental Assessment for Kawai Nui Education Center. August 1998.
- M&E Pacific, Inc. Final Environmental Impact Statement for Kawainui Flood Damage Mitigation Project. City and County of Honolulu, Division of Engineering, Department of Public Works. June 1990.
- State of Hawaii. Department of Planning and Economic Development. Resource Management Plan for Kawainui Marsh. March 1983.
- U.S. Army Engineer District, Honolulu, and City and County of Honolulu. Final Detailed Project Report and Environmental Impact Statement for Kawainui Marsh Flood Control Project. July 1992.
- U.S. Army Engineer District, Honolulu. Kawainui Marsh Environmental Restoration Project, Draft Environmental Assessment. Prepared in cooperation with the Division of Forestry and Wildlife, Department of Land and Natural Resources. March 1997.
- U.S. Fish and Wildlife Service. Hawaiian Waterbirds Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. September 1985.
- Wilson Okamoto & Associates, Inc. Kawai Nui Marsh Master Plan Project Development Report. Prepared for the Department of Land and Natural Resources. July 1994.

EXHIBITS 1 - 12



Kawai Nui Marsh

Exhibit 1

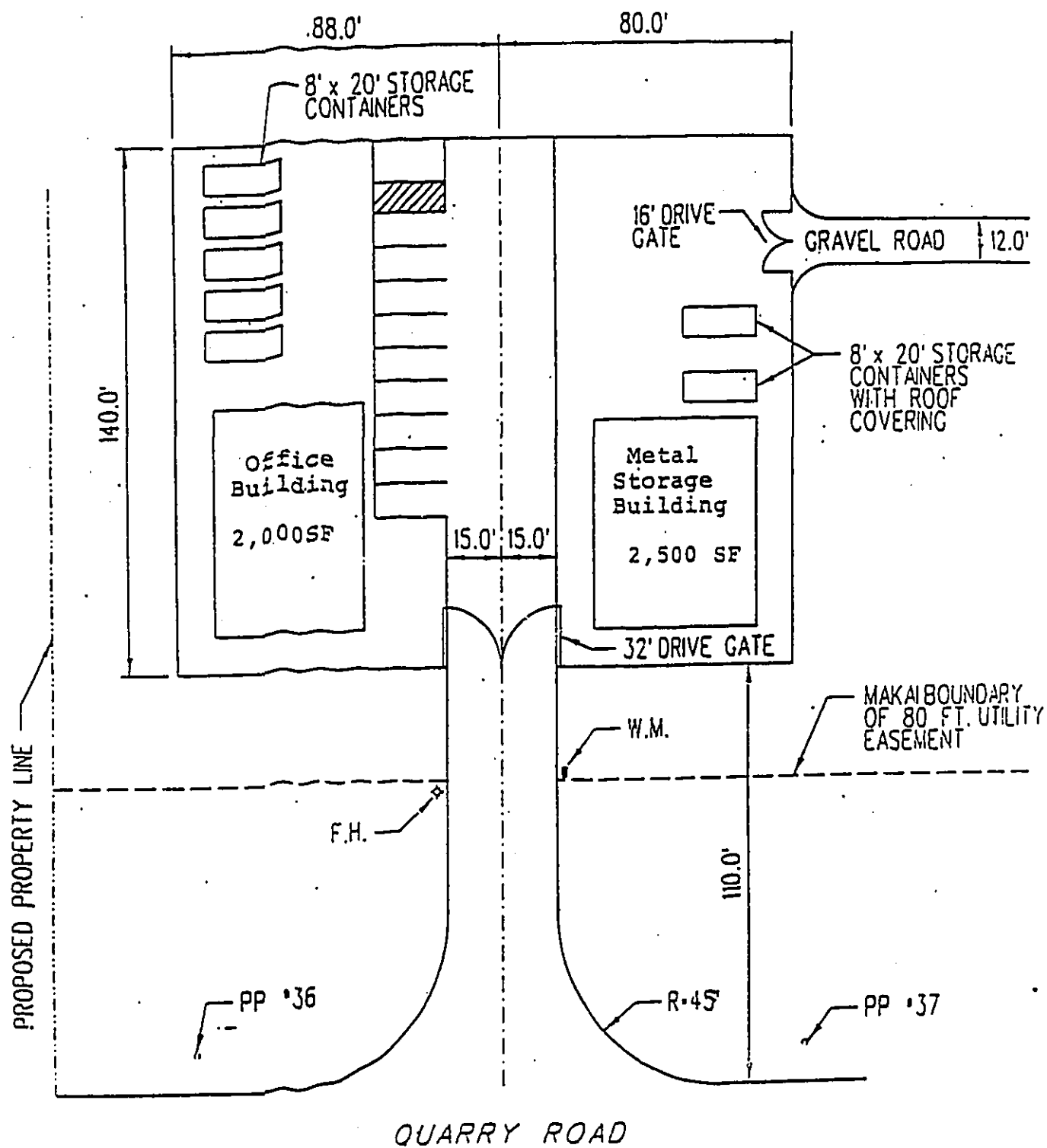


Kawai-Nui Marsh

Approx. Scale
0' 1000' 2000' 3000'



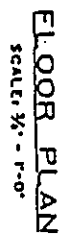
Exhibit 2

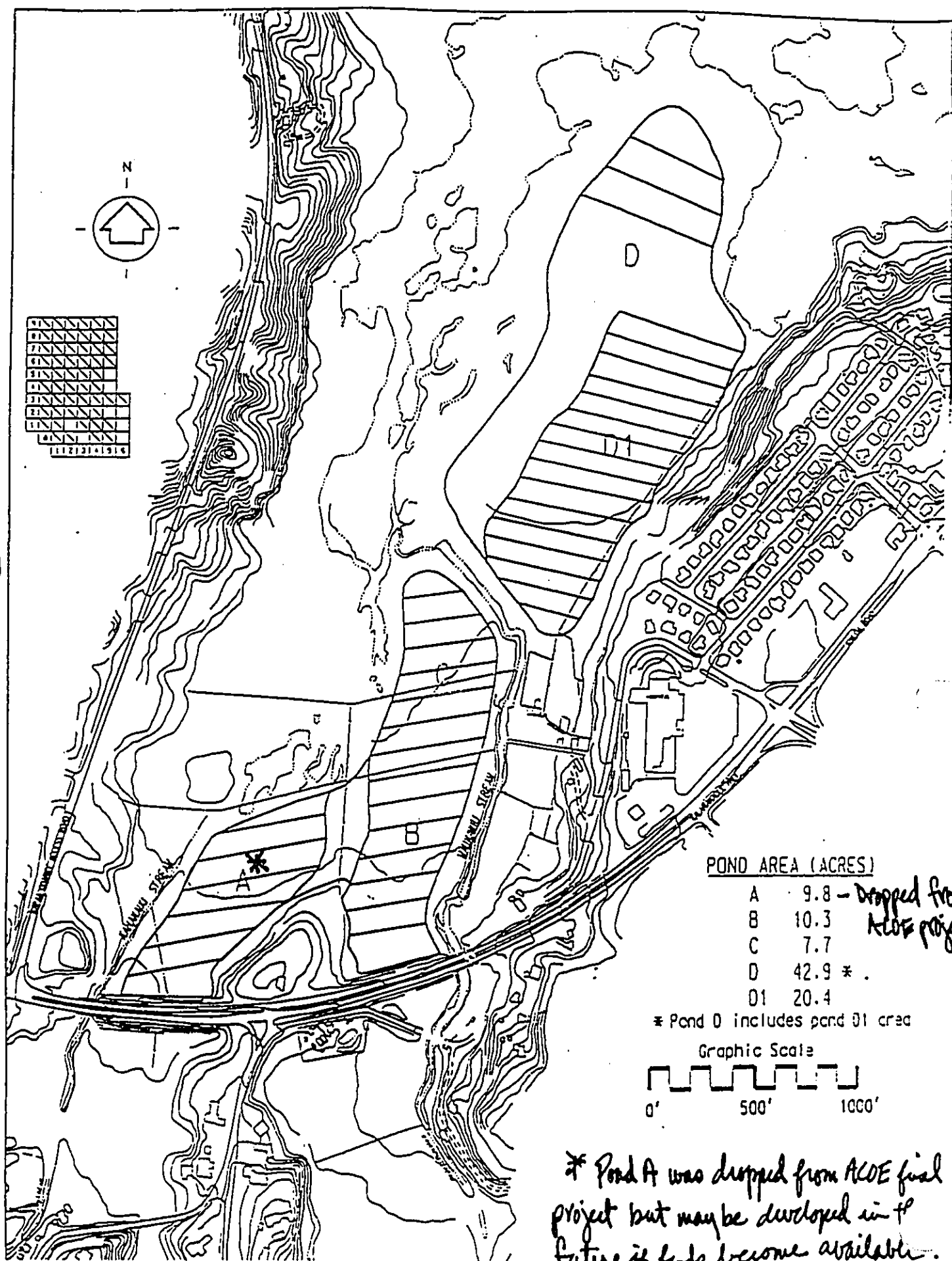


SITE LAYOUT

SCALE: 1" = 40'

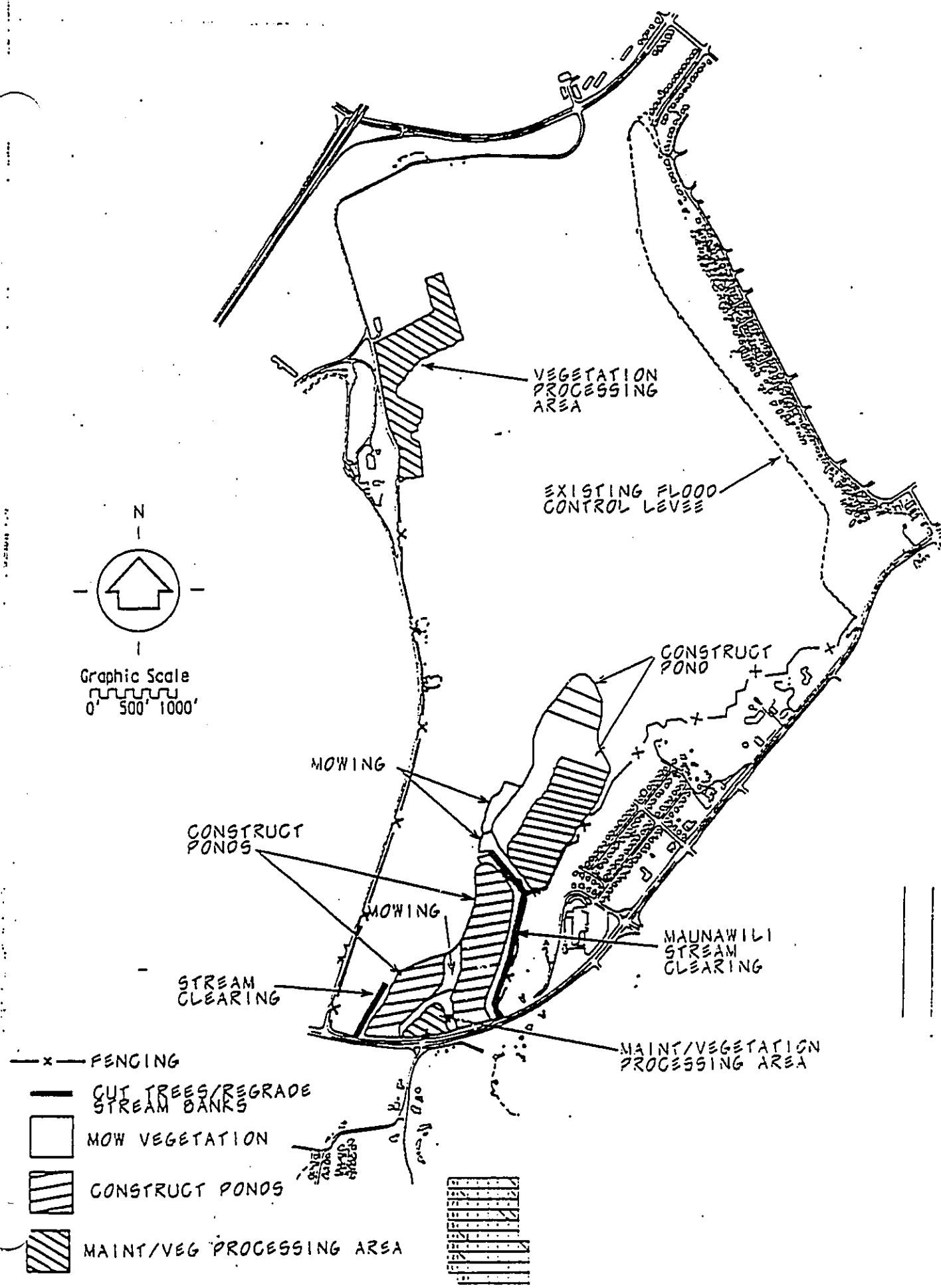
Exhibit 4





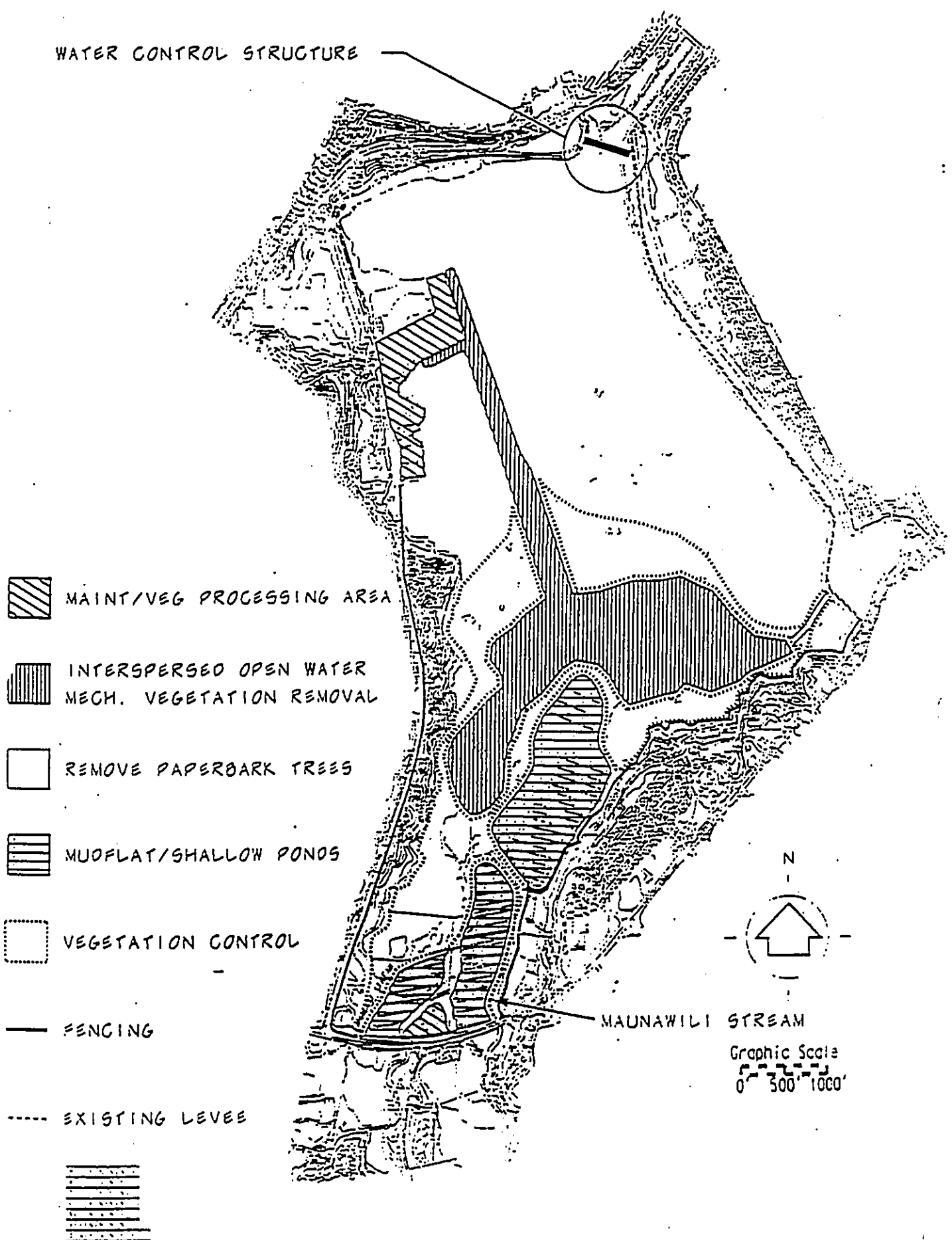
Kawai Nui Marsh

Exhibit 5



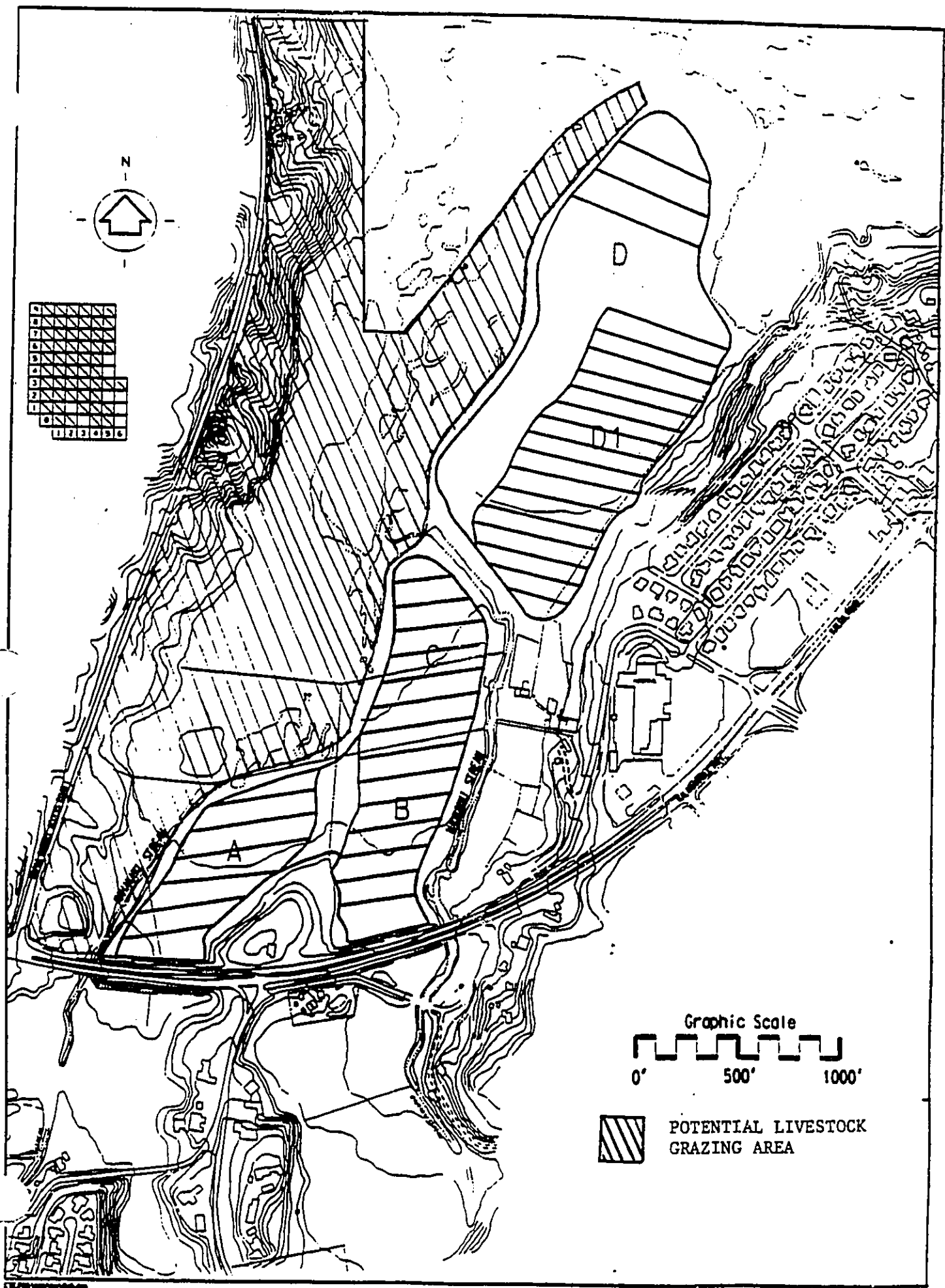
Kawai Nui Marsh

Exhibit 6



Kawai Nui Marsh

Exhibit 7



Kawai Nui Marsh

Exhibit 8

Proposed Implementation Schedule for Management Plan Projects and Activities.

<u>Component</u>	<u>Proposed Schedule</u>
Maintenance Facility	Construction: June, 2000 - December, 2000 Operations and Maintenance: December, 2000 +
Wildlife Habitat Restoration	Plans and Specs: November, 1999 - August, 2000 Construction: December, 2000 - December, 2002 Operations and Maintenance: December, 2002 +
Maintenance of Flood Control Structures	December 1999 +
Vegetation Removal Opening waterways Marsh Interior	December 1999 + ACOE Project Proposed for 2002, pending funding
Water Quality Monitoring	Currently in progress, ongoing
Sediment Basins	No current proposal, pending future funding
Predator Control	In conjunction with Habitat Restoration Project, Begin in December 2000
Powerline Relocation	No current proposal, pending future funding
Fire Management	No current proposal, pending future funding
Interpretive and Educational Programs and Facilities	No current proposal, pending future funding
Cultural Park	No current proposal, pending future funding
Ethnobotanical Gardens	No current proposal, pending future funding
Agricultural Areas	No current proposal, pending future funding
Scenic Parks	No current proposal, pending future funding
Trail System	In conjunction with Habitat Restoration Project, Begin in December 2000
Aquatic Fauna Migratory Habitat	In conjunction with Flood Control Open Water Maintenance, Begin December, 2000

Exhibit 11

Correspondence regarding Pre-consultation with interested parties

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4414 • FAX: (808) 527-6743

JEREMY HARRIS
MAYOR



JANNADE SULLIVAN
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

97-02201(ASK)

May 27, 1997

Mr. Benton Ching
District Engineer
U.S. Army Engineer District, Honolulu
Attention: CEPOD-ET-PP-J
Building 230
Fort Shafter, Hawaii 96858-5440

Dear Mr. Ching:

Kawainui Marsh Environmental Restoration Project
Draft Project Modification Report and Environmental Assessment

This responds to your transmittal dated April 9, 1997 requesting review of the above-referenced document and summarizes the discussion which took place during a May 15, 1997 meeting between yourself, Paul Conry of the Division of Forestry and Wildlife, Department of Land and Natural Resources, and Department of Land Utilization (DLU) staff, Ardis Shaw-Kim and Arthur Challacombe.

During that meeting, DLU staff explained the need for disclosure of additional information and identified several specific areas which should be addressed. You related that much of the detailed data and specifications would be available only after the planning and specification phase of the project, following the issuance of the Finding of No Significant Impact (FONSI).

Because the project is within the State Conservation District and involves the use of both government land and funds, it is subject to the requirements of Chapter 343, Hawaii Revised Statutes (HRS). Further, the project is within the Special Management Area and is subject to the provisions of Chapter 25, Revised Ordinances of Honolulu (ROH) which requires a Special Management Area Use Permit (SMP). Both laws require an Environmental Assessment (EA). The Director of Land Utilization may waive the EA required under Chapter 25, ROH, provided impacts to coastal resources have been adequately addressed in either Federal or State environmental disclosure documents.

Mr. Benton Ching
Page 2
May 27, 1997

This letter identifies information which we believe should be disclosed in an environmental document. While we prefer that these matters be fully addressed in the current EA or the document that will be prepared to satisfy Chapter 343, HRS requirements, the following information must be submitted prior to our acceptance of the SMP for processing:

A. Proposed Improvements

A detailed description of construction activities, physical improvements and operational aspects of the project.

Water control structures, such as the one identified in Figure 3 of the Executive Summary, the pumps shown on other figures, and the water control structures at each of the subponds should be described in greater detail. Installation and operation of these features should also be described.

Page EA-4 states that water will be supplied to the ponds through a combination of low weirs placed in the streams or ground pumping stations. If both methods are being considered, each should be more fully described in the SMP application. Project information should describe the location, installation, physical make-up and operational aspects of these improvements.

Will grading of the stream banks or diversion of water affect stream water quality or ecosystems? Will this construction and diversion be regulated by the State Water Commission?

The SMP application should clarify the need to create separate supply and drainage channels as indicated in Figures 5 and 6 of the Draft EA, Appendix E.

Plans showing the pond sections should identify existing elevations.

Information presented in Figure 3 "Historic Taro Lo'i Configuration" does not appear to be consistent with the cross sections found in Figures 7 and 8 which show only two lo'i walls in the section drawings. If the lo'i walls are as shown in Figure 3, we would have expected to see more shown on the section drawings.

B. Stream Clearing

The SMP application should clarify the need to alter the slopes of Kahanaiki and Maunawili Streams and should more clearly explain what considerations were observed in arriving at the proposed slopes. Paragraph "c" on page 10 of the Draft EA refers to an area "downstream side of the bridges...". The location of this area should be clarified. This section should also indicate what aspect of this area was considered in designing the stream alterations.

C. Flood Hazards

The project is located in a flood hazard area identified as Zone A (General Flood Plain), and is therefore subject to Section 21-7.10-8, ROH. These regulations require submittal of a flood study to determine the regulatory flood elevation, and flood fringe and floodway boundaries for review and acceptance by our office. Subsequently, Floodway and "No-rise" certifications indicating that there will be no increase in the regulatory flood elevations for any grading work in the floodway district must be submitted to our office.

These requirements must be satisfied prior to submittal of the SMP application.

D. Visual Impacts

The SMP application should describe the visual impact of the proposed fencing and the vegetation processing activities. Views from public areas should be described. The type and color of fencing material to be used should be disclosed in the Final EA. A typical elevation plan should be included in the Final EA.

E. Riparian Habitat

1. The SMP application should include a typical cross section for the existing and proposed stream bank alteration.
2. How does construction of the stream bank modifications impact water quality within the stream? Are State water quality standards currently being met in these streams? For what period of time will the water quality be impacted?

F. Solid Waste

The SMP application should describe the proposed methods of solid waste disposal that will be used in both the construction and operational phases of the project.

Page EA-24 indicates that excavated soils "will likely be used as fill for other construction project". If this is the final disposal step, the suitability of these soils for this type of use should be explored.

The SMP application should describe the volume and processing of the excavated soils. What is the total area that will be grubbed or graded? Dewatering activities, if proposed, should also be described.

The SMP application should describe the removal, processing and disposal of green waste during the construction and operational phases of the project. What is the area of the "vegetation processing area" shown on Figure 10 of the Draft EA? Page EA-7 indicates that only mechanical removal will be used during the construction phase of the project. What type of equipment will be used? Will the soil be grubbed to remove root systems (page EA-24)?

We recommend that the State Department of Health be contacted regarding requirements for dewatering and composting.

G. Public Recreation

Page EA-24 of the Draft EA indicates that opportunities for recreational activities such as fishing, boating and bird watching will be improved as a result of the project. The SMP application should indicate whether all of these activities are planned for the area and how these activities will be managed. Will recreational activities potentially disturb the wetland resource or the birds that inhabit the area?

H. Miscellaneous

1. Will structures or shelters be needed in the future to support construction, maintenance or recreational activities? If so, these structures should be described in the SMP application.

Mr. Benton Ching
Page 5
May 27, 1997

2. The Final EA should include a map showing the State's Land Use District boundaries.
3. A list of required permits and approvals should be provided in the Final EA.
4. We believe that reference to Kailua Road in paragraph "c", page 10 of the Executive Summary should be Kalaniana'ole Highway. Similarly, reference to Kailua Road, found in the last sentence of the first paragraph on page EA-6 should be changed to Kalaniana'ole Highway.

I. Water Quality and Hydraulics

1. The SMP application should identify applicable water quality regulations and explain how water quality will be monitored for compliance.
2. When will the land survey referred in Section F "Hydraulic and Hydrologic Conditions" (page EA-15) be completed?
3. Will the creation of 70.7 acres of open ponds and vegetation over a large area alter the hydraulics of the overall wetland?

Page EA-22 of the Draft EA claims that increased water surface is too small to significantly affect transpiration rates but does not provide information to support this.

4. According to the Draft EA, the project will increase flood storage capacity. Will the project affect the water quality or volumes flowing into Oneawa Channel or Kailua Bay?
5. The SMP application should indicate whether or not the project will be phased and the approximate timing for each phase of the project.

J. Existing Uses

The SMP application should identify uses or tenants that will be displaced by the project. Will existing utilities such as the overhead electric line be affected by the project? Will grazing be allowed to continue? If so, in what areas?

Mr. Benton Ching
Page 6
May 27, 1997

If you have any questions, please contact Ardis Shaw-Kim of our staff at 527-5349.

Very truly yours,



JAN NAOE SULLIVAN
Director of Land Utilization

JNS:am

cc: Department of Land and Natural Resources,
Division of Forestry and Wildlife
Office of Environmental Quality Control
State Department of Health

G:Kawai.ask
A:kawai.299



DEPARTMENT OF THE ARMY
U.S. Army District Office Honolulu
P.O. Box 1118, Honolulu, Hawaii 96811

MEMO
DISTRIBUTION

August 20, 1997

Planning and Operations Division

Ms. Jan Nease Sullivan
Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Ms. Sullivan:

Thank you for your letter dated May 20, 1997, regarding the draft Project Modification Report and Environmental Assessment (PME/EA) for the proposed environmental restoration project at Kawaiauli Marsh, Kailua, Oahu.

As indicated in your letter and in meetings between our staffs, detailed data will be available when the project plans and specifications are prepared. However, funds to develop plans and specifications will not be authorized by U.S. Army Corps Engineers headquarters until the Environmental Assessment and finding of No Significant Impact is completed (EA/FONSI).

We acknowledge the need to prepare an EA for the State Conservation District Use (CDU) and County Special Management Area permits (SMP). As the local sponsor, the State Department of Land and Natural Resources, Division of Forestry and Wildlife (DOPAW) will be required to obtain all State, County, and local permits. During the plans and specifications phase, my staff will continue to coordinate with DOPAW and OLU to allow DOPAW to prepare a State/County EA and ensure that a complete SMP application can be provided.

-2-

Thank you for your input on this project and in providing your questions and concerns in advance of the SMP application. If you have any questions regarding the project, please contact Mr. Benton Ching of my Planning and Operations Division staff at 438-3238, extension 13.

Sincerely,

/s/ 20 Aug 97

Ray H. Jyo, P.E.
Director of Engineering
and Technical Services

Copy Furnished:

Mr. Michael Buck
Administrator
Division of Forestry and Wildlife
Department of Land and Natural Resources
State of Hawaii
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

JUL 24 1998

Ref.:PB:THE

File:Kawainui EA

The Honorable Jan Sullivan, Director
Department of Planning and Permitting
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Ms. Sullivan,

Subject: Kawainui Marsh

As you may know, our Department has been preparing to accept management, operational and maintenance responsibility of Kawainui Marsh on October 1, 1998, pursuant to Act 314, Session Laws of Hawaii 1990.

Accordingly, we intend to implement a number of programs to fulfill these responsibilities, including first and foremost certain flood control activities (such as the construction of a maintenance and operations baseyard at the present location of the model airplane field), secondarily the Environmental Restoration Project, and thirdly a variety of educational, cultural and recreational projects.

We are currently in the process of drafting an environmental assessment (EA) to comprehensively plan for the myriad management activities we will undertake; the EA will also serve as the primary vehicle to support our efforts to receive the necessary Special Management Area (SMA) and Conservation District Use permits to implement these activities.

Our staff recently met with members of your Coastal Lands Branch staff to discuss your SMA permitting requirements. We found this meeting to be very helpful in understanding the SMA permit process. Your staff indicated that presently, the procedural timeline, which includes and requires a final EA, public notification period, public hearing, Zoning Committee hearing and full Council action, could provide for an SMA Use Permit for the entire project sometime in January 1999 at the earliest. Your staff also noted that portions of the overall project could possibly be handled independently through the issuance of minor SMA permits if certain requirements are met.

As indicated previously, we have been preparing a comprehensive management plan to unite and link our various activities, and our desire is to pursue a comprehensive, rather than segmented, approach to the planning and permitting process. However, our concern is that the required SMA permit for the entire project would not be forthcoming in time to allow us to begin our flood control work by October 1, 1998, when we are scheduled to assume responsibility and liability regarding flood events in and around the marsh. Given that we take this responsibility and liability very seriously, we may need to revisit the timing of the transfer to assure that it coincides with our receipt of the necessary permits.

At this point, we would like to clarify and verify our understanding of the process and timeline involved to fulfill the SMA permit responsibilities, since this has a direct bearing on our ability to initiate our critical flood control activities, as well as the other project elements. We look forward to your response so that we can continue to prepare for the smooth transfer and initiation of work to implement this important project. Please contact Tom Eisen or Lauren Tanaka of our Land Division's Planning Branch at 587-0386 or 587-0385, respectively, should you have any questions on this matter.

Aloha,

/S/ MICHAEL D. WILSON

Michael D. Wilson, Chairperson
Board of Land and Natural Resources

cc: Oahu Land Board member
Paul Conry (DOFAW)
Sterling Yong (Engineering Branch)
Cecil Santos (ODLO)

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
Phone: (808) 523-4414 • Fax: (808) 527-6743



JEREMY HARRIS
MAYOR

JAN NACE SULLIVAN
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

98-05637(ASK)

August 26, 1998

Mr. Michael D. Wilson, Director
Department of Land and
Natural Resources
State of Hawaii
Kalanimoku Building
1151 Punchbowl Street, Room 130
Honolulu, Hawaii 96813

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

38 AUG 27 PM 2: 19

RECEIVED

Dear Mr. Wilson:

Subject: Kawainui Marsh

This responds to your July 24, 1998 letter regarding Special Management Area Use Permit (SMP) procedures for proposed developments within Kawainui Marsh. We hope the following will clarify the permitting procedures:

We understand your desire to construct the maintenance and operations baseyard for flood control activities prior to October 1, 1998, when the State will assume responsibility and liability for flood events around the marsh. Your staff has indicated that the cost of construction for this project is less than \$125,000. In recognition of the public safety implications for this project and the imminent onset of what is normally "the rainy season", we have no objections to processing the proposed construction as a minor SMP, separate from the other projects that will be located within the marsh. Should you choose to pursue a minor permit as an option, the minor SMP application should include the following:

1. A copy of the final environmental assessment, addressing impacts to coastal resources or declaration by the Department of Land and Natural Resources (DLNR) that the project is exempt under Chapter 343, HRS; and
2. Scaled drawings including a location map, site plan, building plans and grading plans (if applicable).

A minor SMP can be issued shortly after a complete application has been received by our office.

Mr. Michael D. Wilson, Director
Page 2
August 26, 1998

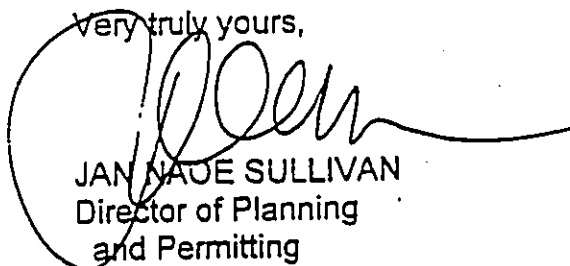
We support DLNR efforts to consolidate the planning and permit processing of various projects within the Kawainui Marsh as this approach will lead to a comprehensive, rather than a segmented, review of area projects. Should the DLNR continue to move forward with this consolidated approach, a major SMP will be required as the project cost will exceed \$125,000.

Permit procedures, including processing deadlines and minimum notice requirements are dictated by Chapter 25, Revised Ordinances of Honolulu (enclosed).

Your letter states that an environmental assessment pursuant to the requirements of Chapter 343, HRS is currently being prepared to address all of the projects collectively (including construction of the maintenance and operations baseyard). As was explained during the July 17, 1998 meeting between the staffs of our departments, the assessment procedures of Chapter 25, ROH can be waived provided impacts to coastal resources have been adequately discussed in the Chapter 343 document. Subsequent to assessment procedures, the SMP application can be accepted for processing. As indicated in your letter, processing steps for a major SMP include a departmental public hearing, review before the Zoning Committee and action before the City Council. Assuming the final environmental assessment and a complete application were submitted by mid September, it would be possible to obtain an SMP by the end of the year.

We hope this clarifies the SMP procedures. Should you have any questions, please contact Ardis Shaw-Kim of our Coastal Lands Branch at 527-5349.

Very truly yours,



JAN NA'OE SULLIVAN
Director of Planning
and Permitting

JNS:am
Encl.

A:kauai.a11
G:kawai.ask

Exhibit 12 **Correspondence regarding Draft Environmental Assessment**

State of Hawaii
Department of Land and Natural Resources
DIVISION OF AQUATIC RESOURCES
October 28, 1998

MEMORANDUM

To: Dean Y. Uchida, Administrator
Land Division
From: William Devick, Acting Administrator *WD*
Division of Aquatic Resources
Subject: Comments on x Management Plan for Kawainui Marsh

Comments Requested By: Tom Eisen and Lauren Tanaka

Summary of Project

Title: Management Plan for Kawainui Marsh
Proj. By: Land Division, Dept. of Land and Natural Resources
Location: Kawainui Marsh, Kailua, Oahu

Brief Description:

Act 314 (1990 Session Laws of Hawaii) authorized the Dept. of Land and Natural Resources to manage, operate and maintain the economic, ecological, historic and cultural resources of Kawainui Marsh. In July, 1994, the Kawainui Marsh Master Plan was developed by the Kawainui Marsh Advisory Committee, and staff from the Divisions of Forestry and Wildlife, the former Water and Land Development Division and State Parks. The master plan contains recommendations for projects designed to carry out the intent of Act 314, and include the following:

- 1) Construction of a maintenance facility and associated improvements to support field personnel in operations and maintenance of flood control facilities;
- 2) Restoration of ponds and mudflats, installation of fencing and implementation of a trapping program to restore waterbird habitat in the marsh, and;
- 3) Development of the Kawainui Education Center proposed by The Hawaii Audubon Society, in conjunction with Ahahui Malama i ka Lokahi, Conservation Council for Hawaii and Kawainui Heritage Foundation.

Comments:

Restoration of waterbird habitat in Kawainui Marsh will require the removal of vegetation (water hyacinth, California grass, etc.) currently clogging the waterway. This will have the added benefit of improving water flow through the marsh, which in turn should increase recruitment of native stream animals into Kahanaiki and Maunawili Streams.

Our Division is fully supportive of measures designed to improve the water quality of Kawainui Marsh. Appropriate mitigative measures should be implemented to minimize short-term adverse impacts to the extent possible.




STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 821
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

MEMORANDUM

TO: William Devick, Administrator
Division of Aquatic Resources, DLNR

FROM: Dean Uchida, Administrator
Land Division, DLNR 

SUBJECT: Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh

Thank you for your memorandum dated October 14, 1998 with comments on our Department's draft Environmental Assessment of the Management Plan for Kawai Nui Marsh.

We note your comment that removing the vegetation currently clogging the waterway will have the added benefit of improving water flow through the marsh, which in turn should increase the recruitment of native stream animals in Kahanaiki and Maunawili Streams. As you suggest, we will implement appropriate mitigative measures to minimize short-term adverse impacts; these measures are described in Section 6.2 of the final Environmental Assessment for the project.

We appreciate your division's support of this important project.

Once again, thank you for your comments.

cc: DOFAW

DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of State Parks
November 27, 1998

MEMORANDUM

TO: Dean Uchida, Administrator
Land Division

FROM: Ralston Nagata, State Parks Administrator

SUBJECT: Comments on Draft Environmental Assessment for the Kawainui Marsh Management Plan, September 1998, and the Environmental Assessment Kawai Nui Marsh Education Center Initial State Kailua, Ko'olaupoko, O'ahu TMK: 4-2-13: 5

State Parks review covers the Environmental Assessment for the Management Plan and the Environmental Assessment for the Kawai Nui Education Center, referred to in the Management Plan.

Draft Environmental Assessment for Kawainui Marsh Management Plan

The Division of State Parks has no objections or comments on the Draft EA, other than to suggest that a section on implementation be included in the EA. The 1994 Master Plan included a chapter devoted to implementation.

Environmental Assessment for Kawai Nui Education Center Initial Stage

The subject project by the Hawai'i Audubon Society proposes to lease a 4.67 acre parcel of State-owned land along the southeastern edge of the marsh and construct an education center with office, storage, parking area, and landscaping. The project location is different from the site proposed in the 1994 Kawai Nui Marsh Master Plan, the 1983 Resource Management Plan, or the 1982 community plan. Therefore, the EA document should provide a more comprehensive analysis of the alternative site locations and why the previous sites have been abandoned in favor of this new location (pages 16-17). It should also be explained why this location was not considered in any of the previous plans. This assessment might include a pros and cons of each alternative location in terms of:

- Traffic. What is the anticipated daily traffic count? What are the potential impacts of the increased traffic on the neighborhood?
- View Corridors. The inclusion of photographs would assist in this assessment, as was done in the 1994 plan.
- Interpretation/Educational Programs.

- Existing and Proposed Land Uses. For example, a maintenance area and ethnobotanical nursery are proposed in the subject area in the 1994 plan. Do these facilities complement or conflict?

It is also unclear from the EA document what the operational and long-term plans are for this education center. The following issues should be addressed so that the impacts of the project can be better assessed and evaluated:

- Will this facility serve as the visitor center for Kawai Nui Marsh? It is implied that this facility will be expanded in the future. Therefore, there needs to be some consideration of the long-term plans and impacts for this structure in terms of size, programs, and infrastructure. One alternative not presented would be to keep the visitor center proposed in the 1994 plan and consider the proposed education center a "satellite" educational facility for the taro *lo'i* and wildlife habitat. As a "satellite" facility, this structure would remain small and efforts would be made to minimize the impacts on the neighborhood.
- How is this facility going to operate in relationship to the other programs planned for the marsh? How will the facility and programs be operated?
- There needs to be a better assessment of the audience and the hours of operation. If the center is open to the public 8 hours a day, 7 days a week, for example, then the potential impacts on the neighborhood need to be better evaluated.

We support the need for an educational center for Kawai Nui Marsh. However, the selection of a new site location not addressed in previous planning documents raises several concerns for the overall, long-range plans for the Marsh. It is also important to note that all these planning efforts involved extensive community involvement in the decision-making. It is possible for situations to change and new information comes to light which triggers a consideration of new sites. If this is the case, there needs to be a thorough discussion of these changes with an assessment of why this new site is now the best site. While the proposed location may be a good one for the short-term, is it going to be the best location for the larger educational and interpretive effort in the Marsh? Is this location going to be able to handle the program needs of the Marsh and is it going to be able to tie in well with the other proposed facilities and resources? Is there any conflict with the proposed maintenance area proposed in the 1994 plan? In these matters, the EA document has not adequately addressed the alternatives and impacts, either short-term or long-term.

MANAGEMENT PLAN FOR KAWAI NUI MARSH

Draft Environmental Assessment

Department of Land and Natural Resources
Land Division

September 1998

Copy for
Cecil Santos
DLNR-DLM

ENVIRONMENTAL ASSESSMENT
FOR
KAWAI NUI EDUCATION CENTER
INITIAL STAGE

REQUIRED WITH AN APPLICATION FOR LEASE OF STATE LAND

AT

TAX MAP PARCEL 4-2-13: portion of 5
KAILUA, KO'OLAUPOKO, O'AHU, HAWAI'I

Prepared by Hawaii Audubon Society
on cooperation with the partnering organizations
'Ahahui Malama i ka Lokahi
Conservation Council for Hawai'i
Kawai Nui Heritage Foundation

for the
Department of Land and Natural Resources

August 1998




STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MEMORANDUM

NOV 28 2000

TO: Ralston Nagata, Administrator
State Parks

FROM: Dean Y. Uchida, Administrator
Land Division 

SUBJECT: Response to Comments on Draft Environmental Assessment for Kawai
Nui Marsh Management Plan

Thank you for your Memorandum dated November 27, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The responses to your comments are as follows:

Comment 1: The EA should include a section on implementation.

Response: The Department does not believe that a new section needs to be added addressing implementation. As noted in your memorandum, the Kawai Nui Master Plan has an Implementation Plan that discusses management responsibilities, a phasing plan, development costs, and operational costs for Master Plan activities. That plan provides good general information on implementation. The Department will provide more specific information on the implementation schedule of projects for which there is funding by adding a table in the final EA.

The following language on Implementation Schedule will be incorporated into the final EA in a New Section 4.4.15.

"4.4.15 Implementation Schedule

Below is a proposed schedule for implementation of Management Plan projects and activities. Implementation and completion dates are estimated and dependent on obtaining necessary permits, approvals and project funding.

Proposed Implementation Schedule for Management Plan Projects and Activities.

<u>Component</u>	<u>Proposed Schedule</u>
Maintenance Facility	Construction: June, 2000 - December, 2000 Operations and Maintenance: December, 2000 +
Wildlife Habitat Restoration	Plans and Specs: November, 1999 - August, 2000 Construction: December, 2000 - December, 2002 Operations and Maintenance: December, 2002 +
Maintenance of Flood Control Structures	December 1999 +
Vegetation Removal Opening waterways Marsh Interior	December 1999 + ACOE Project Proposed for 2002; pending funding
Water Quality Monitoring	Currently in progress, ongoing
Sediment Basins	No current proposal, pending future funding
Predator Control	In conjunction with Habitat Restoration Project, Begin in December 2000
Powerline Relocation	No current proposal, pending future funding
Fire Management	No current proposal, pending future funding
Interpretive and Educational Programs and Facilities	No current proposal, pending future funding
Cultural Park	No current proposal, pending future funding
Ethnobotanical Gardens	No current proposal, pending future funding
Agricultural Areas	No current proposal, pending future funding
Scenic Parks	No current proposal, pending future funding
Trail System	In conjunction with Habitat Restoration Project, Begin in December 2000
Aquatic Fauna Migratory Habitat	In conjunction with Flood Control Open Water Maintenance, Begin December, 2000

Comment 2: The second series of comments pertained to the planning, location and assessment of impacts for the Kawai Nui Education Center.

Response: The comments provided in your letter pertain to the development of the Environmental Education Center at the Diamond K Ranch site. The coalition of non-profit organizations' proposing that project decided to withdraw that proposal, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. Upon submittal, that proposal will require a separate environmental assessment; any comments and concern with that proposal can be addressed at that time.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

cc: DOFAW

NOV - 6 1998

DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

TO: Mr. Dean Y. Uchida, Administrator
Land Division

FROM: Timothy E. Johns, Deputy Director
Commission on Water Resource Management *Timothy E. Johns*

SUBJECT: Draft Environmental Assessment for the Kawai Nui Marsh Master Plan.

FILE NO.: Kawai Nui DEA

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas which are important for the maintenance of streams and the replenishment of aquifers.

- ☐ We recommend coordination with the county government to incorporate this project into the county's 20-year Water Use and Development Plan, which is subject to regular updates.
- ☐ We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the 20-year State Water Projects Plan, which is subject to regular updates.
- ☐ We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- ☐ A Well Construction Permit and/or a Pump Installation Permit from the CWRM would be required before ground water is developed as a source of supply for the project.
- ☐ The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the CWRM would be required prior to use of this source.
- ☐ Groundwater withdrawals from this project may affect streamflows. This may require an instream flow standard amendment.
- ☒ If the proposed project diverts additional water from streams or if new or modified stream diversions are planned, the project may need to obtain a stream diversion works permit and petition to amend the interim instream flow standard for the affected stream(s).
- ☒ If the proposed project alters the bed and banks of a stream channel, the project may need to obtain a stream channel alteration permit.
- ☐ We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.
- ☒ OTHER: The following activities identified in the subject document may be subject to the requirement for a stream channel alteration permit (HRS §174C-71).
 - a. Channel clearing and vegetation removal (Page 2).
 - b. Construction of 16,200 feet of fencing (page 4).

In addition, the construction of a taro/native wetland plant cultivation areas may require a stream channel alteration, and stream diversion works permits (HRS §174C-93) and a petition to amend the interim instream flow standard (HAR §13-169-50).

If there are any questions, please contact David Higa at extension 70249.



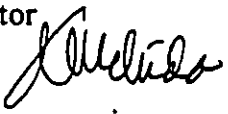
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MEMORANDUM

MAR 28 2000

TO: Linnel Nishioka, Deputy Director
Commission on Water Resource Management

FROM: Dean Y. Uchida, Administrator
Land Division 

SUBJECT: Response to Comments on Draft Environmental Assessment for Kawai Nui Marsh
Management Plan

Thank you for your Memorandum dated November 6, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The responses to your comments are as follows:

Comment 1: If the proposed project diverts additional water from streams or if new or modified stream diversions are planned, the project may need to obtain a stream diversion works permit and petition to amend the interim in-stream flow standard for the affected stream(s).

Response: The wildlife habitat restoration component of the project will divert water from Maunawili Stream and/or involve development of ground water supplies and well(s) in the area. The decision on exact source, location and specifications for the water supply will be developed during the Army Corps' Plans and Specification stage of the Habitat Restoration Project. The Department is aware of the need to obtain a stream diversion works permit and to amend the interim in-stream flow standard for the affected stream. These will be applied for once adequate data is obtained during the Plans and Specification stage of the project. These permits and approvals will be added to the list of needed permits and approvals in the FEA. The language for permits will be revised as listed below.

Comment 2, 3a and 3b: If the proposed project alters the bed and banks of a stream channel such as with channel clearing and vegetation removal and during construction of 16,200 feet of fencing, the project may need to obtain a stream channel alteration permit.

Response: The wildlife habitat restoration component of the project will involve clearing vegetation and smoothing the contour of the Maunawili and Kapakahi Streams and the

construction of 16,200 feet of fencing that may enter the stream beds of the Maunawili and Kapakahi Streams. The flood control maintenance activities may also involve vegetation clearing along canals and stream channels. The Department is aware of the need to obtain a stream channel alteration permit for these activities. These will be applied for during the Plans and Specification stage of the project. This permit will be added to the list of needed permits in the FEA.

Comment 3: The construction of a taro/native wetland plant cultivation areas may require a stream channel alteration permit, and stream diversion works permits and a petition to amend the interim instream flow standard.

Response: The Audubon Society's proposal to locate the Education and Cultural Center and associated Taro Loi Demonstration project at the Diamond K Ranch site has been withdrawn pending further community input and discussions. This activity is no longer proposed at this time and therefore will not require permits. However, taro and other native plants will be outplanted into the ponds developed for the wildlife habitat restoration project. The permit requirements for the wildlife habitat restoration project are discussed above.

The following language on required permits and approvals will be incorporated into the final EA in Section 11:

Para 2 add: "Flood control maintenance activities will also require a stream channel alteration permit from the Commission on Water Resource Management."

Para 3 add: "The Wildlife Habitat Restoration Project will also require 1) a stream diversion works permit, 2) a stream channel alteration permit and 3) an amendment to the interim in-stream flow standards from the Commission on Water Resource Management."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

cc: DOFAW

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



DEC 4 2 52 PM '98
STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhikawa Building, Room 555
601 Kamehale Boulevard
Kapolei, Hawaii 98707

November 25, 1998

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
GILBERT COLOMA-AGARAN
TIMOTHY E. JOHNS

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

MEMORANDUM

LOG NO: 22543 ✓
DOC NO: 9811EJ08

TO: Dean Uchida, Administrator
Land Division

FROM: Don Hibbard, Administrator
Historic Preservation Division

A handwritten signature in dark ink, appearing to be "DH", written over the name "Don Hibbard".

SUBJECT: Chapter 6E-8 Historic Preservation Review -- Draft Environmental
Assessment for the Kawai Nui Marsh Management Plan (File No.
Kawainui.DEA)
Kailua, Ko'olaupoko, O'ahu
TMK: 4-2-13:10, 22

Thank you for the opportunity to review the Kawai Nui Marsh Management Plan DEA. We apologize for our late response to you; our office's recent move to Kapolei caused a temporary suspension of correspondence. We regret any inconvenience to you caused by this unavoidable delay.

The DEA incorporates our earlier recommendations on creating a project that will have "no adverse effect" on historic sites (Doc. 9602TD02). These comments are included in Chapter 6.2.4 of the DEA.

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

EJ:jk




STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

APR 10 2000

MEMORANDUM

TO: Don Hibbard, Administrator
Historic Preservation Division, DLNR

FROM: Dean Uchida, Administrator
Land Division, DLNR 

SUBJECT: Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh

Thank you for your memorandum dated November 25, 1998, noting that Draft Environmental Assessment incorporates your earlier recommendations on creating a project what will have "no adverse affect" on historic sites. These comments are included in Chapter 6.2.4 of the final Environmental Assessment.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

cc: DOFAW

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



LAWRENCE MIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to

December 11, 1998

91-151C/epo

Mr. Dean Uchida
Land Division Administrator
Department of Land and
Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Uchida:

Subject: Draft Environmental Assessment (DEA)
Kawai Nui Marsh Management Plan
Kailua, Hawaii
TMK: 4-2-16: 1

Thank you for allowing us to review and comment on the subject plan. We have the following comments to offer:

Hazard Evaluation and Emergency Response Office (HEER)

There has been evidence of leaching from Kapaa landfill and possible impact to the marsh. One such impact would be the possible deposition of heavy metals to marsh sediments.

The HEER Office is currently conducting a site investigation under the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)* of the Kapaa landfill and its possible impact to Kawai Nui Marsh. This investigation will attempt to determine the presence of contaminants associated with leachate in Kawai Nui Marsh hydrology and sediments. Disturbance of sediments during the proposed project may impact

91-151C/epo
DEC 16 1998
HAWAII

Mr. Dean Uchida
December 11, 1998
Page 2

91-151C/epo

sensitive flora and fauna through increased exposure to contaminants contained in the sediments.

If there are any questions regarding these comments, please call Mr. Steve Okoji of the HEER Office at 586-4249.

Underground Storage Tanks (USTs)

Although the DEA does not mention it, the proposed maintenance facility may require underground storage tanks (USTs) to store vehicular fuel, used motor oil, emergency power generator fuel, or other types of petroleum or hazardous substances. USTs are subject to federal and state requirements. Owners of newly installed USTs must notify our Solid and Hazardous Waste Branch, Underground Storage Tank Section of the existence of such USTs within 30 days of installation. In addition, our Underground Storage Tank Section is developing new state administrative rules on USTs which, when finalized, will require permits for all new USTs. Finally, permits must be obtained from the applicable building and fire safety authorities before installation of any USTs.

Should you have any questions regarding these comments, please contact Mr. Eric Sadoyama of our Underground Storage Tank Section at 586-4226.

Wastewater

The subject project is located in a critical wastewater disposal area as determined by the Oahu Wastewater Advisory Committee. No new cesspools will be allowed in the subject area.

As there is no existing sewer service system in the area and none will be constructed in the near future, the Department of Health (DOH) concurs with the proposed construction of an individual wastewater system, distribution box and soil absorption bed for the disposal of sewage from the maintenance facility. We have already received the wastewater plans for review and approval. Should

Mr. Dean Uchida
December 11, 1998
Page 3

91-151C/epo

municipal sewer service become available in the near future, connection to the public sewers will be required.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions on these comments, please contact the Planning/Design Section of the Wastewater Branch at 586-4294.

Sincerely,



BRUCE S. ANDERSON, Ph.D.
Deputy Director for
Environmental Health

c: HEER
SHWB
WWB



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Gary Gill, Deputy Director for Environmental Health
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Gill,

Thank you for the letter dated December 11, 1998 with comments on our Department's Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh

The responses to your agency's comments are as follows:

Comment 1: There has been evidence of leaching from Kapaa landfill and possible impact to the marsh. One such impact would be the possible deposition of heavy metals to marsh sediments.

Response: We understand your Hazard Evaluation and Emergency Response (HEER) Office is conducting a site investigation under the "Superfund Act" of the Kapaa landfill and its possible impact to the marsh. Further, we understand this investigation will attempt to determine the presence of contaminants associated with leachate in the marsh's hydrology and sediments. We are very interested in the outcome of this investigation, since flora and fauna within the marsh's ecosystem may be affected by exposure to contaminants contained in the sediments. We request that we be kept abreast of the status of the investigation.

Comment 2: The proposed maintenance facility may require underground storage tanks (USTs) to store various types of petroleum or hazardous substances. USTs are subject to federal and state requirements.

Response: While no USTs are planned or proposed in connection with the proposed maintenance facility, should any USTs be utilized, all applicable permits will be obtained prior to their installation.

Comment 3: The subject project is located in a critical wastewater disposal area as determined by the Oahu Wastewater Advisory Committee. No new cesspools will be allowed in the subject area.

Response: No cesspools are planned or proposed in the subject project area. We note the DOH has concurred with the proposed construction of an individual wastewater system, distribution box and soil absorption bed for the disposal of sewage from the maintenance facility. Additionally, we

note your agency has already received the project's wastewater plans for review and approval. We understand that all such wastewater plans must conform with the applicable provisions of Chapter 11-62, Hawaii Administrative Rules, and that should municipal sewer service become available in the near future, connection to the public sewers will be required.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

Sincerely,



DEAN UCHIDA
Administrator

cc: DOFAW

BENJAMIN J. CAYETANO
GOVERNOR



GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4186
FACSIMILE (808) 586-4186

October 23, 1998

Mr. Dean Uchida, Administrator, Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Uchida:

Having reviewed the September 1998, draft environmental assessment (DEA) for the "Management Plan for Kawai Nui Marsh" we submit the following comments for your response.

1. **COMPARISON OF THE JULY 1994, KAWAI NUI MARSH MASTER PLAN AND THE PRESENT MANAGEMENT PLAN**

We are in receipt of comments (attached) from Senator Whitney Anderson and Ms. Deborah Pope suggesting that the relocation of the Kawai Nui Education Center contravenes the Kawai Nui Marsh Master Plan (1994). In the final environmental assessment, please discuss differences between the present management plan and the 1994 master plan, giving reasons for such differences.

2. **DISCUSSION OF ENVIRONMENTAL SETTING - POLLUTION CONTROL FACILITIES, RANCHES, STABLES AND NEARBY INDUSTRIAL FACILITIES**

In the Appendix, chapter 2 of site analysis for the 1994 Kawai Nui Marsh Master Plan is reproduced to fulfill the content requirements for describing the environmental setting of the project. The descriptions in the DEA make passing mention of sewer pump stations, a refuse transfer station, ranches and stables, the Kapa'a Sanitary Landfill, the Kapa'a Sanitary Landfill Expansion, the Kapa'a Industrial Park, sites which appear to be hydrologically upgradient from the marsh itself.

Please include more detail discussion on these sites and what potential direct, indirect and cumulative effects they may have on your agency's potential management of the marsh. Items to be discussed should include at a minimum: controls to prevent landfill leachate, animal waste, methane gas and hazardous constituents from adversely affecting the marsh; conditions in appropriate solid waste management permits (such as groundwater monitoring, lysimeters) to monitor/detect horizontal subsurface contaminant migration to the marsh.

Thank you for the opportunity to comment. If there are any questions, please call Leslie Segundo, Environmental Health Specialist, at 586-4185.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Gill", written over a horizontal line.

GARY GILL
Director

Attachments

c: Mr. Tom Eisen and Ms. Lauren Tanaka, DLNR Land Division



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

MAR 28 2000

Dear Ms. Salmonson:

Thank you for your letter dated October 23, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The responses to your comments are as follows:

Comment 1: Comparison of the July 1994, Kawai Nui Marsh Master Plan and the Present Management Plan. We are in receipt of comments suggesting that the relocation of the Kawai Nui Education Center contravenes the Kawai Nui Marsh Master Plan (1994). In the final environmental assessment, please discuss differences between the present management plan and the 1994 master plan, giving reasons for such differences.

Response: There are only two major differences in the draft EA and the 1994 master plan: 1) the proposal to locate the Environmental Education Center at the Diamond K Ranch site rather than the 1994 master plan site at the corner of Kailua Road and Kapaa Quarry Road, and 2) the addition of a maintenance baseyard facility near the model airplane field site.

The coalition of non-profit organizations' proposing the Environmental Education Center project decided to withdraw that proposal, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. That proposal therefore has been removed from the Final EA. Upon submittal, that proposal will require a separate environmental assessment; any comments and concern with that proposal can be addressed at that time.

The addition of a maintenance baseyard facility near the model airplane field site is necessary to provide adequate security and protection from the elements for the sizeable investment of manpower and equipment that is needed to maintain the flood control structures and functions of the marsh, and other maintenance and management needs of the marsh. The following language will be added to the end of section 4.1 to identify the variance from the 1994 master plan and the reason.

"The construction of the baseyard facilities was not originally included in the 1994 Master Plan. That plan proposed use of this site only as a boat staging area and for drying dredged vegetative material before disposal. The development of this facility is needed to provide a base of operations for the equipment and manpower that will be involved in the management and maintenance of the marsh. The baseyard facilities will provide the needed security and protection from the elements for the sizeable investment of equipment that will be used to maintain the flood control structures and functions of the marsh, and the other maintenance and management needs of the marsh."

Comment 2: Discussion of Environmental Setting – Pollution Control Facilities, Ranches, Stables and Nearby Industrial Facilities. Please include more detail discussions of these sites and what potential direct, indirect and cumulative effects they may have on your agency's potential management of the marsh. Items to be discussed should include at a minimum: controls to prevent landfill leachate, animal waste, methane gas and hazardous constituents from adversely affecting the marsh; conditions in appropriate solid waste management permits (such as groundwater monitoring, lysimeters) to monitor/detect horizontal subsurface contaminant migration to the marsh.

Response: The request for an in-depth discussion of prior existing facilities and their impacts on the marsh environment exceeds the purpose, scope and capacity of this document. The management actions described in this EA do not affect nor propose to manage factors in the general area that may potentially affect Kawai Nui Marsh. The purpose of this environmental assessment is to identify those actions that the Department is planning to undertake and to assess their effects on the environment. The information and analysis requested is more appropriately included in a baseline study of the hydrology, water quality and contaminants of Kawai Nui Marsh. The Department is concerned about these issues, and has included limited water monitoring as a component in its management plans and will seek funding from State and Federal sources to implement an expanded water monitoring program as part of project operations and management to continually assess water quality issues.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW

4265

W

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

STP 8.8867

October 14, 1998

TO: THE HONORABLE MICHAEL D. WILSON, CHAIR
BOARD OF LAND AND NATURAL RESOURCES
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: KAZU HAYASHIDA *KV*
DIRECTOR OF TRANSPORTATION

SUBJECT: KAWAI NUI MARSH MANAGEMENT PLAN
DRAFT ENVIRONMENTAL ASSESSMENT

Thank you for your transmittal of October 1, 1998, requesting our comments on the proposed plan.

The proposed development will not impact our State transportation facilities.

We appreciate the opportunity to provide comments.

RECEIVED
STATE OF HAWAII
OCT 20 11:07
& NATURAL RESOURCES




STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

MEMORANDUM

TO: Kazu Hayashida, Director
Department of Transportation

FROM: Dean Uchida, Administrator
Land Division, DLNR 

SUBJECT: Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh

Thank you for your memorandum dated October 14, 1998 with comments on our Department's Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh.

Your comment that the proposed development will not impact your State transportation facilities is noted, and will be included in our final Environmental Assessment for the project.

Once again, thank you for your comments.

cc: DOFAW

4/40

LD

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

JOHIE M. K. M. YAMAGUCHI
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P.O. BOX 1879
HONOLULU, HAWAII 96805

October 9, 1998

To: Honorable Michael D. Wilson, Chairperson
Board of Land and Natural Resources

Attn: Dean Uchida, Administrator
Land Division

From: *for* Kali Watson, Chairman *J. Chu*
Hawaiian Homes Commission

Subject: Draft Environmental Assessment for Kawai Nui Marsh
Management Plan, Dated September, 1998

Thank you for the opportunity to review the subject application.
The Department of Hawaiian Home Lands has no comment to offer.

If you have any questions, please call Daniel Ornellas at
586-3837.

OCT 12 3 03 PM '98

DEPARTMENT OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

OCT 12 P 2: 24

RECEIVED




STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

MEMORANDUM

TO: Raynard Soon, Chairman
Hawaiian Homes Commission

FROM: Dean Uchida, Administrator
Land Division, DLNR 

SUBJECT: Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh

Thank you for your agency's memorandum dated October 9, 1998, noting that upon review of our Department's Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh, the Department of Hawaiian Home Lands has no comments to offer.

The correspondence will be included in our final Environmental Assessment for the project.

Once again, thank you for your agency's time in reviewing this important project.

cc: DOFAW

State of Hawaii
Territorial Legislature
The Senate

September 16, 1998

To Whom It May Concern:

Attached are my comments on the Draft Environmental Assessments for the Kawai Nui Education Center as published by the Office of Environmental Control in the September 8, "Environmental Notice".

I am forwarding copies of my comments to the OEOC, DLMR and the Audubon Society as instructed in the Notice.

Whitney T. Anderson
Whitney T. Anderson
Senator
Twenty Fifth District

**State of Hawaii
Ninety-first Legislature
The Senate**

While I do not question the need for an Education Center at the appropriate time and place I do not believe that this proposed location is the proper one for such a facility.

At the time that the Master Plan for Kawai Nui was developed and adopted the Plan was the result of intensive study and participation by many varied segments of our community. At the end of this planning process agreements and disagreements were worked out and a homogeneous plan was adopted.

I do not believe that it is in the best planning interest of the State Park to alter the Master Plan. This could set a precedent for further "spot" variances that could destroy the homogeneity of the original concept in which each part is integral to the whole.

In the Master Plan the Education Center is located at the corner of Kalenianiole Highway and Kapaa Quarry Road, providing a direct access. Under this proposed location the Center would be located off a narrow road behind Castle Hospital, a road never intended for more than local residential traffic.

I sincerely hope that the integrity of the Master Plan will not be violated..

My second comment on this proposal is a fiscal question. Under this proposal the State would grant a 50+ year renewable lease on about 5 acres at the foot of Ulukahi Street below Castle Hospital and adjacent to Kawai Nui Marsh. The organizations seeking this lease intend to look for private funding for the project including:

- a) developing an on going educational program

CC: OEQC
DLNR
Audubon Society

Mike Wilson
October 6, 1998

2

No Provision for Benefits of Ranching to Marsh Management. On page 15 the EA states that removal of cattle will be of positive benefit to the marsh. This is in direct conflict with the Maszer Plan which throughout describes the benefits the Knott Ranch provides to preserving open water wildlife habitat. It also conflicts with statements by Paul Courty of DLNR's Forestry & Wildlife Division before the Kailua Neighborhood Board meeting on Thursday, October 1, 1998 in which he acknowledged that livestock grazing helps to control vegetation which in turn benefits wildlife habitat.

The proposed location of the Education Center is in the area now occupied by the Knott animal pens, holding and work areas. The Education Center would block access from these areas to the grazing area, thereby disrupting ranching operations altogether.

- What alternative access to grazing areas have been identified?
- Have alternative sites for relocation of the Knott Ranch been evaluated?
- What are the relocation costs?
- If the Knott Ranch were not able to continue operations, what alternative methods would be put in place for controlling vegetation? At what cost?

In addition, there is no acknowledgement of the benefits the Division of Forestry & Wildlife derives from their long-term relationship with the Knotts. DOPAW currently uses a portion of the Knott's leased land as a base yard from which to manage the marsh and propagate birds. They enjoy cooperation and good working relationships with the Knotts and their ranching operation.

- Would these DOPAW functions continue at their current site?
- If not, where would they be relocated?
- What are the costs of relocating these functions and facilities?

Inadequate Assessment of Cultural Impact. The EA does not acknowledge the place of ranching in the culture and history of Kawai Nui Marsh. The use of the Marsh for ranching goes back over 100 years. Ranching is a vital and continuing part of this unique cultural and natural landscape and as such should be incorporated into the interpretive and educational plans for the Center. It is in fact "living history," part of the complex working life of the Marsh and the human traditions surrounding it. As such it represents rich educational potential.

- Is there a written interpretive plan for the Educational Center?
- What is the educational content of the Center's proposed programs and exhibits?
- What is the justification for disrupting and jeopardizing a working lifestyle which

Mike Wilson
October 6, 1998

3

Is an essential part of Marsh history in order to interpret other aspects of the Marsh?

Traffic and Vehicular Access. The EA is deficient in assessing the adequacy of the existing access to the site and potential impact of increased traffic.

- Who are the target audiences for the Educational Center and how are they likely to be transported to the site?
- Is the road adequate for the proposed uses?
- If school groups are a main target group, how will school buses be accommodated? Is there adequate area for turnaround?
- What is the impact on access to Castle Hospital Emergency Center?

No Feasibility & Funding Plans. The EA is inadequate in identifying the costs of the Educational Center, either in terms of planning and construction or in terms of annual operating costs. Fundraising is to be done by a new non-profit organization currently being formed by the participating partners.

- What is the charter of the proposed new non-profit organization? What is the organizational structure?
- Will the new organization have paid staff? Do any of the participating partners employ paid staff?
- What kind of experience do the partners have with fundraising? What is their track record with funding agencies?
- How will the Center raise start-up funds for planning and construction?
- How will the Center earn annual operating revenue to continue its programs and operations? Will fees be assessed? Does the Center have other earned income potential?
- Is the Educational Center prepared to be fully independent of State funds or will taxpayers be paying for these facilities and programs?

In the context of State budget cuts, the State has severely cut back or withdrawn support altogether from some of our most valuable cultural and historical resources including 'Iolani Palace, Bishop Museum, the State Archives, He'eia State Park and many others. Many of these and other non-profit organizations are in an aggressive fundraising mode and the private sector finds itself unable to meet the demand created by the loss of State support. While private funding sources are often eager to provide capital and start-up money, they are almost never willing to provide annual operating support. In this day and age, the expectation of granting agencies is always that organizations will support



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Honorable Senator Whitney T. Anderson
Hawaii State Capital
415 South Beretania Street, Room 221
Honolulu, Hawaii 96813

Dear Senator Anderson,

Thank you for your letter dated September 16, 1998 with comments on the Draft Environmental Assessment for Kawai Nui Education Center Initial State

The Department's responses to your comments are as follows:

Comments on the Environmental Education Center.

Response: The comments provided in your letter pertain to the development of the Environmental Education Center at the Diamond K Ranch site. The coalition of non-profit organizations' proposing that project decided to withdraw that proposal, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. Upon submittal, that proposal will require a separate environmental assessment; any comments and concern with that proposal can be addressed at that time.

The Department agrees with your comments on the importance of interpretive and educational programs for Kawai Nui Marsh. The following language will be added to Section 4.4.8 on educational programs to emphasize the need and community involvement in the program.

"Section 4.4.8 Interpretive and Educational Programs and Facilities"

Para 2: "It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving community and government."

As was the case with the education center, the Department is taking the position that any future project that significantly deviates from the Master Plan will be required to prepare an Environmental Assessment and undergo a public review process.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

Sincerely,

A handwritten signature in cursive script, appearing to read 'D. Uchida', is written over the printed name.

DEAN UCHIDA
Administrator

cc: DOFAW

10

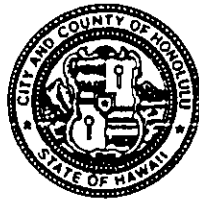
4310

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET • HONOLULU, HAWAII 96813
PHONE: (808) 523-4414 • FAX: (808) 527-6743

98 OCT 28 P 2: 29

JEREMY HARRIS
MAYOR



DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

JAN NAOE SULLIVAN
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

98-07606 (DT)

October 27, 1998

Mr. Michael D. Wilson, Director
Department of Land and
Natural Resources
State of Hawaii
Kalanimoku Building
1151 Punchbowl Street, Room 130
Honolulu, Hawaii 96813

Attn: Mr. Tom Eisen

Dear Mr. Wilson:

Draft Environmental Assessment (EA)
Kawai Nui Marsh Management Plan

We have reviewed the above Draft EA and have the following comments:

1. The final EA should contain a vicinity map showing Kawai Nui Marsh in relation to the proposed baseyard and Kawai Nui Education Center.
2. What is the approximate amount of fill in cubic yards that will be graded for the proposed baseyard and education center sites? How will potential runoff from grading these areas be minimized?

The proposed baseyard and education center sites are currently vacant. The proposals will increase surface runoff due to the construction of impervious surfaces, such as roads and buildings. A topographic map clearly showing existing and final elevation contours should be included with the Special Management Area Use Permit (SMP) applications for the baseyard and education center so that the drainage patterns for the project sites can be analyzed.

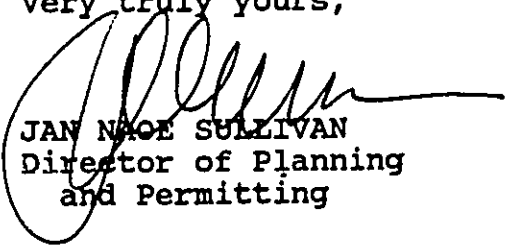
3. The distance of the baseyard and education center from Kawai Nui Marsh should be mentioned in the final EA.

Mr. Michael D. Wilson, Director
Page 2
October 27, 1998

4. As noted in Section 11 of the Draft EA, an SMP will be required for the education center. Not mentioned in this section is that the baseyard will also require a SMP. It appears that the proposals are being segmented as there is a separate Environmental Assessment for the education center. Chapter 25, Revised Ordinances of Honolulu requires that proposed development projects not be segmented where the cumulative impacts may have an adverse impact on the coastal environment. We consider the management plan, education center, and baseyard as part of a larger project, in which a major SMP will be required.
5. What types of best management practices will be implemented to prevent construction runoff from leaving the project sites for the baseyard and education center?
6. The method of solid waste disposal to be utilized after completion of the baseyard and education center, and the location where the solid waste will be disposed of should be included in the final EA.
7. The final EA should mention whether the proposed management plan follows the objectives of the 1994 Kawai Nui Marsh Master Plan. Any proposed changes should be noted.
8. We have no comments regarding drainage at this time.

Should you have any questions regarding this letter, please contact Ms. Dana Teramoto of our staff at 523-4648.

Very truly yours,



JAN NAOE SULLIVAN
Director of Planning
and Permitting

JNS:am

g:zd\9807606.djt



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Randall Fujiki, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

Draft Environmental Assessment (EA) Kawai Nui Marsh Management Plan

Thank you for your letter dated October 27, 1998, with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *General Comment: The final EA should contain a vicinity map showing Kawai Nui Marsh in relation to the proposed baseyard and Kawai Nui Education Center.*

Response: A vicinity map will be included in the final EA showing the location of the proposed baseyard facility. The Education Center site location has not been set at this time.

2. *General Comment: What is the approximate amount of fill in cubic yards that will be graded for the proposed baseyard and education center sites? How will potential runoff from grading these areas be minimized?*

The proposed baseyard and education center sites are currently vacant. The proposals will increase surface runoff due to the construction of impervious surfaces, such as roads and buildings. A topographical map clearly showing existing and final elevation contours should be included with the Special Management Area Use permit (SMP) applications for the baseyard and education center so that the drainage patterns for the project sites can be analyzed.

Response: We are unable to comment on the Education Center, since it has not been

sited or designed.

The maintenance base yard will generate approximately 3,000 cubic yards of excavation and will involve 500 cubic yards of fill. The excavation amount includes 1,000 cubic yards for the construction of the service road and related concrete pads.

Appropriate BMPs will be incorporated during the construction of the site (i.e. silt fences). We estimate approximately 20,000 square feet of impervious area will be added to the site from the maintenance base yard improvements. This will increase the runoff from the base yard by 1 cubic feet per second. $(\text{Additional Runoff} = (20,000\text{sf} / 43,560\text{sf/acre}) \times (\text{Coef. } 0.95 - 0.35) \times (\text{Rainfall intensity } 4 \text{ in/hr}))$

Site drainage patterns will be included with the SMP Application. The final drainage pattern will match the existing drainage pattern. Some areas of the site will be altered. However, we do not anticipate any impacts to the surrounding areas. Grading plans with this information have been submitted and will be resubmitted for review and approval by the City and County of Honolulu.

3. *General Comment: The distance of the baseyard and education center from Kawai Nui Marsh should be mentioned in the final EA.*

Response: We are unable to comment on the Education Center, since it has not been sited or designed. The maintenance base yard will be approximately 300 feet from the closest edge of the marsh.

4. *General Comment: As noted in Section 11 of the Draft EA, an SMP will be required for the education center. Not mentioned in this section is that the baseyard will also require a SMP. It appears that the proposals are being segmented as there is a separate Environmental Assessment for the education center. Chapter 25, Revised Ordinances of Honolulu requires that proposed development projects not be segmented where the cumulative impacts may have an adverse impact on the coastal environment. We consider the management plan, education center, and baseyard as part of a larger project, in which a major SMP will be required.*

Response: The maintenance base yard did submit a SMP and is considered as a stand alone project based on its function. However, the SMP application is planned to be resubmitted as part of the overall combined project.

5. *General Comment: What types of best management practices will be implemented to prevent construction runoff from leaving the project sites for the baseyard and education center?*

Response: Silt fences and stabilized construction entrances will be utilized during

construction.

6. *General Comment: The method of solid waste disposal to be utilized after completion of the baseyard and education center, and the location where the solid waste will be disposed of should be included in the final EA.*

Response: We are unable to comment on the Education Center, since it has not been sited or designed. A septic tank with a buried soil absorption bed, has been approved for use at the base yard. All solid waste, other than green waste, will be collected and transported to the Kapaa Transfer Station. Green waste will be dried, chipped or mulched, and then recycled to other DLNR facilities.

7. *General Comment: The final EA should mention whether the proposed management plan follows the objectives of the 1994 Kawai Nui Marsh Master Plan. Any proposed changes should be noted.*

Response: The proposed management plan for the base yard does follow the objectives of the Kawai Nui Master Plan.

8. *General Comment: We have no comment regarding drainage at this time.*

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,

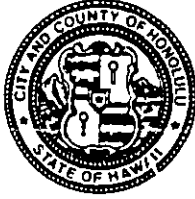

DEAN UCHIDA
Administrator

c. OEQC

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 8TH FLOOR • HONOLULU, HAWAII 96813-3017
PHONE: (808) 523-4333 • FAX: (808) 523-4950

JEREMY HARRIS
MAYOR



PATRICK T. ONISHI
CHIEF PLANNING OFFICER
DONA L. HANA'IKE
DEPUTY CHIEF PLANNING OFFICER

MH 10/98-1934

October 22, 1998

Mr. Dean Uchida
Land Division Administrator
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Oct 27 9 25 AM '98

Dear Mr. Uchida:

Draft Environmental Assessment
for Kawai Nui Marsh Management Plan

In response to your division's request of October 1, 1998, we have reviewed the subject Draft Environmental Assessment and have no objections. The proposed project is consistent with the Preservation use designation as shown on the Koolaupoko Development Plan Land Use Map.

Should you have any questions, please contact Matthew Higashida of our staff at 527-6056.

Yours very truly,

A handwritten signature in black ink, appearing to read "Patrick T. Onishi".
PATRICK T. ONISHI
Chief Planning Officer

PTO:ft

c: Division of Forestry and Wildlife, Department of Land and Natural Resources
Office of Environmental Quality Control



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREA-
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

APR 10 2000

Mr. Randall Fujiki, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

Draft Environmental Assessment (EA) Kawai Nui Marsh Management Plan

This letter responds to the comments submitted by the former Planning Department on October 22, 1998, regarding our Draft Environmental Assessment of our Management Plan for Kawai Nui Marsh.

We note the comment that the project is consistent with the Preservation use designation as shown on the Koolaupoko Development Plan Land Use Map; further, we note that upon review of the subject draft EA, the Planning Department had no objections.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,

A handwritten signature in black ink, appearing to read "Dean Uchida".

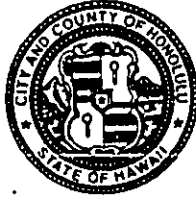
DEAN UCHIDA
Administrator

c.

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 10TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4182 • FAX: (808) 523-4054

JEREMY HARRIS
MAYOR



WILLIAM D. BALFOUR, JR.
DIRECTOR

MICHAEL T. AMI
DEPUTY DIRECTOR

October 22, 1998

Mr. Dean Uchida, Land Division Administrator
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Uchida:

Re: Draft Environmental Assessment for
Kawai Nui Marsh Management Plan

We have reviewed the above-referenced document and find that the draft management plan does not impact on any of our recreational activities within the management plan area.

We are very pleased that the draft calls for such a large number of opportunities for the public to enjoy educational and passive recreational activities in an area that is rich in wildlife and botanical resources.

If you have any questions, please contact Mr. John Eveland,
Executive Assistant, at 527-6038.

Sincerely,

W.D. Balfour, Jr.
WILLIAM D. BALFOUR, JR.
Director

WDB:cu
(98-2409GT)

031 25 9 50 PM '98



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREAT
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

APR 10 2000

Mr. William D. Balfour, Jr., Director
Department of Parks and Recreation
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Balfour,

Draft Environmental Assessment (EA) Kawai Nui Marsh Management Plan

Thank you for your agency's letter dated October 22, 1998, noting that upon review of our Department's Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh, you found that there would be no impact on any of your recreational activities within the management plan area.

We too are pleased that the project will create a large number of opportunities for the public to enjoy the wildlife and botanical resources of this special area.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

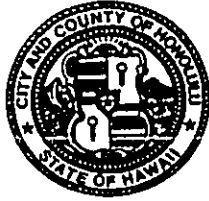
Sincerely,

A handwritten signature in black ink, appearing to read "Dean Uchida".

DEAN UCHIDA
Administrator

c.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 527-8883 • FAX: (808) 527-6875



JEREMY HARRIS
Mayor

KENNETH E. SPRAGUE, P.E., Ph.D.
Director

CHERYL K. OKUMA-SEPE, ESQ.
Deputy Director

ENV 98-196

October 12, 1998

Mr. Dean Uchida, Administrator
Land Division
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Uchida:

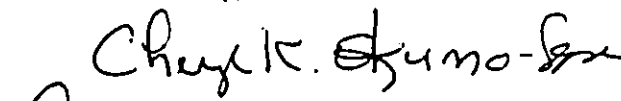
Subject: Draft Environmental Assessment (DEA)
Kawai Nui Marsh Management Plan

We have reviewed the subject DEA and have the following comments:

1. During construction, best management practices (BMPs) should be employed to control and reduce discharge of pollutants.
2. BMPs should also be applied during the routine maintenance operation (e.g. installation of drip pan to prevent leak of engine oil from vehicles, proper application of pesticides, etc.) to control discharge of pollutants.

Should you have any questions, please contact Alex Ho, Environmental Engineer, Division of Environmental Quality at 523-4150.

Sincerely,


KENNETH E. SPRAGUE
Director

Oct 14 1998



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Kenneth E. Sprague, Director
Department of Environmental Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

Dear Mr. Sprague:

Draft Environmental Assessment (EA) Kawai Nui Marsh Management Plan

Thank you for your letter dated October 12, 1998, with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department has noted your comments and will utilize applicable BMPs during construction. Further precautionary BMPs will be utilized during routine maintenance. Chemicals and other herbicides shall be applied, as per manufacturer's instructions, and only herbicides acceptable for use around the marsh will be used on the levee.

Thank you again for your comments. If you have any questions, or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,


DEAN UCHIDA
Administrator

c. OEQC

BOARD OF WATER SUPPLY

Y AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843
PHONE (808) 527-6180
FAX (808) 533-2714



October 28, 1998

JEREMY HARRIS, Mayor
EDDIE FLORES, JR., Chairman
FORREST C. MURPHY, Vice Chairman
KAZU HAYASHIDA
JAN M.L.Y. AMII
JONATHAN K. SHIMADA, PhD
BARBARA KIM STANTON
CHARLES A. STED

CLIFFORD S. JAMILE
Manager and Chief Engineer

Mr. Dean Y. Uchida, Administrator
Land Division
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Uchida:

Subject: Your Letter of October 1, 1998 Regarding
the Draft Environmental Assessment for
the Kawainui Marsh Management Plan


Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the proposed Kawainui Marsh Management Plan.

We provide the following response to your concerns:

1. There is no existing water service to the project site. We are currently reviewing the construction plans for the installation of a 3/4-inch water meter to serve the Kawainui Maintenance Baseyard.
2. The existing water system near the proposed education center cannot provide adequate fire protection in accordance with our Water System Standards. Therefore, the applicant will be required to install a fire hydrant in the vicinity of the proposed development.
3. The applicant will be required to obtain a water allocation from Department of Land and Natural Resources.
4. The availability of water will be confirmed when the building permit applications are submitted for our review and approval. When water is made available, the applicant will be required to pay our Water System Facilities Charges for transmission and daily storage.
5. The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.
6. If a three-inch or larger meter is required, the construction drawings showing the installation of the meter should be submitted for our review and approval.
7. The proposed project is subject to Board of Water Supply cross-connection control requirements prior to the issuance of the building permit application.

If you have any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,


CLIFFORD S. JAMILE
Manager and Chief Engineer



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Clifford S. Jamile
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Jamile:

Draft Environmental Assessment (EA) Kawai Nui Marsh Management Plan

Thank you for your letter dated October 28, 1998, with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *General Comment: There is no existing water service to the project site. We are currently reviewing the construction plans for the installation of a 3/4 -inch water meter to serve the Kawai Nui Maintenance Baseyard.*

Response: Noted.

2. *General Comment: The existing water system near the proposed education center cannot provide adequate fire protection in accordance with our Water System Standards. Therefore, the applicant will be required to install a fire hydrant in the vicinity of the proposed development.*

Response: We are unable to comment on the Education Center, since the site or design has not been set at this time.

3. *General Comment: The applicant will be required to obtain a water allocation from Department of Land and Natural Resources.*

Response: Water allocation from the State DLNR has been obtained.

4. *General Comment: The availability of water will be confirmed when the building*

permit applications are submitted for our review and approval. When water is made available, the applicant will be required to pay our Water System Facilities Charges for transmission and daily storage.

Response: Per earlier discussions with the Board of Water Supply, 500 gpd was confirmed to be available for use at the maintenance base yard. Applicable Water System Facilities, Transmission, and Storage charges will be paid at the time permits are obtained.

5. *General Comment: The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.*

Response: Fire protection requirements will be confirmed with the Honolulu Fire Department when building permits are obtained.

6. *General Comment: If a three-inch or larger meter is required, the construction drawings showing the installation of the meter should be submitted for our review and approval.*

Response: 3-inch meter was not required for the baseyard.

7. *General Comment: The proposed project is subject to Board of Water Supply cross-connection control requirements prior to the issuance of the building permit application.*

Response: A Board of Water Supply approved reduced pressure backflow preventer will be installed for the baseyard.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen or my staff at 587-0439.

Sincerely,



DEAN UCHIDA
Administrator

c. OEQC

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU

850 SOUTH KING STREET, 11TH FLOOR • HONOLULU, HAWAII 96813
Phone: (808) 523-4341 • Fax: (808) 527-6867

JEREMY HARRIS
MAYOR



JONATHAN K. SHIMADA, PhD
DIRECTOR AND CHIEF ENGINEER

ISIDRO M. BAQUILAR
DEPUTY DIRECTOR

IN REPLY REFER TO:
PRO 98-204

October 13, 1998

Mr. Michael D. Wilson, Chairperson
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Mr. Tom Eisen, Planning Branch

Dear Mr. Wilson:

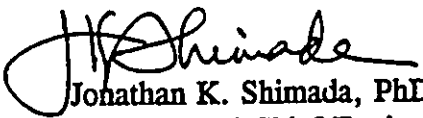
Subject: Draft Environmental Assessment for Kawainui Marsh Management Plan

We offer you our comments:

1. Kawainui Marsh is under the jurisdiction of the City Department of Parks and Recreation (DPR). Please ensure that they have the opportunity to review the document.
2. DPR has expressed their desire to subdivide the model airplane field and retain ownership of the field. This issue will need to be resolved between DPR and DLNR.

If you have any questions, please call Laverne Higa at 527-6246.

Very truly yours,


Jonathan K. Shimada, PhD
Director and Chief Engineer

LH
cc: Department of Parks and Recreation

OCT 15 0 53 AM '98



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 821
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Ross Sasamura, Director
Department of Facility Maintenance
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

Dear Mr. Sasamura:

Draft Environmental Assessment (EA) Kawai Nui Marsh Management Plan


Thank you for your letter dated October 13, 1998, with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department has noted your comments. The draft EA was transmitted to the City Department of Parks and Recreation, as part of the Conservation District Use Application (CDUA) package, for their review and signature. Additional concerns that the City agencies may have can also be addressed during the SMA permitting process.

The Department is committed to provide a location for the model airplane community; however, we do not know where the permanent location will be at this time. The existing model airplane field will be maintained, as much as possible, based on the requirements of the marsh maintenance activities.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,


DEAN UCHIDA
Administrator

c. OEQC



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Ecoregion
300 Ala Moana Blvd, Rm 3-122
Box 50088
Honolulu, HI 96850

NOV 19 1998

In Reply Refer To: LTG

Mr. Dean Uchida
Land Division Administrator
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, HI 96809

Re: Draft Environmental Assessment for Kawai Nui Marsh Management Plan, Kailua, Oahu

Dear Mr. Uchida:

The U.S. Fish and Wildlife Service (Service) has reviewed your October 1, 1998, letter seeking comments on the Draft Environmental Assessment (DEA) for Kawai Nui Marsh Management Plan (Plan). The project sponsor is the State of Hawaii Department of Land and Natural Resources (DLNR). The purpose of the Plan is to outline methods by which Kawai Nui Marsh will be managed, primarily for flood control and secondarily for recreational, cultural/archaeological, religious, educational, open-space, wildlife, and commercial uses. The project involves the construction and long-term management of a maintenance facility and education center, restoration of wildlife habitat, and other proposed actions (e.g., a trail system, cultural park, ethnobotanical gardens, agricultural areas, and scenic parks).

The Service has previously cooperated with the U.S. Army Corps of Engineers (Corps) and DLNR Division of Forestry and Wildlife to restore habitat for native endangered waterbirds (i.e., Hawaiian stilt, *Himantopus mexicanus knudseni*; Hawaiian common moorhen, *Gallinula chloropus sandvicensis*; Hawaiian duck, *Anas wyvilliana*; and the Hawaiian coot, *Fulica americana alai*), migratory waterfowl, and shorebirds in Kawai Nui Marsh. Our most recent involvement was the preparation of a Fish and Wildlife Coordination Act Report for the Kawainui Marsh Environmental Restoration Project (July 1997) (FWCA Report) for the Corps. For your consideration, the Service offers the following comments regarding the wildlife habitat restoration portion of the Plan.

General Comments

The Service supports the Plan and its objective to restore wildlife values for Hawaii's endangered waterbirds and to retain the flood storage function of the marsh. We also commend DLNR for working with various Federal and State agencies, private organizations, and the public to manage Kawai Nui Marsh. However, the Plan does not adequately describe the long-term management actions regarding the wildlife habitat restoration project. Based on a conversation with the DOFAW, it's the Service's understanding that the ponds and mudflats will be redesigned and a water delivery system will be identified upon completion of this change. The Service would like to emphasize the importance of developing a management plan that adequately describes the long-term maintenance actions regarding the wildlife habitat restoration project prior to the start of construction. The Service recommends that the design of the ponds and mudflat areas and a water level maintenance system be chosen that is cost efficient and requires the least amount of management in the long-term.

Specific Comments

Pages 3-6. 4.2 Wildlife Habitat Restoration Project

The DEA provides a general list of cooperators that will assist in the operation and maintenance of the wildlife habitat restoration project. The DEA did not identify the lead agency responsible for coordinating with the cooperators and the long-term maintenance of the wildlife habitat project. The Service recommends that the Final Environmental Assessment (FEA) identify the lead agency responsible for the long-term management of the wildlife habitat restoration project and a list of the agencies, organizations, ranchers, private contractors, etc. that have committed to participate in the operation and maintenance of this project.

One of the major components of the restoration project is to cultivate taro. The DEA does not adequately describe what is involved with taro cultivation and does not discuss the impacts to the four endangered waterbirds that are present within Kawai Nui Marsh. The FEA should describe what is involved in taro cultivation, what portion(s) of the wildlife habitat restoration project will be used for taro cultivation, and describe any impacts to federally listed endangered species.

The DEA does not adequately describe the predator removal program. The Service recommends that the FEA identify the time of year this program will be implemented, how often the traps will be checked, and if information will be collected regarding this program (e.g., amount and species of predator captured).

Pages 18-25. 6.2 Environmental Restoration Project

This section of the DEA provides a discussion of the potential impacts to various resources for each of the alternatives considered, along with proposed mitigation measures. This section does not provide a complete description of potential impacts to fish and wildlife resources resulting from the

wildlife habitat restoration project. The FWCA Report, which is enclosed, identifies the expected impacts of the Kawai Nui Marsh Environmental Restoration Project on fish and wildlife resources in Kawai Nui Marsh and recommendations to minimize indirect adverse impacts to those resources. The DEA does not identify all of the impacts mentioned in the FWCA report or incorporate the provided recommendations to minimize indirect adverse impacts. The Service suggests that the recommendations provided in the FWCA Report be incorporated into the FEA.

Page 23. 6.2.6 Hydrologic and Hydraulic Conditions

The DEA states that either a gravity fed or pump operation will be used to maintain variable water depths within the proposed ponds and mudflats. The Service is concerned with the long-term maintenance and operation costs of either option. We recommend that a cost-benefit analysis be completed to determine which option will provide a cost efficient method for maintenance and operation of the water level in the proposed ponds and mudflats. The FEA should describe the chosen option.

Exhibits


The exhibits in the DEA are not clearly identified. The Service suggests that each exhibit in the FEA contain a label that describes the contents.

It is not clear why Exhibit 6 is included in the DEA because it does not coincide with the description of the alternatives considered for the wildlife habitat restoration project. The Service recommends that Exhibit 6 be removed from the FEA.

Provided that these issues are satisfactorily addressed in the FEA and there are no significant adverse impacts to federally protected trust resources, the Service will concur with a Finding of No Significant Impact for the proposed project.

The Service offers these comments as technical assistance for your consideration in preparation of the FEA. We look forward to further coordination with you on this project as more specific information becomes available. If you have any questions concerning these comments, please contact Fish and Wildlife Biologist Leila Gibson by phone at 808/541-3441 or by facsimile transmission at 808/541-3470.

Sincerely,


for/ Robert P. Smith
Pacific Islands Manager

Enclosure

cc: DOFAW, Honolulu
COE, Hawaii



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

Mr. Robert Smith
Fish and Wildlife Service
Pacific Islands Ecoregion
P.O. Box 50088
Honolulu, Hawaii 96850

MAR 28 2000

Dear Mr. Smith:

Thank you for your letter dated November 19, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *Comment: The Plan does not adequately describe the long-term management actions regarding the wildlife habitat restoration project....it's the Service's understanding that the ponds and mudflats will be redesigned and a water delivery system will be identified upon completion of this change....the Service recommends that the design of the ponds and mudflat areas and a water level maintenance system be chosen that is cost efficient and requires the least amount of management in the long-term.*

Response: The Department's Management Plan describes the overall scope, layout and elements of the proposed wildlife habitat restoration project as being proposed by the Army Corps of Engineers' (as described in the ACOE Final EA which is made a part of this document by reference). ACOE Headquarters' has asked for further justification for construction of Pond System A because of its higher per-acre unit-costs. As a result of this review, Pond System A has been dropped from the Army Corps final project because of costs. It is being retained in the DLNR Final EA because it may still be added to the project in the future (as a State add-on) if funding from other sources becomes available. The "redesign" of the project you referred to will not involve changes to the scope, layout and elements of the final ACOE Plan but will consider changes in the engineering specifications of the ponds and water delivery system, i.e. fewer internal divisions and larger basins, and the specifics on water delivery systems using stream diversions where applicable and pumping ground water only where necessary, to minimize long-term maintenance costs as recommended by the Service. The specifics and details will be worked out during the ACOE Plans and

Specification stage of the project. Another requirement of the project is that the ACOE and the Local Sponsor-DLNR adopt an Operations and Maintenance Agreement for the project. As a cooperator in this project, the Service will have opportunity to provide additional input on the final plans and specifications for the project and on the Operations and Maintenance Agreement for the project. The Department's intent is to develop a project that will require the least amount of operations and maintenance costs while providing the desired services. In response to these comments, the following language on changes in plans and specifications will be included in the final EA in section 4.2.

"Implementation of the project will be contingent on approval of the project by ACOE Headquarters' and receipt of federal funding. ACOE Headquarters' has asked for further justification for construction of Pond System A because of its higher per-acre unit-costs. As a result of this review, Pond System A has been dropped from the Army Corps final project. This Pond System is being retained in the DLNR Final EA because it may still be implemented in the future (as a State add-on to the project) if funding from other sources becomes available. The final ACOE Project may also incorporate changes in the engineering specifications of the ponds and water delivery system. Engineering changes that will be considered include building fewer internal divisions in the ponds (i.e. larger basins) and water delivery systems using stream diversions where applicable and pumping ground water only where necessary (minimize long-term maintenance costs). The specifics and details will be worked out during the ACOE Plans and Specification stage of the project. An Operations and Maintenance Agreement for the project will also be developed by the ACOE and the Local Sponsor-DLNR during this phase. The Department's intent is to develop a project that will require the least amount of operations and maintenance costs while providing the desired services."

2. *Comment: The Final Environmental Assessment (FEA) should identify the lead agency responsible for the long-term management of the wildlife habitat restoration project and a list of the agencies, organizations, ranchers, private contractors, etc. that have committed to participate in the operation and maintenance of this project.*

Response: Agreed. The following language will be added to the final EA in section 4.2.

"The Department of Land and Natural Resources, Division of Forestry and Wildlife will be the lead agency responsible for the long-term management of the wildlife habitat restoration project once constructed. Ducks Unlimited (DU) and the U.S. Fish and Wildlife Service have committed to provide technical assistance for future operations and maintenance. DU has expressed interest in developing a cooperative wetland management crew partially funded by DLNR and DU to provide manpower to manage wetlands on Oahu, including Kawai Nui. Diamond K Ranch has committed to working cooperatively with DLNR to manage cattle for weed control around ponds.

Kawai Nui Heritage Foundation, Hawaii Audubon Society, Ahau Malama I Ka Lokahi and Conservation Council for Hawaii have expressed an interest in providing volunteers for wetland management projects such as weed control, outplanting of native plants, bird surveys, educational tours, a docent program, experimental taro production, and guided nature walks. DLNR will seek other cooperators and volunteers to participate in the future as needed and available."

3. *Comment: The FEA should describe what is involved in taro cultivation, what portions of the wildlife habitat restoration project will be used for taro cultivation, and describe any impacts to federally listed endangered species.*

Response: Page 6, paragraph 1 describes how taro will be incorporated into the wildlife habitat restoration project as a tool in managing vegetation in the ponds. It is anticipated that the interaction that will occur between the wildlife and the community residents restoring a native Hawaiian cultural practice in harmony with the wildlife will be much more favorable than detrimental. The following language on taro cultivation will be added to the final EA in section 4.2.

"After construction of the wildlife restoration project, taro will be planted on an experimental basis in increments up to 1 acre in size and evaluated for its wildlife habitat contribution. If it does not provide adequate habitat, its use would be discontinued in restoration project areas. Dependent on availability of manpower, taro plantings will be tried on an experimental basis in pond area B. Hand tools and community volunteers including members of Ahau Malama I Ka Lokahi will provide the labor to prepare beds, plant and maintain the taro. Taro and taro cultivation methods are considered a compatible wetland land use for endangered birds. It provides weed control, open shady water and food sources for stilt, gallinule and coot. Potential impacts would be from human presence in pond areas as they cultivate the loi. Endangered birds on Kauai do eat taro but those impacts may be mitigated with alternative food sources. Volunteers at Kawai Nui will be instructed that production of habitat for the endangered birds is the priority action for this project and to mitigate and avoid activities that would be detrimental to the birds."

4. *Comment: The DEA does not adequately describe the predator removal program.... The FEA should identify the time of year, how often the traps will be checked, and if information will be collected regarding this program.*

Response: Agreed. The following language on predator control will be added to the final EA in section 4.2.

"The initial construction phase predator removal program will be contracted out to USDA-ADC and operational procedures are described in the attached letter. Control of rats, mice and mongoose will begin before initiation of pond construction. Removal of feral dogs and cats will begin after fence construction. After the initial construction

phase, predator control will continue on a maintenance level with an increase in effort prior to the breeding season. Live traps will be checked every 48 hours and records will be kept on the number of animals removed."

5. *Comment: The DEA does not identify all of the impacts (to fish and wildlife resources) mentioned in the Fish and Wildlife Coordination Act (FWCA) Report. The Service suggests that the recommendations provided in the FWCA Report be incorporated into the FEA.*

Response: The development of the project is being done in cooperation with the ACOE in accordance with the methods and procedures outlined in the ACOE FEA for the project. The comments and recommendations contained in the Service's FWCA Report are incorporated into the DLNR FEA by reference. The ACOE has committed to incorporate the 17 recommendations of the Service into the implementation plans for the project. DLNR will, to the maximum extent practicable, do so likewise. Reporting of any incidental take of endangered species during the course of operations and management will be done under, and in accordance with, requirements in the Endangered Species Act - Section 6 Cooperative Agreement between the Service and DLNR.

6. *Comment: The Service recommends that a cost-benefit analysis be completed to determine which option (gravity feed or pump operation) will provide a cost efficient method for maintenance and operation of water level in the proposed ponds and mudflats and that the chosen option be described in the FEA.*

Response: DLNR will work with the ACOE to further refine changes in the engineering specifications of the ponds and water delivery system, i.e. specifics on water delivery systems using stream diversions where applicable and pumping water only where necessary, to minimize long-term maintenance costs as recommended by the Service. The specifics and details will be worked out during the ACOE Plans and Specification stage of the project. The elevations of the ponds in relation to the existing stream level elevations will dictate where pumping will be required, such as in the upper sections of Pond B. As a cooperator in this project, the Service will have opportunity to provide additional input on the final plans and specifications for the project. The Department's intent is to develop a project that will require the least amount of operations and maintenance costs while providing the desired services. Some form of cost-benefit analysis will be incorporated into the plans and specifications stage of the project. These data will not be available until the Plans and Specifications stage of the project.

7. *Comment: Each Exhibit in the FEA should contain a label that describes the contents. The purpose of Exhibit 6 is unclear and should be removed from the FEA.*

Response: Exhibit 6 and 7 should be switched. Draft EA - Exhibit 7 provides information on the ACOE wildlife habitat restoration project and will be renumbered to Final EA - Exhibit 6. Draft EA - Exhibit 6 presents a map where the open water vegetation removal and paperbark tree removal activities will occur and will be renumbered as Final EA - Exhibit 7 and referenced in the text.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,



DEAN UCHIDA
Administrator

cc: DOFAW



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

P.O. Box 50004
Honolulu, HI
96850

Our People...Our Islands...In Harmony

December 2, 1998

Mr. Tom Eisen
DLNR - Land Division, Planning Branch
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Eisen:

Subject: Draft Environmental Assessment (DEA) - Kawainui Marsh Management Plan,
Kailua, Hawaii

We have reviewed the above mentioned document and offer the following comments:

The management plan is too engineered and there is a lot of maintenance involved.

Thank you for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

DEC 4 1998

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

P.O. Box 50004
Honolulu, HI
96850

Our People...Our Islands...In Harmony

December 2, 1998

Mr. Tom Eisen
DLNR - Land Division, Planning Branch
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Eisen:

Subject: Draft Environmental Assessment (DEA) - Kawainui Marsh Management Plan,
Kailua, Hawaii

We have reviewed the above mentioned document and offer the following comments:

The management plan is too engineered and there is a lot of maintenance involved.

Thank you for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

DEC 4 10 51 AM '98



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 521
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREAT
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Kenneth M. Kaneshiro
State Conservationist
USDA Natural Resources Conservation Service
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Mr. Kaneshiro:

Thank you for your letter dated December 2, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *Comment: The Management Plan is too engineered and there is a lot of maintenance involved.*

Response: Although it is unclear which elements of the plan this comment pertains to, the Department received similar comments from the U.S. Fish and Wildlife Service, another resource management agency, regarding the habitat restoration project.

The Department's Management Plan describes the overall scope, layout and elements of the proposed wildlife habitat restoration project as being proposed by the Army Corps of Engineers' (as described in the ACOE Final EA, which is made a part of this document by reference). The Department has similar concerns about the habitat restoration project. The Department plans to work with the ACOE in the preparation of the final ACOE Plans and Specifications for the project and consider changes in the engineering specifications of the ponds and water delivery system (i.e. fewer internal divisions and larger basins and the specifics on water delivery systems using stream diversions where applicable and pumping ground water only where necessary) to simplify the design and minimize long-term maintenance costs. The specifics and details will be worked out during the ACOE Plans and Specification stage of the project.

Another requirement of the project is that the ACOE and the Local Sponsor-DLNR adopt an Operations and Maintenance Agreement for the project. The Department's intent is to develop a project that will require the least amount of operations and maintenance costs while providing the desired services. In response to these comments, the following

language on changes in plans and specifications will be included in the final EA in section 4.2.

"Implementation of the project will be contingent on approval of the project by ACOE Headquarters and receipt of federal funding. ACOE Headquarters has asked for further justification for construction of Pond System A because of its higher per-acre unit-costs. As a result of this review, Pond System A has been dropped from the Army Corps final project. This Pond System is being retained in the DLNR Final EA because it may still be implemented in the future (as a State add-on to the project) if funding from other sources becomes available. The final ACOE Project may also incorporate changes in the engineering specifications of the ponds and water delivery system. Engineering changes that will be considered include building fewer internal divisions in the ponds (i.e. larger basins) and water delivery systems using stream diversions where applicable and pumping ground water only where necessary (minimize long-term maintenance costs). The specifics and details will be worked out during the ACOE Plans and Specification stage of the project. An Operations and Maintenance Agreement for the project will also be developed by the ACOE and the Local Sponsor-DLNR during this phase. The Department's intent is to develop a project that will require the least amount of operations and maintenance costs while providing the desired services."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW



KAILUA NEIGHBORHOOD BOARD NO. 31

P.O. BOX 487 • KAILUA, HAWAII 96734

October 6, 1998

Department of Land and Natural Resources
1151 Punchbowl Street, Room 220
Honolulu, HI 96813

Attn: Tom Eisen/Lauren Tanaka

Dear Sir:

Re: Kawai Nui Marsh Management Plan, Education Center,
Restoration and Waterbird Habitat
TMK 4-2-16:01 and 4-2-13:05

At its regular meeting of October 1, 1998, the Kailua Neighborhood passed the following motion:

The Board requests that Department of Land and Natural Resources (DLNR) extend the deadline for comment on all three environmental documents relating to Kawai Nui Marsh to provide the community additional and adequate time to comment on this important community issue. In particular the Board and the community are concerned about amending the Kawai Nui Marsh Master Plan without substantial community input; the impact of and termination of the Knott's revocable permit; and the limited time period given to consider the issues. The motion carried with 13 yes and 1 no.

The Board requests an extension of 90 days for comment. The motion carried with 13 yes and 1 no.

Thank you for allowing our Kailua Neighborhood Board No. 31 the opportunity to comment on this most important issue.

Sincerely, ,

Kathy Bryant Hunter
Environmental Committee Chair

cc: Hawaii Audubon Society
Kawai Nui Heritage Foundation
'Ahahui Malama i ka Lokahi
Conservation Council for Hawaii
Army Corps of Engineers
Martin and Mae Knott
Councilmember Steve Holmes



Oahu's Neighborhood Board System-Established 1973



KAILUA NEIGHBORHOOD BOARD NO. 31

P.O. BOX 487 • KAILUA, HAWAII 96734

December 30, 1998

Michael Wilson
Chairperson
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

RECEIVED
DIVISION OF
LAND MANAGEMENT
JAN 4 9 54 AM '99

Dear Chair Wilson,

During our regular meeting of December 3, 1998, the Kailua Neighborhood Board voted to support the following motions:

- The Kailua Neighborhood Board recommends support of the waterbird habitat restoration project at Kawaimui Marsh with the exception of the 16,000 - foot fence. (NOTE: The motion carried unanimously, 15-0-0.)
- The Kailua Neighborhood Board recommends support of the flood control project at Kawaimui Marsh with the exception of eliminating the physical maintenance facility. (NOTE: This motion also carried unanimously, 15-0-0).

Thank you for your attention to this matter. Should there be any questions or concerns regarding the above referenced motions please feel free to call the Neighborhood Commission Office at 527-5749.

Sincerely,

Claudine M. Tomasa

Claudine M. Tomasa,
Chair

cc: Neighborhood Board Commission
Terry Carroll, Secretary

RECEIVED
90 DEC 31 P 4: 04
DEPT OF LAND
& NATURAL RESOURCES
STATE OF HAWAII



Oahu's Neighborhood Board System-Established 1973

2002

TOMASA

12/30/98 WED 20:54 FAX 808 254 1113



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 821
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

Chairperson
Kailua Neighborhood Board
P.O. Box 487
Kailua, Hawaii 96734

MAR 28 2000

Dear Chairperson,

Thank you for the letters dated October 6, 1998 and December 30, 1998 with comments on our Department's Draft Environmental Assessment of the Management Plan for Kawai Nui Marsh

The responses to your agency's comments are as follows:

Comment 1: The Kailua Neighborhood Board (KNB) requests that the Department of Land and Natural Resources extend the deadline for comment on the environmental documents relating to Kawai Nui Marsh to provide the community additional and adequate time to comment on this important community issue.

Response: Pursuant to KNB's request, the 30-day public comment period for the environmental assessments was extended an additional 30 days.

Comment 2: The KNB recommends support of the waterbird habitat restoration project at Kawainui Marsh with the exception of the 16,000-foot fence.

Response: The fence is an essential element of the waterbird habitat restoration project to help reduce access by the waterbird's predators.

Comment 3: The KNB recommends support of flood control project at Kawainui Marsh with the exception of eliminating the physical maintenance facility.

Response: The addition of the maintenance baseyard facility (near the model airplane field site) is necessary to provide adequate security and protection from the elements for the sizeable investment of manpower and equipment that is needed to maintain the flood control structures and functions of the marsh, and other maintenance and management needs of the marsh. The following language will be added to the end of section 4.1 to identify the variance from the 1994 master plan and the reason.

"The construction of the baseyard facilities was not originally included in the 1994 Master Plan. That plan proposed use of this site only as a boat staging area and for drying dredged vegetative material before disposal. The development of this facility is needed to provide a base of operations for the equipment and manpower that will be involved in the management and maintenance of the marsh. The baseyard facilities will provide the needed security and protection from the elements for the sizeable investment of equipment that will be used to maintain the flood control structures and functions of the marsh, and the other maintenance and management needs of the marsh."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

Sincerely,



DEAN UCHIDA
Administrator

cc: DOFAW

11/19/98

To: The Board of Land and Natural Resources
From: Bill Sager, Conservation Council for Hawaii

Subj: Kawai Nui Marsh Master Plan

A fundamental concept in natural resource management is to determine the primary values for which land should be used and then determine what other uses are compatible and what uses are incompatible.

Kawai Nui Marsh can serve many uses. It could have been converted into another Hawaii Kai, but years ago, the community rejected that option and instead worked long and hard to have the state acquire this wetland and protect it for its benefits as a marsh. These include not only the flood control function, but also the marsh is home to rare Hawaiian water birds, it acts as a filter for sediment, and is a natural sink for nitrogen and other chemicals flowing from homes and golf course up stream. The ocean water at Kailua Beach Park are said to be some of the dirtiest in the state. Water quality in the Bay would be much worse if it were not for Kawai Nui Marsh.

The primary use of Kawai Nui Marsh is and must continue to be water bird habitat and its function as a filter for pollutants. Consistent with this is its use for public recreation and education. We strongly support the proposed trail around the marsh. Public vision for such a trail ranges from a 12 foot wide paved "road" capable of handling four "off road" strollers abreast to a forest trail of perhaps four feet that winds gently around archeological, geologic and cultural sites.

As it should be, this master plan will continually evolve and how the trail is designed will be worked out with the community as the project is implemented. The trail designed should be a matter for environmental and cultural impact planning prior to its construction.

Access to the marsh for bird watching and public education needs to be accomplished as the plan develops. It is important and has only been discussed in general terms in this plan.

While water bird habitat, public education and recreational access are compatible uses, grazing is not. Cattle benefit the marsh by controlling invasive vegetation, but cattle damage the marsh by trampling and compacting the soil and they contribute heavy loads of manure and urine. A small cattle operation may be beneficial; however, cattle are a potential hazard to recreationists and portions of the area which has been designated for cattle grazing are not appropriate. This is particularly true for the steeper ground around Na Pohaku O Hauwahine. A large operation with associated feed lot definitely poses problems. We believe grazing in the marsh may have serious environmental impacts. An EIS is needed before the state commits to any long term cattle operation.

Sincerely,
Bill Sager, Conservation Council For Hawaii



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Bill Sager
Conservation Council for Hawaii
P.O. Box 2923
Honolulu, Hawaii 96802

Dear Mr. Sager,

Thank you for your letter dated November 19, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *Comment 1: The primary use of Kawai Nui Marsh is and must continue to be water bird habitat and its function as a filter for pollutants. Consistent with this is its use for public recreation and education.*

Response: The Department agrees with your assessment of the importance of the Marsh to provide water bird habitat and filter pollutants. We would also add flood control to this list as another major function of the marsh (and one of major importance to adjacent residents in the flood plain). The habitat restoration project, flood control facilities, flood control management activities, water quality monitoring, trails, parks, and provisions for education and cultural centers proposed in the Department's Management Plan all serve to restore, manage and sustain these functions in the future.

2. *Comment 2: The trail design should be a matter for environmental and cultural impact planning prior to its construction.*

Response: The Department agrees that the design of trails in the plan be done with adequate considerations for environmental and cultural impacts. This will be done during the final layout of the trail design and with the assistance of the Na Ala Hele program staff. Care will be taken to design trails to avoid impacts to environmental and cultural resources and provide scenic views where possible. Much of the trail system is already laid out, such as the trail along the levee. The Kapaa Quarry Road and Kukanono slope portion of the perimeter trail will follow the proposed perimeter fence line, and clearing of the fence line will provide the corridor for trail development. Expansion of the trail system to take advantage of more scenic routes

and other features will be dependent on the future availability of resources and community support.

3. *Comment 3: Access to the marsh for bird watching and public education needs to be accomplished as the plan develops. It is important and has only been discussed in general terms in this plan.*

Response: The Department agrees with your assessment of the importance for providing public access to the marsh for bird watching and public education. The plans for public access for bird watching are general at this time because the Department plans to develop those amenities after the habitat component of the plan has been developed. The public amenities will be developed after the habitat is restored; the Department will then be able to identify those areas that are best suited to support and sustain public use activities, while providing public opportunities to view and learn about wildlife.

4. *Comment 4: Cattle grazing in the marsh is not a compatible use and may have serious environmental impacts. An EIS is needed before the state commits to any long term cattle operation.*

Response: The Department's plan is to continue indefinitely a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for, controlling vegetation in areas outside of the planned habitat restoration project. This use is anticipated to be long-term, but its tenure is contingent on that operation providing the expected benefits without serious negative impacts to the other resource values being managed. Livestock will be controlled by fencing and proper management to protect and exclude them from ponds, water delivery structures, facilities, public use areas and other important resources, such as archaeological sites.

This limited cattle grazing operation will provide benefits of 1) controlling grass and weeds in upland areas and areas outside ponds and developed facilities, 2) providing short grass feeding areas for waterbirds in areas near to ponds, and 3) providing additional security in the area and assistance with management activities. The Department recognizes that the continued use of cattle on the fringes of the project may have some negative impacts such as adding nutrient and animal wastes to the system but feels that the positive impacts that cattle grazing has in controlling vegetation will outweigh potential negative impacts on wetlands, streams and water quality. This management tool and future assistance will be done at no cost to the state. As was evident in the public meetings that occurred, continuing some form of cattle grazing along the outskirts of the marsh has the support of a large segment of the community.

In order to identify and mitigate the potential impacts that cattle grazing may have, the Department will work with the Natural Resources Conservation Service and Diamond K Ranch to develop a Livestock Management Plan that will address issues of proper

stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. The Department will seek funding from State and Federal sources to implement a water monitoring program as part of the project operations and management to evaluate water quality issues. Continuing the ranching operations as modified by a Livestock Management Plan will provide positive affects of vegetation control and bird habitat production and reduce impacts to the marsh from the current operations and result in improved environmental conditions. These continuing actions do not require an EIS.

The following language on the development of a livestock management plan will be incorporated into the final EA in section 4.2.

"A livestock management plan will be developed and periodically updated in cooperation with the Natural Resources Conservation Service and Diamond K Ranch to address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. Management practices developed under the plan will be implemented and followed to reduce potential negative impacts of cattle grazing and keep them in balance with the positive benefits of vegetation control, production of short-grass bird-habitat, and management assistance that a cattle grazing operation contributes to the project."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW



LIFE OF THE LAND

HAWAII'S OWN COMMUNITY ACTION GROUP
PROTECTING HAWAII'S ENVIRONMENT THROUGH
EDUCATION, RESEARCH, ADVOCACY & LITIGATION

November 5, 1998

Audubon Society
850 Richards St., Suite 505
Honolulu, HI 96813

Department of Land and Natural Resources
Land Division: Cecil Santos, Tom Eisen, and Lauren Tanaka
1151 Punchbowl Street, Room 220
Honolulu, Hawaii 96813

re: Draft Environmental Assessments for the Kawai Nui Marsh Master Plan & Education Center

Introduction

Kawai Nui Marsh plays a critical role in supporting habitat for endangered species in Hawaii. The marsh is the largest freshwater wetlands in the state. The marsh is an integral part of the Ahupua'a of Kailua. Measures to further protect the marsh are critical.

Development plans including building a shopping center in Kawainui Marsh in the 1970s were successfully blocked. Master Plans for the Kawai Nui Marsh were developed in 1976 by groups such as the Congress of the Hawaiian People and the Outdoor Circle's Ad Hoc Committee for Kawainui. A Workshop on Kawainui Marsh was held in 1982 as part of Life of the Land's Conference on Environmental Protection and Inflation. Speakers for that Conference included Muriel Seto (Chair of the Historic Sites Committee of the Congress of the Hawaiian People); Sheila Conant (Co-Chair, Department of General Science at the University of Hawaii and consultant to the Kawainui Marsh Technical and Advisory Committee); and Bob Herlinger (Planning Consultant for the Outdoor Circle's Ad Hoc Committee for Kawainui). Master Plans for the Kawai Nui Marsh were developed in 1983 and again in 1994 with the help of the Kawai Nui Advisory Council. The Draft Environmental Assessments for the Master Plan for Kawai Nui Marsh ("Master Plan Draft Environmental Assessment") and the Kawai Nui Marsh Education Center ("Education Center Draft Environmental Assessment"), both published in 1998, are part of the continuing effort to protect and promote the marsh. The successful efforts to protect the marsh have resulted from the hard work of several groups, including the Kawai Nui Heritage Foundation, the Hawai'i Audubon Society, the Conservation Council of Hawai'i, the Congress of the Hawaiian People and the 'Ahahui Malama I Ka Lokahi.

wildlife park. The Coalition organized a team of experts to testify in opposition to issuance of the SMA permit for the residential subdivision. The Ad Hoc Coalition did such a good job that the Department of Land Utilization (DLU) recently recommended that the City Council deny the developers application.

LOL staff member Doug Meller, assisted the Ad Hoc Coalition by preparing an outline of testimony needed to allow an effective court challenge if the SMA permit is granted. In addition, a Summary, Findings of Fact and Conclusions of Law, and testimony on the inadequacy of the City grading ordinance was also prepared. At the advice of LOL, the Ad Hoc Coalition for Kawainui asked for a contested case hearing. Both agencies denied the petition. Council approval of the SMA permit for the proposed subdivision now would be a violation of the State Administrative Procedures Act and could be successfully challenged in court.

The permit will be revived in 1980 by the City Council's Planning and Zoning Committee to be headed by Andrew Poepoe. The recommendation will be given to the Council as a whole who will make the final decision to approve or deny the permit." **Life of the Land Newsletter. January 1980**

"Negotiations continue between the City and the plaintiffs in LOL's suit over the City's landfill in the Marsh area. The City has promised to help clear the Marsh of excess vegetation, to conduct better water-monitoring studies below the landfill, to ensure that silt runoff from the landfill operation is kept to a minimum, and to take steps to repair and preserve the Pahukini Heiau, which has apparently been undermined by the landfill excavations. LOL is cautiously optimistic that the City will honor these promises, but its lawsuit remains in court." **Life of the Land Newsletter. September - October 1980**

"At the beginning of our discussion, I said that Kawainui was a classic environmental land-use case that was also extremely complex. But one unifying theme beneath the apparent complexity is the question of how important environmental and cultural values really are to us. That's the fundamental values conflict that each of us is struggling with in his own way." **Duane Preble. Moderator of the Life of the Land Conference Workshop on Kawainui Marsh. 1982.**

"In the other lawsuit, LOL alleges that the City is illegally discharging sewage onto the Special Management Area (SMA) at Kawainui Marsh without a SMA Permit and that the City is illegally violating State Water Quality Standards for the Marsh without a Zone of Mixing Permit. The State contends that a SMA Permit is never needed for a sewage discharge and that the City can legally violate State Water Quality Standards without a Zone of Mixing Permit. The City contends that the sewage discharge onto Kawainui Marsh is 'grandfathered' (because it began prior to the State law which established SMA Permits) and that the City applied for a Zone of Mixing in 1997 and was told by the State that it need not have bothered.

Both the City and State acknowledge that City discharges have resulted in serious adverse impacts to the habitat of endangered water-birds in Kawainui Marsh. While the State feels responsible to require diversion of sewage out of the Marsh, it refuses to require the City to mitigate the effect of sewage discharges before they are diverted. The City has procrastinated diversion of sewage out of the Marsh and is hostile to the idea of spending money to restore open water in the Marsh." **Life of the Land Newsletter. March 1986**

Kailua Neighborhood Board: Special Presentation. October 1, 1998

"Environmental Assessment for an Education Center at Kawainui Marsh - Susan Miller, Audubon Society; Paul Conry, Department of Land and Natural Resources; and Mike Gibson, Knott Farm

According to our Kupuna, when there was a shortage of taro in Kailua, the men of Kailua went to Kawainui pond to get edible mud. The lepo ... (edible mud) as found only in Kawainui pond. The chant of Kualii mentions Kawainui Fishpond and its sweet tasting fish, the *ʻoʻopu kuʻai*. Kawainui pond had the finest *ʻamaʻama* (fat mullet) on this side of the island, and the *awa* (milkfish) were so tame that they were easily caught.

Recently, archeology has substantiated the veracity of the oral traditions of Kawainui, as the oldest known Hawaiian agricultural sites, ca. A.D. 239, have been discovered at Kawainui. In fact, archeological and geological evidence from Kawainui and nearby areas place occupation by Polynesian voyagers at as early as the fourth century A.D.

Three prominent heiau were once located near Kawainui Fishpond. The most accessible is Ulupo Heiau on the eastern edge of Kawainui Fishpond. Ulupo provides a commanding view of Kawainui. Because of its location adjacent to fertile farm land, Ulupo may have been an agricultural heiau. Less accessible is Pahukini Heiau, located in the City and County Kapaʻa Landfill site, whose stability is threatened by the dumpsite/landfill technique of garbage disposal being used there. It is said to have been of the Poʻokanaka class, a heiau of human sacrifice built by only the highest chief. The third heiau was recently discovered on property immediately adjacent to the proposed site [Le Jardin].

The site of the two remaining heiau, Pahukini and Ulupo, have been placed on the National Registry of Historic Sites, but the Fishpond and surrounding agricultural terraces and other sites in the area have been ignored. Removing Kawainui's preservation status in order to allow development would mean the destruction of certain aspects of our Hawaiian culture."

ʻAhahui Malama I Ka Lokahi. Testimony presented to the City and County of Honolulu Department of Land Utilization. re: Shoreline Management Area Permit Application for the proposed Le Jardin Academy. September 26, 1996).

The Draft Environmental Assessments

Life of the Land read the Kawai Nui Marsh Master Plan Draft Environmental Assessment and the Kawai Nui Marsh Education Center Draft Environmental Assessment. We are in support of the general concepts and many of the ideas in both Draft Environmental Assessments. Kawai Nui Marsh is a world-class resource. The establishment of an Education Center will greatly enhance the marsh.

Life of the Land wishes to offer the following constructive comments on the Draft Environmental Assessments. The development of a trail system around the marsh, tying the trail system into parks such as Kaha Park and Mokulana Park, an education center, demonstration loʻi, and boardwalks will lead to a greater appreciation of this critical resource. Greater cultural awareness of Ulupo and Pahukini Heiaus and the Kukanoho historical site will help integrate cultural awareness into our historical analysis.

Life of the Land recommends that the Final Environmental Assessment presents a clear vision of the long-range full build-out plans for the site. Then Phase 1 can be better understood as a part of the whole. For comparison purposes, what existing site(s) on Oʻahu or in the state would represent the type of center you wish to build: Makiki Nature Center, Hoʻomaluhia Botanical Gardens?

The plans for Phase 1 are somewhat confusing. It is confusing to have two environmental assessments on the same property at the same time. The Tax Map Key ("TMK") for the Education Center is 4-2-13: portion of 05. The TMK for the Master Plan is 4-2-13:05 and 4-2-16:01. Thus it appears that both

Education Center aid or impede habitat restoration? Has a flora/fauna study and a soil study been completed on the preferred site?

Expansion of the section on permitting is important. Under what conditions would you need a Clean Water Act Section 404 Permit or a Section 401 Water Quality Certificate? What variances would be needed for the property? Please elaborate.

The Education Center will be a wonderful opportunity for residents, visitors, school groups and others to participate. How many people do you expect will use the site initially and in your future plan? How many people will come with organized groups? How many people will just show up? Will the parking lot be available to hikers wanting to use the perimeter hiking trail? Will Kanaka Maoli (Native Hawaiians) have the right to use the parking spots to practice "traditional and customary practices" in the marsh area?

Cumulative impacts measures the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time. Cumulative impacts includes those resulting from the interaction of the proposed project with other significant projects being constructed by others in the same area during the same time period. Cumulative impacts include expected population changes. If the center is expanded, what will the cumulative impacts be? What is the desired (or planned) capacity of the Education Center?

Secondary impacts are non-regulated activities associated with the development that may have more than minimal impacts. How will vegetation be controlled? Can cattle from Knott's Farm play a role?

The area is prone to flooding. The area has been hit with severe floods in 1921, 1951, 1965, 1987 and 1988. With El Nino and Global Warming, it seems likely that flooding will continue to occur. Is the Education Center in the 100-year flood zone? Which flood mitigation measures be implemented? How does the property related to proposals put forth by the US Army Corps of Engineers to control flooding in the marsh? Will the Education Center aid or impede dredging operations?

Conclusion

Kawai Nui Marsh is an integral part of the Ahupua'a of Kailua and of O'ahu. Life of the Land recognizes that the construction of an Education Center near the Kawai Nui Marsh will greatly enhance educational understanding of this great cultural, historical and environmental landscape. The Education Center presents a wonderful opportunity to demonstrate sound environmental principles -- i.e. -- low impact materials, photovoltaic cells, non-intrusive design, etc.

Mahalo,



Henry Curtis
Executive Director



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Henry Curtis
Executive Director
Life of the Land
1111 Bishop Street, Suite 503
Honolulu, Hawaii 96813

Dear Mr. Curtis:

Thank you for your letter dated November 5, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

Comments on the Environmental Education Center.


Response: The comments provided in your letter pertain to the development of the Environmental Education Center at the Diamond K Ranch site. The coalition of non-profit organizations' proposing that project decided to withdraw that proposal, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. Upon submittal, that proposal will require a separate environmental assessment; any comments and concern with that proposal can be addressed at that time.

The Department agrees with your comments on the importance of interpretive and educational programs for Kawai Nui Marsh. The following language will be added to Section 4.4.8 on educational programs to emphasize the need and community involvement in the program:

"Section 4.4.8 Interpretive and Educational Programs and Facilities"

Para 2: "It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving community and government."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen or my staff at 587-0439.

Sincerely,

DEAN UCHIDA
Administrator

cc: DOFAW

November 19, 1998

H. Michael Harrington
Associate Vice President
AMA District X

I speak on behalf of the users of the membership of the Aloha State Radio Control Club which totals more than 100 members of all ages. I will also speak for more than 100 non-affiliated model enthusiasts who regularly use the Kawai'nui Model Airpark.

The aeromodeling community represents one of the longest standing formal users of a portion of the marsh area. As an approved city park, this former dump site has been in continuous use for modeling for nearly 25 years. Our activities provide not only wholesome family entertainment but also public service demonstrations such as "hand-on" flight experiences for scout and school groups. We have a youth program which provides educational activities centered on the wonder of flight. These activities provide a excellent opportunity for young modelers to develop problem solving and building skills as well as to learn about electronics and mechanical devices. In addition, the park is frequented by tourists who specifically come to fly at the site as well as curious parents, usually at the request of even more curious children.

The modelers have been responsible users of the marsh. We have helped to police the area and have adopted the park through the City and County adopt-a-park program. Other efforts include regular clean-up of the grounds and the installation of a locked gate to prevent illegal dumping activities that still present a major problem along the quarry road. In short, we have been and will continue to be good neighbors.

There is no evidence that our activities have adversely affected the marsh or its wildlife. Birds of all types are regularly seen flying in the vicinity of the model field and even soaring with gliders in thermals. Birds regularly fish at the end of our runway, catching fish disturbed by landing aircraft. There is a bird sanctuary adjacent the runways at MCBH and there are similar wildlife refuges across the country. Bird strikes are a common occurrence at major airports indicating the birds are unafraid

of very loud aircraft. To our knowledge, there has never been a bird strike at the Kawaiʻnui Model Air Park probably owing the much slower speeds of model aircraft.

The modeling community participated in every meeting during the extended marsh planning process of several years ago. We worked hard to have our activities included in the final Master Plan. We also demonstrated sensitivity to the community and a willingness to compromise.

We support plans that allow for continued use of the model air park. Rule changes by the Parks and Recreation Department make the Kawaiʻnui Model Airpark the only public radio control flying site on Oahu. Because of its dedicated usage and location, the Kawaiʻnui site is the safest RC site on the island. Currently, there is a tentative agreement for the City and County to retain a set aside interest and an Executive Order that will insure continued use of the airpark by Oahu modelers. We support and applaud these efforts. We also stand ready to work with concerned parties to develop mutually agreeable solutions to problems that might arise.

Thank you for this opportunity to speak on behalf aeromodeling.

H. Michael Harrington
47-668 Halemanu St
Kaneohe, HI 96744

239-6682 (h)
956-8131 (w)
956-9105 (fax)
email: mikeha@hawaii.edu

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P O BOX 373
HONOLULU, HAWAII 96809

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
DEPUTY
JANET E. KAWELO

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
ENGINEERING BRANCH
PLANNING BRANCH
TECHNICAL & SUPPORT BRANCH
STATE PARKS

MAR 28 2000

Mr. H. Michael Harrington
Associate Vice President
AMA District X
47-668 Halemanu Street
Kaneohe, Hawaii 96744

Dear Mr. Harrington:

Draft Environmental Assessment (EA) Kawai Nui Marsh Management Plan

Thank you for your letter with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department of Land and Natural Resources is dedicated to preserving the integrity of the Marsh as a flood control facility, a wildlife preserve, and as an educational tool for the children and residents of Hawaii. The Department is also committed to provide a location for the model airplane community within the marsh area; however, we do not know where the permanent location will be at this time. The existing model airplane field will be maintained, as much as possible, based on the requirements of the marsh maintenance activities.

We thank you for your letter and look forward to a neighborly relation with the Aloha State Radio Control Club. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,

A handwritten signature in dark ink, appearing to read "Dean Uchida".
DEAN UCHIDA
Administrator

EM:ek
c. OEQC

Tom Eisen
DLNR, Land Division
1151 Punchbowl Street, Room 220
Honolulu, HI 96813

Nov 27

November 20, 1998

Dear Mr. Eisen;

This is our foundation's comment regarding the draft EA for Kawai Nui Marsh. Specifically we want to address the cattle ranching within the marsh, the status of Matsuda's General Store, the perimeter trail, and re-inclusion of an education center within the DLNR plan.

RANCHING

Relevance to the goals of previous plans:

Our foundation does not advocate a strict interpretation of the '94 master plan but we do wish to point out that ranching activities were not a major component of the plan. Ranch facilities are simply not depicted in Figure 4.3, Description Proposed Master Plan. One reason for this is that in '94 we recognized that the plan was a long range vision and it was assumed that the Knott's activity would naturally cease within a few years. There are two features depicted in the plan's description for the makai side of the upper marsh- a DLNR maintenance facility and an ethnobotany garden/nursery.

I have personal knowledge of the '94 plan because I attended every single public hearing where the elements were developed, I was a member of DLNR's Kawai Nui Marsh Advisory Committee during that time, and I was the president of our foundation for a term covering that tumultuous and vigorous planning period. In a historical sense, ranch activities were generally considered by most people I knew then to be detrimental to the natural environment and of minor importance to the thousand year old heritage of Kawai Nui Marsh.

Our foundation supported, with some reservations, the limited ranching activities that existed in 1993 although we said that taro cultivation would be better. Continuation of our support depends upon an evaluation of impacts, that we recommend in the last section below under this heading.

Use of the ranch's petition:

Although the Diamond "K" Ranch's petition is not a DLNR document, DLNR's possible use of it in their evaluation make discussion of it here pertinent to the master plan. The Knott's lawyer's questions at the 11/19/98 public hearing seemed to indicate that he intends to submit their petition results in his comments. The signatures upon their document were obtained using the misleading and inflammatory statement "It would be wrong to throw them [the Knotts] out now." We vigorously contest the use of the ranching interest's false argument to stir up fear within our community. Furthermore, we request that DLNR not use the ranch's petition results in their evaluation of the impacts of DLNR's proposals. To accept their signatures at face value would only further damage and divide the Kailua community.

Location of the arena:

KNHF is supportive of DLNR's concept of relocating the cattle facilities to the mauka side of the marsh. This would make the use of the makai side of the upper marsh safer for the general public and provide for less public intrusion upon the ranching operations. We have heard many times that cattle and people don't mix. Our foundation

Kawai Nui Heritage Foundation

P.O. Box 1101, Kailua, HI 96734

supports a separation of cattle operations from the potential public uses that the makai side of the marsh might serve in the future. Cattle occasionally escape and some husbandry practices are not appropriate viewing for groups such as elementary school children.

Moving of the arena and pens to the mauka side would be more efficient for a rancher since it would be adjacent to the grazing land. Also, cattle would not compact porous wetland soils or damage erosion prone riparian habitats in order to transit the waterbird pond area. It makes good planning sense to have the makai side for the public and the mauka side for the cattle. Horses could easily access both sides.

Security of the penned animals has been cited as a reason for not moving the arena. The lawyer for the cattle interest has stated to me that livestock have been "rustled" from the VO Ranch on the mauka side. I have seen sheep and goats wandering freely in the woods by the Quarry Road and I suggest that the term "rustling" should not apply to poor fence maintenance. The keeping of goats and sheep so close to areas slated for the reintroduction of native flora should be prohibited given their recent history of escaping their pens.

Cattle density and environmental impacts of the cattle herd:

The use of cattle grazing to control grass would preclude the reintroduction of native flora to grazing areas since cattle graze selectively upon native plants. This may significantly harm the re-establishment of native bird populations in wetland areas, a primary purpose of the conservation district.

In a October 28, 1998 public presentation before the Olomana Community Association the ranch management admitted that because of the low nutritional quality of California grass the cattle were also fed quantities of high protein cattle feed. This seems to indicate that the current grazing density is above the carrying capacity. They also stated on the 28th that the ranch's intent is to greatly increase the grazing density in the future. This will mean a proportional increase in feed supplementation.

Nitrogen and phosphorous input to the wetland ecosystem is a very serious concern. We stated that concern in comments to the '94 plan and we wish to amplify them here. There is now a large quantity of manure piled near the ranch's arena site. It certainly leaches pollutants into Maunawili Stream when it rains or floods. This pollution flows directly into the critical open water habitats required by endangered waterfowl.

Eutrophication of these ponds may profoundly harm bird habitats by limiting space for feeding, nesting, and loafing with higher densities of encroaching California grass. The risk of massive botulism outbreaks among the birds, such as those seen on Maui, may well be increased by the creation of anaerobic bottom conditions that result from eutrophication. Anaerobic muds promote growth of the bacteria that cause botulism. DLNR's consultation with other agencies regarding the impact of grazing is a strongly recommended. We respectfully request that consultation with the U.S. Fish and Wildlife Service be included since the federal Clean Water Act may apply here.

The practice of using cattle grazing as a means of vegetation control in Hawaiian wetlands should be closely examined and, as a management tool in and of itself, may require a formal Environmental Impact Statement. We assert that DLNR's use of public funds mandate that the real potential for environmental damage be fully assessed before this management practice is implemented by the state of Hawai'i in Kawai Nui Marsh.

MATSUDA'S GENERAL STORE

The Matsuda General Store has been an area of great interest for many Kailua residents. The concept of restoring it and using it to showcase the history of the ahupua'a has been widely supported. Great concern exist about the decay of the structure and the ability to restore it.

Kawai Nui Heritage Foundation

P.O. Box 1101, Kailua, HI 96734

We wish to recommend that some restoration or even just preservation of the building be included in DLNR's EA. The store would be a priceless asset to a community that both reveres its past and wishes to provide for future education. The proximity of a restored building to some future education center might offer a host of educational and cultural benefits to the state of Hawai'i. Funds that the state will provide to build maintenance facilities on the makai side might also be used for renovation and use of the general store by DLNR, instead of building totally new offices for example. The state could thereby accomplish two objectives at once and stretch taxpayer's dollars.

PERIMETER TRAIL

There has been an effort by the Coconut Grove Community Association to obtain federal funding for the perimeter trail around the marsh. We support the CGCA and are especially interested in improving access to and from the neighborhoods makai of Kawai Nui for passive recreational use. The proposed fence line should be positioned to allow for later trail building activities. Perhaps the work crews could access the fence building sites by a route that might later serve as a trail, accomplishing two objectives at once. Restricting access to sensitive archaeological sites should be included in the planning.

Installation of lockable gates in certain places may be helpful in facilitating future access by community service groups to selected areas. Consideration should be given to the viewplane of the wetland and beyond and to the likely position of a future perimeter trail.

EDUCATION CENTER

Our coalition of nonprofit organizations has withdrawn without prejudice the proposal for the Kawai Nui Education Center. The center was of such great importance to the drafters of the '94 Master Plan that we wish to be sure it is included in this edition of the DLNR master plan. To exclude this central element of planning now would be a grave injustice to all of those who have worked so hard during the decades preceding this current effort. It would be a bitter irony to see all of our recent work result in the total exclusion of a center from planning.

An education center should be included in the CDU permit application and in DLNR's '98 master plan. We strongly support inclusion of the language submitted by Susan Miller at the 11/19/98 public hearing, within these DLNR documents.

Thank you for this opportunity to provide comment.

Larry Abbott, President





STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREAT
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

Mr. Larry Abbott, President
Kawai Nui Heritage Foundation
P.O. Box 1101
Kailua, Hawaii 96734

MAR 28 2000

Dear Mr. Abbott:

Thank you for your letter dated November 20, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *Ranching:*

- a. *Relevance to the goals of previous plans. Ranching activities were not a major component of the '94 Master Plan. There are two features depicted in the plan's description for the makai side of the upper marsh - a DLNR maintenance facility and an ethnobotany garden/nursery.*

Response: Although ranching activities were not identified as a Master Plan Improvement, they are recognized as existing land uses and the continued operation is repeatedly mentioned in discussions of the location of proposed improvements throughout the document (p. 4-13, para 5; p. 4-17, para 4; p. 4-20, para 3).

- b. *Use of Ranch Petition. We request that DLNR not use the ranch's petition results in their evaluation of the impacts of DLNR's proposals.*

Response: Diamond K Ranch did not submit a copy of the petition with their comments nor refer to the petition. However, as was evident in the public meetings that occurred, continuing some form of cattle grazing along the outskirts of the marsh has the support of a large segment of the community.

- c. *Location of the arena. KNHF is supportive of DLNR's concept of relocating the cattle facilities to the mauka side of the marsh. We support a separation of cattle operations from the potential public uses that the makai side of the marsh might serve in the future (safer for the general public and provide for less public intrusion upon the ranching operations). Moving the arena and pens to the mauka side*

would be more efficient for a rancher since it would be adjacent to the grazing land. Also, cattle would not compact porous wetland soils or damage erosion prone riparian habitats in order to transit the waterbird pond area.

Response: The Department is planning to work with the Natural Resources Conservation Service and Diamond K Ranch to develop a Livestock Management Plan that will address issues of proper stocking levels and grazing patterns, water quality and impacts to streams. One aspect that will be considered in that planning process will be an option to relocate the cattle operations to the Kapaa Quarry side or other locations in the marsh. Pending the results of further community input and discussions and the recommendations from the livestock management planning process, the facilities presently used by Diamond K Ranch for existing ranching activities may be relocated to other areas around the marsh.

The language in the Final EA will be changed to read:

“Facilities presently used by the Knotts for existing ranching activities may be relocated to other areas around the marsh.”

- d. *Cattle density and environmental impacts of the cattle herd. The use of cattle grazing to control grass would preclude the reintroduction of native flora to grazing areas since cattle graze selectively upon native plants. This may significantly harm the re-establishment of native bird populations in wetland areas, a primary purpose of the conservation district. Nitrogen and phosphorous input to the wetland ecosystem is a very serious concern. Manure piled near the ranch's arena site leaches pollutants into Maunawili Stream and flows directly into the critical open water habitats required by endangered waterfowl. Eutrophication of these ponds may profoundly harm bird habitats by limiting space for feeding, nesting, and loafing with higher densities of encroaching California grass. The risk of massive botulism outbreaks among the birds, such as those seen on Maui, may well be increased by the creation of anaerobic bottom conditions. DLNR's consultation with other agencies regarding the impact of grazing is a strongly recommended. We respectfully request that consultation with the U.S. Fish and Wildlife Service be included since the federal Clean Water Act may apply here. The practice of using cattle grazing as a means of vegetation control in Hawaiian wetlands should be closely examined and, as a management tool in and of itself, may require a formal Environmental Impact Statement. We assert that DLNR's use of public funds mandate that the real potential for environmental damage be fully assessed before this management practice is implemented by the state of Hawaii in Kawai Nui Marsh.*

Response: The Department's plan is to continue indefinitely a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for,

controlling vegetation in areas outside of the planned habitat restoration project. This use is anticipated to be long-term but its tenure is contingent on that operation providing the expected benefits without serious negative impact to the other resource values being managed. Livestock will be controlled by fencing and proper management to protect and exclude them from ponds, water delivery structures, facilities, public use areas and other important resources, such as archaeological sites. This limited cattle grazing operation will provide benefits of 1) controlling grass and weeds in upland areas and areas outside ponds and developed facilities, 2) providing short grass feeding areas for waterbirds in areas near to ponds, and 3) providing additional security in the area and assistance with management activities. The Department recognizes that the continued use of cattle on the fringes of the project may have some negative impacts such as adding nutrient and animal wastes to the system but feels that the positive impacts that cattle grazing has in controlling vegetation will out weigh potential negative impacts on wetlands, streams and water quality. This management tool and future assistance will be done at no cost to the state.

In order to identify and mitigate the potential impacts that cattle grazing may have, the Department will work with the Natural Resources Conservation Service and Diamond K Ranch to develop a Livestock Management Plan that will address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. The Department will seek funding from State and Federal sources to implement a water-monitoring program as part of the project operations and management to evaluate water quality issues.

The following language on the development of a livestock management plan will be incorporated into the final EA in section 4.2.

"A livestock management plan will be developed and periodically updated in cooperation with the Natural Resources Conservation Service and Diamond K Ranch to address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. Management practices developed under the plan will be implemented and followed to reduce potential negative impacts of cattle grazing and keep them in balance with the positive benefits of vegetation control, production of short-grass bird-habitat, and management assistance that a cattle grazing operation contributes to the project."

Continuing the ranching operations as modified by a Livestock Management Plan will provide positive affects of vegetation control and bird habitat production and result in reduced impacts to the marsh from the current operations and result in improved environmental conditions. Continuing an ongoing operation with improved management practices that reduce environmental impacts does not trigger the preparation of an EIS.

Other federal agencies have been involved in review of the management plan. The Army Corps of Engineers prepared a separate EA on the habitat restoration project. The U.S. Fish and Wildlife Service provided comments on this plan and did not raise cattle grazing on the outskirts of the habitat restoration project as an issue of concern. An increased risk of botulism in Kawai Nui due to continued presence of cattle is not consistent with the pattern of botulism outbreaks observed elsewhere (Kanaha Pond on Maui is shallow pond habitat without cattle). Fencing and livestock management practices will be used to exclude cattle and wastes from the shallow pond habitat created in the Wildlife Habitat Restoration project. Botulism outbreaks have not been a problem thus far in the open water habitat at Kawai Nui with the presence of cattle for over 25 years.

2. *Matsuda's General Store. We wish to recommend that some restoration or even just preservation of the building be included in DLNR's EA. Funds that the state will provide to maintenance facilities on the makai side might also be used for renovation and use of the general store by DLNR, instead of building totally new offices for example.*

Response: The Department agrees with your assessment of the potential educational value of some preservation or restoration actions for Matsuda's General Store. However, DLNR does not have plans or funding to initiate a project such as this at this time. We would welcome a proposal from the community to take the lead on such a project.

Your suggestion to use the funds intended for the maintenance facilities for renovation of Matsuda's General Store would not work. The maintenance facility is being located at that site because of the existing boat ramp to access open water areas, proximity to the levee, availability of a large drying area for vegetation stock-piling, an unobtrusive area for machines and operations, and the site is above the 100 year base flood elevation. The office space being provided for the baseyard is a small but integral part of the overall building being constructed. It is not functionally efficient or economical to create office space at the Matsuda's General Store site to service the maintenance baseyard. The Store is more suited for use as an educational or interpretation facility, rather than a maintenance baseyard facility.

3. *Perimeter Trail. The proposed fence line should be positioned to allow for later trail building activities. Restricting access to sensitive archaeological sites should be included in the planning. Installation of lockable gates in certain places may be helpful in facilitating future access by community service groups to selected areas. Consideration should be given to the viewplane of the wetland and beyond and to the likely position of a future perimeter trail.*

Response: The Department agrees that the design of trails in the plan be done with adequate consideration for environmental and cultural impacts. This will be done

during the final layout of the trail design and with the assistance of the Na Ala Hele program staff. Care will be taken to design trails to avoid impacts to environmental and cultural resources and provide scenic views where possible. Much of the trail system is already laid out such as the trail along the levee. The Kapaa Quarry Road and Kukanono slope portion of the perimeter trail will follow the proposed perimeter fence line and clearing of the fence line will provide the corridor for trail development. Expansion of the trail system to take advantage of more scenic routes and other features will be dependent on the future availability of resources and community support.

4. *Education Center. An education center should be included in the CDU permit application and in DLNR's 98 master plan. We strongly support inclusion of the language submitted by Susan Miller, at the 11/19/98 public hearing, within these DLNR documents.*

Response: The Department agrees and will change the Final EA to read:

Title: "Section 4.4.8 Interpretive and Educational Programs and Facilities"

Para 2: "It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving community and government."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0386.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW



For the Protection of Hawaii's Native Wildlife

HAWAII AUDUBON SOCIETY

850 RICHARDS ST., SUITE 505 • HONOLULU, HI 96813-4709
TELEPHONE (808) 528-1432 FAX (808) 537-5294

NOV 24 1998

MEMORANDUM

TO: Dean Uchida, Administrator, Land Division,
Department of Land and Natural Resources

SUBJECT: Management Plan for Kawai Nui Marsh, Draft
Environmental Assessment

DATE: November 23, 1998

The Hawai'i Audubon Society (HAS) appreciates the opportunity to comment on the subject document. Although we are not necessarily in agreement with all the actions proposed in the document, we are pleased to see the state moving to implement enhancement and protection measures for Kawai Nui Marsh.

HAS is aware that the purpose of an Environmental Assessment (EA) document is to disclose fully for a proposed action: the potential impacts upon the surrounding environment and community; the proposed measures to mitigate those impacts, and alternative approaches to accomplishing the action. Although there is a great temptation to use a review of the draft EA to agree or disagree with the proposed action and/or its elements, such comments should be reserved to the permit approval action; HAS will submit those comments at the time the Conservation District Use Application (CDUA) for the Management Plan for Kawai Nui Marsh comes before the Board of Land & Natural Resources.

However, we are also aware that DLNR has already been publicly asked to make two amendments to the dEA that are, in fact, policy amendments: (1) making movement of the "[f]acilities presently used by the Knotts for existing ranching operations" permissive rather than mandatory; and (2) treating the education/visitor center as an "other recommendation" since the specific proposal contained in the dEA has been withdrawn. Therefore, our views on these two issues are included at the appropriate places in the comments below.

Hawaii Audubon Society comments on the dEA for the Management
Plan for Kawai Nui Marsh
November 23, 1998

Page 2

General comment:

The document would be easier to understand if many of the convoluted sentences were separated into their component parts and presented as several separate sentences.

Specific comments:

Section 3. Identification of agencies, citizen groups, and individuals consulted:

Were no individuals consulted during preparation of the draft EA?

Section 4.1 Kawai Nui Marsh Maintenance Facility:

2nd paragraph (page 1)¹: Second sentence appears to be missing an element: perhaps the employee facilities mentioned on page 2, item 3?

3rd paragraph (page 1-2): Will provisions (such as maintained grass filter strips or french drains) be made to mitigate the impact of runoff from the proposed asphaltic concrete access road?

Exhibit 2 does not clearly illustrate the location of the maintenance facility, although it might serve to illustrate the elevation of the facility, since it appears to be a contour map.

A separate non-contour map showing the actual location of the model airplane field and the proposed maintenance facility would make matters much clearer.

Is the site proposed for the maintenance facility the same site from which transformers containing PCBs were removed in the 1980s?

3rd paragraph (page 2): We understand the City & County has a green waste facility in connection with its landfill operations adjacent to the marsh. Use of that facility would appear to be less of an impact on the wetland than creation of an additional facility.

4th paragraph (page 2) item 4 & 5: What is the hurricane resistance of the sheet metal roofing and sides of the proposed metal storage building and of the storage containers?

¹ Paragraph numbers are given in reference to the numbered section, not the page.

Hawaii Audubon Society comments on the dEA for the Management
Plan for Kawai Nui Marsh
November 23, 1998

Page 3

4th paragraph (page 3) item 7: It appears this proposal would be draining a septic tank into the wetland?

5th paragraph (page 3): What are the implications of excluding the office, storage building and containers, and gravel basecourse on (1) the surrounding natural environment by runoff from unprotected equipment and materials and (2) the cost to the taxpayer of using facilities elsewhere in lieu of the excluded facilities? (We believe the latter is a valid question since we understand the DLNR Kawai Nui flood control maintenance crew is presently working out of a state baseyard at Campbell Industrial Park. Could some joint arrangement of use of either the City & County baseyard across Kapa'a Quarry Road or HECO's baseyard on Kalaniana'ole Highway be arranged?)

Section 4.2 Wildlife Habitat Restoration Project

6th paragraph (page 4): How does the proposed fencing relate to the proposed perimeter trail? It appears from Exhibit 6 that, at least on Kapa'a Quarry Road, the fencing would force the trail quite a way from the wetland.

7th paragraph (page 4): What is meant by "division office"?

We would prefer to see the last sentence modified to read: If a cattle operation continues at the Knott Ranch, the facilities for that operation will be moved to the Kapa'a Quarry Road side of the marsh. Other facilities presently used by the Knotts may be relocated to other areas around the marsh. This amendment is suggested because once the ponds/mudflats are constructed, the pasture area will be on the Kapa'a Quarry Road side (as is recognized in paragraph 12).

12th paragraph (page 5): The language here implies a commitment to livestock as a vegetation management tool. Have the following questions been addressed? If so, what were the answers?

1. How much acreage is proposed to be managed by livestock grazing?
2. How many livestock would that acreage require to achieve the desired reduction in vegetation growth?
3. What would be the impact on the wetland in terms of (a) compaction of soil, (b) nutrient addition?
4. How compatible are livestock with the proposed use of volunteer personnel in wetland vegetation restoration?
5. Is the commitment to livestock long-term or short-term? If the latter, what is the time frame?

We believe that if livestock are to be used as a management tool, the action should be done in the context of a livestock

management plan developed in cooperation with the Natural
Resources Conservation Service.

16th paragraph (page 5): In connection with vegetation
removal for pond/mudflat construction, exactly what use will be
made of the Mokulana site, which is identified on Exhibit 7 as a
"vegetation processing area"? Historical circumstances connected
with Mokulana's former use as an orchid nursery have made the
back portion of the area a unique open place; removed from the
highway, to view the marsh. It would be a disservice to the
public for that area to be degraded by heavy equipment,
vegetation storage and removal, etc. Use of the existing access
to the wetland makai of Mokulana would not have such detrimental
effect.

Section 4.3: We understand this section on the Kawai Nui
Education Center will be removed, since the project has been
withdrawn. Please see our proposed amendment to Section 4.4.8 in
this context.

Section 4.4.1 Management Actions:

8th paragraph (page 10): In connection with the
recommendation to continue to maintain the emergency ditch mauka
of the levee, we note that the Kailua Road end of that ditch is
very stagnant and has been further degraded by the City's use of
herbicide to control vegetation growth in the ditch. Please
comment on the potential for opening up some of the marsh mat to
allow inflows to the ditch; such inflows can be seen along about
two-thirds of the ditch. Given that the natural drainage of
Kawai Nui Marsh was toward Kalelepulu pond through the Hamakua
wetland, such inflows should not be too difficult to generate.

Section 4.4.4 Sediment Basins

Paragraph 3 (page 12): In connection with sedimentation
into and from Kapa'a Stream, has the status of the storm water
runoff plans required by DOH for both the quarry and the landfill
been investigated? In theory, these should reduce sedimentation
into Kapa'a Stream.

Section 4.4.8 Kawai Nui Education Center/Visitor Center

In view of the withdrawal of the specific Kawai Nui
Education Center proposal, HAS supports the following amendments
to this section (page 13) to acknowledge a process of
interpretive and educational center and program development
without specifying a site.

Hawaii Audubon Society comments on the dEA for the Management
Plan for Kawai Nui Marsh
November 23, 1998

Page 5

1) Change title to read: Section 4.4.8 Interpretive and Educational Programs and Facilities

2) Replace second paragraph with following language:
It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving the community and government.

Section 4.4.9 Cultural Park

4th paragraph (page 14): Suggest amending 1st sentence to read: The cultural park would augment other interpretive programs carried on in and around the marsh.

Section 6.2.4 Archaeological and Cultural Resources

We urge that the language "or by DOFAW personnel" be removed from item 3 on excavation monitoring; we believe an archaeologist should be on site during all excavation.

Section 6.2.5 Water Quality

4th paragraph (page 22): This paragraph implies construction will continue during wet weather; does this make sense in a wetland?

6th paragraph (page 22): Have the impacts of controlled burning in a wetland with relatively nearby residences been examined?

#

We hope these comments will be helpful. Please do not hesitate to contact Susan Miller (261-7580) if there are any questions.

cc: Tom Eisen and Lauren Tanaka, Planning Branch, Land Division
Department of Land and Natural Resources
Office of Environmental Quality Control



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

Ms. Susan Miller
Hawaii Audubon Society
850 Richards Street, Suite 505
Honolulu, Hawaii 96813-4709

MAR 28 2000

Dear Ms. Miller:

Thank you for your memorandum dated November 23, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *General Comment: The document would be easier to understand if many of the convoluted sentences were separated into their component parts and presented as several separate sentences.*

Response: The intent of the comment is noted, but without specific citations, responding to it will be difficult. The final document will be reviewed and revised to make it easier to understand, pursuant to the comment.

2. *Section 3. Identification of agencies, citizen groups, and individuals contacted. Were no individuals consulted during preparation of the draft EA?*

Response: The draft EA incorporates by reference a number of separate planning processes, (e.g., the 1994 Kawai Nui Master Plan and the Army Corps of Engineers' Kawai Nui Marsh Environmental Restoration Project EA) that involved extensive agency, community group and individual persons' participation and input. Individuals consulted, in addition to the agencies and groups listed in Section 3, included Mr. Martin Knott, Mr. Mike Gibson, and Mr. Roy Teves. These individuals will be added to the list of persons consulted.

3. *Section 4.1. Kawai Nui Marsh Maintenance Facility.
a. Page 1, 2nd paragraph. Second sentence appears to be missing an element.*

Response: Agreed. The 2nd sentence will be revised to read:

"The facility will provide office space including conference, restroom and employee areas, and secure storage areas for chemicals, equipment, and construction materials."

- b. *Page 1, 3rd paragraph. Will provisions be made to mitigate the impact of runoff from the proposed asphaltic concrete access road?*

Response: French drains will not be used. Runoff from the road will be sheet flowed off the site and filtered through the gravel berm and grass vegetation.

- c. *Exhibit 2. Does not clearly illustrate location. A separate map would make matters much clearer. Is the site proposed for the maintenance facility the same site from which transformers containing PCBs were removed in the 1980s?*

Response: A vicinity map will be added. To our knowledge, the site is not a site where transformers containing PCBs were stored and removed. We contacted HECO personnel and they indicated they would do a site inspection.

- d. *Page 2, 3rd paragraph: We understand that C&C has a green waste facility in connection with its landfill operations adjacent to the marsh. Use of that facility would appear to be less of an impact on the wetland than creation of an additional facility.*

Response: From previous discussions with City personnel, the City's Green Waste Facility does not have enough room to accommodate both the DLNR's personnel and equipment storage needs and the vegetation processing needs.

- e. *Page 2, 4th paragraph: What is the hurricane resistance of the sheet metal roofing and sides of the proposed metal storage building and of the storage containers?*

Response: The building will be designed to meet applicable building code requirements (UBC Section 1614, which is wind loading of 80 lbs/sq ft. and Exposure C).

- f. *Page 3, 4th paragraph: It appears this proposal would be draining a septic tank into the wetlands?*

Response: The proposed septic tank and soil absorption bed will be installed in fast land 150 feet from the nearest edge of the marsh. The design and location of the sanitary system was approved by the Department of Health, Wastewater Branch on February 6, 1998.

- g. *Page 3, 5th paragraph: What are the implications of excluding the office, storage building and containers, and gravel basecourse on (1) the surrounding natural*

environment by runoff from unprotected equipment and materials and (2) the cost to the taxpayer of using facilities elsewhere in lieu of the excluded facilities?

Response: Including the baseyard facility near the model airplane field site is not expected to have significant environmental impacts on the surrounding marsh due to runoff from unprotected equipment and materials. Measures are being designed into the project to minimize and mitigate discharge and runoff of oil and other petroleum products. Equipment will be properly maintained and stored under covered sheds, and protocols will be in place for handling and cleaning up oil spots or leaks.

Using facilities elsewhere, such as at the Campbell Industrial Park Baseyard, will have high operating costs with lowered productivity. It would have direct and recurring expenses for moving large equipment and personnel back and forth to the site, plus added costs of personnel time spent commuting between sites. Commuting to the site would result in a loss of productivity and effectiveness and increase response time to emergency situations.

City and County baseyards in the area were investigated; however, they were not large enough to accommodate both the Kawai Nui Marsh Maintenance Crew operations and the ongoing City operations. Private properties were not investigated. It is more economical for the DLNR to utilize a baseyard on its own property in lieu of leasing land from private or other government agencies. This site for the baseyard was selected for the following reasons: 1) availability of the existing boat ramp to access open water areas, 2) proximity to the levee, 3) availability of a large adjacent area for vegetation stock-piling and drying, 4) an unobtrusive area in which to operate machines, and 5) the site is above the 100 year base flood elevation.

4. *Section 4.2 Wildlife Habitat Restoration Project.*

a. *Comment: How does the proposed fencing relate to the proposed perimeter trail?*

Response: The proposed perimeter trail will follow the proposed perimeter fence line. The clearing of the fence line will provide the corridor for trail development. Expansion of the trail system to take advantage of more scenic routes and other features will be dependent on the future availability of resources and community support.

b. *Comment: What is meant by "division office"?*

Response: The "division office" is the relatively new metal-sided building built by the Division of Forestry and Wildlife on the mauka side of the access road into the Diamond K Ranch property.

c. *Comment: Facilities for cattle operations should be moved to Kapaa Quarry side of the marsh and other facilities used by the Knotts may be relocated to other areas around the marsh.*

Response: The Department is planning to work with the Natural Resources Conservation Service and Diamond K Ranch to develop a Livestock Management Plan that will address issues of proper stocking levels and grazing patterns, water quality, and impacts to streams, wetlands and other important resources such as archaeological sites. One aspect that will be considered in that planning process will be an option to relocate the cattle operations to the Kapaa Quarry side or other locations in the marsh. Pending the results of further community input and discussions, and the recommendations from the livestock management planning process, the facilities presently used by the Knotts for existing ranching activities may be relocated to other areas around the marsh. The following language on facility use will be included in the final EA in section 4.2.

"Facilities presently used by the Knotts for existing ranching activities may be relocated to other areas around the marsh."

d. Comment: Language used implies a commitment to livestock as a vegetation management tool. Have the following questions been addressed?

- 1. How much acreage is proposed to be managed by livestock grazing?*
- 2. How many livestock would that acreage require to achieve the desired reduction in vegetation growth?*
- 3. What would be the impact on the wetland in terms of (a) compaction of soil, (b) nutrient addition?*
- 4. How compatible are livestock with the proposed use of volunteer personnel in wetland vegetation restoration?*
- 5. Is the commitment to livestock long-term or short-term? If the latter, what is the time frame?*

We believe that if livestock are to be used as a management tool, the action should be done in the context of a livestock management plan developed in cooperation with the Natural Resources Conservation Service.

Response: The Department's plan is to continue indefinitely a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for, controlling vegetation in areas outside of the planned habitat restoration project. This use is anticipated to be long-term, but its tenure is contingent on that operation providing the expected benefits without serious negative impacts to the other resource values being managed. Livestock will be controlled by fencing and proper management to protect and exclude them from ponds, water delivery structures, facilities, public use areas, and other important resources such as archaeological sites.

This limited cattle grazing operation will provide benefits of 1) controlling grass and weeds in upland areas and areas outside ponds and developed facilities, 2) providing short grass feeding areas for waterbirds in areas near to ponds, and 3) providing additional security in the area and assistance with management activities. The Department recognizes that the continued use of cattle on the fringes of the project may

have some negative impacts, such as adding nutrient and animal wastes to the system, but feels that cattle grazing's positive impacts (controlling vegetation) will out-weigh potential negative impacts on wetlands, streams and water quality. This management tool and future assistance will be done at no cost to the state. As was evident in the public meetings that occurred, continuing some form of cattle grazing along the outskirts of the marsh has the support of a large segment of the community.

In order to identify and mitigate the potential impacts that cattle grazing may have, the Department will work with the Natural Resources Conservation Service and Diamond K Ranch to develop a Livestock Management Plan that will address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. The Department will seek funding from State and Federal sources to implement a water monitoring program as part of the project operations and management to evaluate water quality issues.

The following language on the development of a livestock management plan will be incorporated into the final EA in section 4.2:

"A livestock management plan will be developed and periodically updated in cooperation with the Natural Resources Conservation Service and Diamond K Ranch to address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. Management practices developed under the plan will be implemented and followed to reduce potential negative impacts of cattle grazing and keep them in balance with the positive benefits of vegetation control, production of short-grass bird-habitat, and management assistance that a cattle grazing operation contributes to the project."

To address the specific questions asked above, the Department provides the following response:

1. Approximately 90-100 acres has the potential for livestock grazing (See Map Exhibit 8 - Potential Livestock Grazing Area). The amount of acreage to graze and the grazing regime will be addressed in a Livestock Management Plan.
2. The amount of livestock needed to achieve vegetation control is unknown at this time and will be developed as a part of the Livestock Management Plan. Initial plans are to start the grazing operation with the existing permitted stocking level (about 100 cattle and 15 horses). The use and effectiveness of the cattle to control vegetation will be monitored and the number of animals used will be balanced with the desired level of vegetation control and compatibility with other uses.
3. The impacts to wetland from soil compaction and nutrient addition are unknown at this time and will be assessed as part of the Livestock Management Plan. These impacts will potentially be less than current conditions because a portion

of the cattle grazing will be shifted to upland ungrazed areas on the fringe of the marsh.

4. The use of cattle and volunteer labor in the marsh can be compatible as long as fencing or time segregates these management tools. Livestock will be controlled by fencing to exclude them from areas where volunteers will work on vegetation restoration projects.
5. Addressed in the comments above.

e. *Comment: Exactly what use will be made of the Mokulana Site? It would be a disservice to the public for that area to be degraded by heavy equipment, vegetation storage and removal, etc.*

Response: The Mokulana site will be used as a temporary storage site for soil and vegetation during the construction of ponds. The soil and vegetation will be removed to the larger and permanent vegetation processing site at the DOFAW baseyard adjacent to the model airplane field. This temporary use of the Mokulana site will be beneficial to clean the site of unwanted garbage, shrubs and weeds, to open up the area, and to improve access to accommodate increased public use.

5. *Section 4.4.1. Management Actions. Comment: Please comment on the potential for opening up some of the marsh mat to allow inflows to the ditch (Kailua road end of the emergency ditch).*

Response: This is possible and will be considered in Phase II of the wildlife habitat restoration in the marsh, which will create open water habitat. The Department and the Army Corps of Engineers have begun a preliminary planning process for open water habitat restoration, and will include this idea in the scoping process. This type of vegetation removal is described in section 4.4.2.

6. *Section 4.4.4 Sediment Basins. Comment: Has the status of the storm water runoff plans required by DOH for both the quarry and the landfill been investigated?*

Response: Not to our knowledge. The Department of Health is the lead agency on this issue. The DLNR will provide appropriate comments on any plans submitted for our review. We agree that a storm water runoff plan may be helpful to control sedimentation in Kapa'a stream.

7. *Section 4.4.8. Kawai Nui Education Center/Visitor Center. Comment: HAS suggests 2 amendments to this section to acknowledge a process of interpretive and educational center and program development without specifying a site.*

Response: The Department agrees and will change the final EA to read:

Title: "Section 4.4.8 Interpretive and Educational Programs and Facilities"

Para 2: "It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving community and government."

8. *Section 6.2.4 Archaeological and Cultural Resources. Comment: We urge that the language "or by DOFAW personnel" be removed from item 3 on excavation monitoring; we believe an archaeologist should be on site during all excavation.*

Response: The Department disagrees. The procedure being set up provides for extensive archaeological consultation, review, inspection, and monitoring. Excavation site boundaries will be marked by archaeologists, excavation depths for each site will be established by archaeologists, and archaeologists will participate in monitoring excavations. DOFAW personnel are included as "monitors" to augment coverage by archaeologists, and will only monitor sites that archaeologists have identified as low potential for historic agricultural features. The Corps and DLNR archaeologists will monitor those sites of special concern for historic agricultural features.

9. *Section 6.2.5 Water Quality. Comment: The 4th paragraph implies that construction will continue during wet weather; does this make sense in a wetland? The 6th paragraph identifies use of controlled burning in a wetland, have the impacts of controlled burning in a wetland with relatively nearby residences been examined?*

Response: Construction of pond areas will be done primarily in dry areas and scheduled for the drier times of year. However, wet weather can occur any time during the year and temporary construction roads will possibly remain during wet periods. Precautions will be taken to prevent erosion and transportation of mud to paved public roads. Controlled burning is identified as a possible management tool in the future. If used, it will be done on a small scale and only with all appropriate air quality permits.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW

SHELLEY NOBRIGA
45-125 IOLE PLACE
KANEIOHE, HI 96744
PH: 255-4919

November 19, 1998

Board of Land and Natural Resources
Land Management Division
ATTN: Dean Uchida or Hearing Chairperson
1151 Punchbowl Street
Honolulu, Hawaii 96817

RE: PUBLIC HEARING, November 19, 1998 at 6:00 p.m.
Use Application No. OA-2912, Kawainui Marsh
at Kalanimoku Bldg, Rm #132

Dear Chairperson:

My name is Shelley Nobriga, and I currently reside on the Windward side of Oahu. I have reviewed the Kawainui Marsh Master Plan, assessed statutory provisions, and reviewed various documents reflecting the Department of Land and Natural Resource's (LNR) goals and objectives. It is my opinion that the proposed maintenance facility, flood control facilities, restoration projects and the development of an educational center will have a positive affect on the residents of the Windward side as well as the community at large.

LNR has focused on education as one of LNR's most important and effective tools to create public awareness about our resources. The Land Management Division's goals are to promote the social, environmental and economical well-being of Hawaii's people. The identification of Kawainui Marsh, as a "sustainability hotspot" indicates that the maintenance and protection of this area is a high priority. The Marsh has an extensive history dating back to the Kingdom of Hawaii. The Marsh is home to four endangered birds, other birds, fish, and aquatic animals. The mission of LNR will go hand in hand with the development of an education center. This center although privately funded will be a benefit to all of Hawaii's residents by providing information about a historical "hotspot" and limiting tax dollar spending.

I believe the education center will benefit more people and outweigh the limited impact on a private land owner, such as the Knott Ranch. It is the duty of LNR: Land Management Division to obtain privately owned lands that are required by the State for public purposes either by negotiations, condemnations or land exchanges. This may coincide with LNR: Land Management Division's other goal of making land available to the public through fee sales, leases, licenses, easements, right of entries, month to month tenancies or kept as open space area. The Knott Ranch as a short term leasee was on notice that their use was limited and this one private interest should not in anyway jeopardize Hawaii residents' right to have an education center.



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Ms. Shelley Nobriga
45-125 Iole Place
Kaneohe, Hawaii 96744

Dear Ms. Nobriga,

Thank you for your letter dated November 19, 1998, with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment (EA).

We understand you are supportive of the proposed actions described in the draft EA, and agree with your belief that the proposed maintenance facility, flood control facilities, and restoration projects will have a positive affect on the entire community. We do note, however, that the coalition of non-profit organizations proposing the education project decided to withdraw that proposal, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. Upon re-submittal, that proposal will require a separate environmental assessment; any comments and concern with that proposal will be addressed at that time.

We also agree with your comments on the importance of educational programs for Kawai Nui Marsh. The following language will be added to Section 4.4.8 on educational programs to emphasize the need and community involvement in the program:

"Section 4.4.8 Interpretive and Educational Programs and Facilities"

Para 2: "It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku & Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving community and government."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW

Testimony on the
Draft Environmental Assessment
Management Plan for Kawai Nui Marsh
dated September 1998

Suggested revision of language on page 13 to acknowledge process of interpretive and educational center and program development without specifying a site.

Current language:

"Section 4.4.8 Kawai Nui Education Center/Visitor Center

"The 1983 Resource Management Plan specifically recommended development of interpretive educational programs and centers which demonstrate the interrelationship of early Hawaiian cultural, agricultural, recreational and social systems.

"The Kawai Nui Education Center proposed by the partnership of four organizations and presented in 4.3 of this document has been planned and designed to obtain the objective for a Visitor Center."

Suggested revision:

Section 4.4.8 Interpretive and Educational Programs and Facilities

The 1983 Resource Management Plan specifically recommended development of interpretive educational programs and centers which demonstrate the interrelationship of early Hawaiian cultural, agricultural, recreational and social systems.

It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving the community and government.

Presented by:
Susan Elliott Miller
1030 Aoloa Place, #102-B
Kailua, Hawai'i 96734-5262

Susan Elliott Miller



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

Ms. Susan Elliot Miller
1030 Aoloa Place, #102-B
Kailua, Hawaii 96734-5262

MAR 28 2000

Dear Ms. Miller:

Thank you for your letter dated September 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *Comment: You suggested revising the language on page 13, Section 4.4.8 of the draft EA to acknowledge the development of an interpretive and educational center and program without specifying a site.*

Response: The Department concurs with your comments and will incorporate the following language into the final EA.

"Section 4.4.8 Interpretive and Educational Programs and Facilities"

Para 2: "It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving community and government."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW

*Margo Stahl, CEP
46-436 Holopeki Street
Kaneohe, Hawaii 96744*

November 18, 1998

Mr. Michael Wilson
Chairman
Board of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii

Dear Mr. Wilson:

I am writing to you today because we share the same love of Kawainui Marsh. Over the years I have grown to know and appreciate the value of that wetland and of its potential to help recover the four species of Hawaiian endangered waterbirds. As you know, over the years I have worked for the State as well as two Federal agencies in some capacity as it related to the marsh. My concerns over the water quality of the marsh and the nearshore marine environment have resurfaced recently with respect to the future of the area known as Knott Farm.

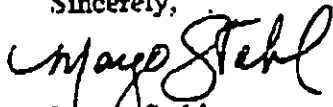
Kawainui Marsh has been identified along with Kaelepulu Stream as a significant source of polluted runoff to Kailua Bay. The draft and final Environmental Impact Statements for the Kawainui Marsh Flood Control Project indicate that the cattle and horses that graze on California Grass associated with the Knott Farm may contribute both pathogens and relatively high nutrient levels into the marsh. Certainly the proximity of the Knott Farm to the major tributary of the marsh, Maunawili Stream, directly impacts the water quality of the marsh. Numerous site visits have documented the negative impact that these cattle have had on the integrity of this stream system.

It is with this knowledge that I urge you to follow through with what most people in the community have grown to believe, that the cattle at this location would no longer be acceptable when marsh restoration activities commence. As you know, significant funding to improve the marsh as habitat for the four endangered waterbirds was solicited and approved with work scheduled to begin soon. The location of the Knott Farm is incompatible with restoration efforts in my opinion.

It seems ironic that the presence of California Grass at the Knott site, the alien grass that was introduced in the early 1920s for cattle grazing, is now being used as a reason why cattle must be retained to control it. There are many ways that California Grass may be controlled without adding a worse environmental impact to the marsh via continual cattle grazing.

I urge you to think of the recovery needs of the marsh and Kailua Bay as you ponder the decision to extend the Knott lease. Thank you for the opportunity to express my feelings on this important issue. I will be happy to furnish you with any supporting documentation if you so desire.

Sincerely,



Margo Stahl

Certified Environmental Professional

National Association of Environmental Professionals

cc: Hawaii Audubon Society
Army Corps of Engineers





STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Ms. Margo Stahl
46-436 Holoapeki Street
Kaneohe, Hawaii 96744

Dear Ms. Stahl,

Thank you for your letter dated November 18, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

Comment: Continued cattle grazing and the proximity of the Knot Farm to the major tributary of the marsh, Maunawili Stream, directly impacts the water quality of the marsh. ... The location of the Knott Farm (and cattle grazing) is incompatible with restoration efforts.

Response: The Department recognizes that the continued use of cattle in the marsh may have some negative impacts on water quality but feels that the positive impacts that cattle grazing has in controlling vegetation will balance out the negative impacts on water quality. The Department's plan is to continue a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for, controlling vegetation in areas outside of the planned habitat restoration project. Livestock will be controlled by fencing and proper management to protect and exclude them from ponds, water delivery structures, facilities, public use areas and other important resources, such as archaeological sites.

This limited cattle grazing will provide benefits of 1) controlling grass and weeds in upland areas and areas outside ponds and developed facilities, 2) providing short grass feeding areas for waterbirds in areas near to ponds, and 3) providing additional security in the area and assistance with management activities. This management tool and future assistance will be done at no cost to the state. As was evident in the public meetings that occurred, continuing some form of cattle grazing along the outskirts of the marsh has the support of a large segment of the community.

In order to identify and mitigate the potential impacts that cattle grazing may have, the Department will work with the Natural Resources Conservation Service and Diamond K Ranch to develop a Livestock Management Plan that will address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. The Department will seek funding from State and Federal sources to

implement a water monitoring program as part of the project operations and management. The following language on the development of a livestock management plan will be incorporated into the final EA in section 4.2.

"A livestock management plan will be developed and periodically updated in cooperation with the Natural Resources Conservation Service and Diamond K Ranch to address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. Management practices developed under the plan will be implemented and followed to reduce potential negative impacts of cattle grazing and keep them in balance with the positive benefits of vegetation control, production of short-grass bird-habitat, and management assistance that a cattle grazing operation contributes to the project."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

Sincerely,



DEAN UCHIDA
Administrator

cc: DOFAW

ASHFORD & WRISTON

ATTORNEYS AT LAW

Paul S. Aoki*
Marjorie C. Y. Au*
Kirk W. Caldwell*
Rosemary T. Fazio*
Michael W. Gibson

Robert Bruce Graham, Jr.*
Lorin B. Hirano*
Francis P. Hogan
Diane S. Kishimoto*
Galen C. K. Leong*

John A. Lockwood*
James K. Mee*
Wayne Hasser*
Cuyler E. Shaw*

Cynthia K. Ching
Glenn K. C. Ching
Wayne E. Costa, Jr.
Ronda K. Kent

Charles A. Price
Paul B. Shimamoto
Jill M. Tsuchihara
Mary Beth M. Wong
Keith M. Yonamine

COUNSEL
David B. Dohms
David C. Farmer
Matthew G. Jewell
Dennis A. Krueger
Russell W. Lum

OF COUNSEL
Clinton R. Armstrong
Albert H. Ogawa*
A. James Wriston, Jr.*
ALICE C. CHUNG

October 26, 1998

Mr. Tom Eisen
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809

Re: Management Plan for Kawai Nui Marsh/
Draft Environmental Assessment

Dear Mr. Eisen:

With one exception, Mr. and Mrs. Martin Knott agree with the Draft E/A submitted by DLNR. The Knotts strongly support the flood control and habitat and wildlife protection and restoration portions of the Draft E/A. The Knotts understand that it may be necessary for them to modify their ranching operation to accommodate certain aspects of the implementation of the management plan. In particular, the Knotts are prepared to assist with weed and vegetation control by grazing cattle and horses in designated areas.

The Knotts' primary concerns with the DLNR Draft E/A is contained in my letter dated October 5, 1998 to Cecil Santos. In the DLNR Draft E/A, it is stated that "Facilities presently used by the Knotts for existing activities will be relocated to other areas around the marsh." DLNR Draft E/A, page 4. The statement raises several issues: What facilities are going to be moved? Where are the facilities going to be moved to? Who is going to pay for the costs to relocate the facilities? Is the reason for the relocation the Education Center? If the Education Center was located at the site specified in the 1994 Kawai Nui Marsh Plan, there would be no need to relocate any Knott Ranch facilities.

The Knotts look forward to working with the DLNR to implement the Kawai Nui Marsh Master Plan. The problems should be able to be resolved with input from all the

HONOLULU OFFICE
Mailing Address:
Post Office Box 131
Honolulu, HI 96810

Street Address
Alii Place, Suite 1400
1099 Alakea Street
Honolulu, HI 96813

Telephone
(808) 539-0400
Facsimile:
(808) 533-4945

KAILUA-KONA OFFICE
Kuakini Tower, Suite 208
75-5722 Kuakini Hwy
Kailua-Kona, HI 96740

Telephone
(808) 329-7706
Facsimile
(808) 329-7528


OCT 27 1998
RECEIVED

Mr. Tom Eisen
Department of Land and Natural Resources
October 26, 1998
Page 2

entities and individuals who are interested in the protection and enhancement of the marsh resources.

Very truly yours,

ASHFORD & WRISTON


Michael W. Gibson

MWG/sys

cc: Mr. and Mrs. Martin Knott



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 2000

Mr. Michael W. Gibson
Ashford & Wriston
Attorneys at Law
Post Office Box 131
Honolulu, Hawaii 96810

Dear Mr. Gibson:

Thank you for your letter dated October 26, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

1. *Page 4. The Draft EA stated that "Facilities presently used by the Knotts for existing activities will be relocated to other areas around the marsh". The statement raises several issues:*
 - a. *What facilities are going to be moved?*
 - b. *Where are the facilities going to be moved to?*
 - c. *Who is going to pay for the costs to relocate the facilities?*
 - d. *Is the reason for the relocation the Education Center? If the Education Center was located at the site specified in the 1994 Kawai Nui Marsh Plan, there would be no need to relocate any Knott Ranch facilities.*

Response to Item a & b: One issue that is being raised with the development of the Habitat Restoration Project is the future role of cattle grazing in the Marsh. The Department's plan is to continue indefinitely a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for, controlling vegetation in areas outside of the planned habitat restoration project. This use is anticipated to be long-term but its tenure is contingent on that operation providing the expected benefits without a serious negative impact to the other resource values being managed.

Livestock will be controlled by fencing and proper management to protect and exclude them from ponds, water delivery structures, facilities, public use areas and other important resources, such as archaeological sites. This limited cattle grazing operation will provide benefits of 1) controlling grass and weeds in upland areas and areas

outside ponds and developed facilities, 2) providing short grass feeding areas for waterbirds in areas near to ponds, and 3) providing additional security in the area and assistance with management activities. The Department recognizes that the continued use of cattle on the fringes of the project may have some negative impacts such as adding nutrient and animal wastes to the system, but feels that the positive impacts that cattle grazing has in controlling vegetation will outweigh potential negative impacts on wetlands, streams and water quality. This management tool and future assistance will be done at no cost to the state. As was evident in the public meetings that occurred, continuing some form of cattle grazing along the outskirts of the marsh has the support of a large segment of the community.

In order to identify and mitigate the potential impacts that cattle grazing may have, the Department will work with the Natural Resources Conservation Service and Diamond K Ranch to develop a Livestock Management Plan that will address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. One aspect that will be considered in the planning process will be an option to relocate the cattle operations to the Kapaa Quarry side or other locations in the marsh. Pending the results of further community input and discussions and the recommendations from the cattle management planning process, the facilities presently used by the Knotts for existing ranching activities may be relocated to other areas around the marsh.

The following language on facility use and development of a livestock management plan will be included in the final EA in section 4.2.

"Facilities presently used by the Knotts for existing ranching activities may be relocated to other areas around the marsh."

"A livestock management plan will be developed and periodically updated in cooperation with the Natural Resources Conservation Service and Diamond K Ranch to address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. Management practices developed under the plan will be implemented and followed to reduce potential negative impacts of cattle grazing and keep them in balance with the positive benefits of vegetation control, production of short-grass bird-habitat, and management assistance that a cattle grazing operation contributes to the project."

Response to Item c: If after completion of the Livestock Management Plan and further community input and discussion, it is decided to move some or all of the ranching facilities to other locations in the marsh, the Department and Diamond K Ranch will work out a relocation plan and ways to fund the relocation. Under the Army Corps of Engineers Habitat Restoration Project, the Department is eligible to receive up to \$16,000 in credit against the state matching share requirement to cover costs for relocating Diamond K Ranch as a result of the development of the Habitat Restoration

Project. In addition, the Department may be able to reduce permit payments in lieu of Diamond K Ranch expenses to relocate their operation. Other funding sources such as wildlife management development funds also may be available to cover costs of fencing and other amenities to manage livestock as determined in the Livestock Management Plan. Diamond K Ranch and other interested parties may also be able to provide in-kind services, materials or funding to help cover the costs of relocation.

Response to Item d: Only partially. The proposal to locate an Education Facility on a portion of the Diamond K Ranch permit site was one of the reasons to consider relocating existing ranching activities to another area of the marsh. However, as is recognized in your letter, development of the Habitat Restoration Project and other public use facilities will affect the ranching operations in the marsh and will result in a need to relocate some existing activities. The question of which activities and facilities will need to be modified or relocated will be addressed in the Livestock Management Plan after an assessment of the compatibility of ranching operations with other resource values being managed in the marsh.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,



DEAN UCHIDA
Administrator

cc: DOFAW

Kimberly Nichols

1246 Mowai Street
Kailua, HI. 96734

Home Phone (808) 263-6379
Email knichols@mauiemail.com

October 16, 1998

DLNR Land Division
PO Box 621
Honolulu HI 96809

Dear Folks at DLNR and interested parties,

Reading the papers and watching the process of Kaiwainui Marsh development unfold on the television, I have become concerned about visions of the future held by decision makers in this area.

Some of the reasons people come to Kailua and why I am interested in purchasing property here is the quiet, lowrise atmosphere and of course, Kailua Beach. People believe it is safe to raise their children, little children, here. We don't need more housing, parking lots, schools, traffic or land development, commercial or residential. We do not need to attract companies to the area for growth. This will fail as it has in every other tourist area in the pacific basin. What works is eco-tourism. We do not need to create more jobs. We need to train people at night, at the existing schools, to move into the jobs which are growing. Nor do we need more schools and education buildings or doctors offices. Lets upgrade our schools. In the long-run we will benefit and our children will have natural open-space. This is investment in the people.

Long term what will support Kailua, Kaneohe, Enchanted Lakes, Aikahi, Keolu Hills, and Waimanalo are more parks, and bike lanes(especially around Enchanted Lakes) and a continuation of the small community idea. These attract healthy, working constituents with their families, and manifest a communities pride. A spread out system drives away those stay at home mothers, makes people drive more often and sets a precedent for new development in the last undeveloped area around here(which I fear is the main reason, i.e.. building monies, the Kawainui Project was conceived). It is the environment which attracts people to Kailua and Hawaii, not jobs.

Let us not be as Waikiki was in the 80's and early 90's, building more to house the single tourist, instead of upgrading the hotels that were already there. They cost us money and provide little per person. We lost the families that used to come, and come again every year because it was a good clean environment for their children. Let us be more forward thinking than that. Let us not build more, but restore what we have. Update what we have. Preserve what we have. This is an investment in the future and history of Kailua.

Please reconsider the castle medical expansion and continuation of plans to develop the marsh area. Forget building more and improve what we have. We do not need more people moving into Kailua. Please do not attract them. Look at Kalihi. Thats what it will be like.

Think first! Save Kawainui Marsh!

cc: DLNR
Mayor Harris
Steve Holmes
SunPress

Sincerely,

Kimberly Nichols



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

Ms. Kimberly Nichols
1246 Mowai Street
Kailua, Hawaii 96734

MAR 28 2000

Dear Ms. Nichols:

Thank you for your letter dated October 16, 1998 with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your comments are as follows:

Comment: Reconsider proposed plans for development of Kawai Nui Marsh that would involve construction of buildings and similar development but rather focus on restoration activities, creation of more community recreation facilities such as parks and bike lanes, and an eco-tourism approach to development.

Response: The Department agrees with your concerns that a restoration and eco-tourism approach be taken to develop Kawai Nui Marsh. The Department's approach, as outlined in the Management Plan for Kawai Nui Marsh, is balanced in that it features restoration of natural and cultural resources, development of community and visitor recreational opportunities, as well as some necessary facility development. The Plan includes immediate restoration activities to control vegetation in canals, streams, and the marsh, thus maintaining the flood control capacity of the marsh, and restoring waterbird habitat in the marsh. It also has eco-tourism type activities such as trail development, and provides recreational opportunities such as bird watching, hiking, biking, and nature viewing that would serve both the local community and visitors.

Development of these programs and activities will require minor expansion or reconstruction of existing facilities, and construction of some additional facilities such as the Kawai Nui Marsh maintenance facility (adjacent to the model airplane field) and some smaller scale facilities such as covered work areas, a plant nursery, animal care facilities, and visitor amenities like signs, viewing blinds, trails, and boardwalks.

Longer term, the Management Plan calls for development of interpretive and educational facilities, a cultural park, an ethno-botanical garden, cultural agricultural practices, and scenic parks; these elements that were included in the 1994 Kawai Nui Marsh Master Plan. The community was

involved in the development of the Master Plan, and will continue to be involved in future decisions regarding large scale development of buildings and structures.

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,



DEAN UCHIDA
Administrator

cc: DOFAW

Deborah Pope
426 'Ili'aina Street
Kailua, Hawai'i 96734
(808) 254-4153 res.
(808) 254-4292 bus.

NOV 1 1998

November 22, 1998

Mr. Michael D. Wilson
Chairman
Department of Land & Natural Resources
1151 Punchbowl Street, Room 130
Honolulu HI 96813

Dear Mr. Wilson:

RE Draft Environmental Assessment (EA)
Ka Wai Nui Marsh Management Plan

I have reviewed the Draft EA on the Ka Wai Nui Marsh Management Plan and have the following questions and comments. I offer these from the perspective of a third-generation resident of Kailua. My family has lived and worked in Maunawili and Olomana since 1930. I grew up and still live on the edge of Ka Wai Nui Marsh, as does most of my family. I am also a cousin of Mrs. Knott who, together with her husband Martin Knott, operates the Knott Ranch under a revokable permit from the State.

- I understand that the primary purposes of the Ka Wai Nui Master Plan are flood control and wildlife habitat restoration. I am fully in support of this concept and wish to compliment the staff of DLNR for the excellent work they have done in developing the original master plan and the proposed management plan as they pertain to flood control and wildlife habitat restoration.

- I also understand per announcements made at the hearing before the Board of Land & Natural Resources on Thursday, November 19 that the DLNR EA no longer incorporates the EA by the Audubon Society for a proposed educational center. It is my understanding that the Audubon Society will not be filing a final EA in time for a lease request to be reviewed by the Board at their December 11 meeting and that plans and locations for an educational center are to be determined at a later date, pending the outcome of the priority projects of pond construction and wildlife restoration. I would like to add that I am fully in support of a future educational/interpretive center and other improvements which will improve public understanding and appreciation of the Marsh and its rich cultural, historical and natural significance. I think it is critical that these secondary projects (educational center, ethnobotanical gardens, trail system, etc) follow the priority projects of pond construction and wildlife restoration.

- The original Master Plan throughout made a strong case for the benefits that

ranching provides to the marsh as wildlife habitat. It also assumed continuation of the Knott Ranch at its current site. The Knotts are long-term, cooperative tenants of the State and have ranched Ka Wai Nui for 27 years.

• Based on these understandings, I have the following questions about how the new management plan deviates from the original Master Plan regarding ranching and the status of the Knott Ranch.

- Under the new management plan, what is DLNR's commitment to continue ranching in the Marsh?
- Will the Knotts, who have ranched Kawai Nui for 27 years, be allowed to continue ranching on a scale comparable to their current operation?
- If ranching is part of the Master Plan as indicated, can the Knotts obtain a lease, as opposed to a month-to-month revocable permit?
- Do the Knotts face the prospect of relocation of their home and cattle operation to a location elsewhere in the Marsh? If so, what are the circumstances which would cause this? To what site would they be relocated? Who would assume responsibility for relocation costs?

Finally, I believe the Management Plan is deficient in assessing the cultural and historical significance of ranching in the Marsh. Ranching in the Marsh goes back over 100 years and is a colorful and important part of the historical record and cultural development of Kailua. The Knott Ranch is in fact "living history" -- a continuation of a historical lifestyle which shaped Kailua -- and as such it represents rich educational potential.

I do not wish to suggest that ranching should take precedence over any of the other historical or proposed uses of the Marsh but rather that ranching should be given its due place among the other uses of the Marsh. The human uses of the Marsh include Native Hawaiian religious and cultural practices, fishing, farming and ranching. Each of these is a vital part of the cultural and natural landscape and its history. Indeed, the original Master Plan makes the point throughout that these mixed uses are compatible and can productively co-exist. I have seen no definitive new research to contradict the data provided in the Master Plan. I believe that preserving and interpreting the place of ranching in the Marsh's history has important implications both for DLNR's plans for the Marsh and for the various proposed future improvements including the educational center, signage, etc.

Mahalo for the opportunity to pose these questions and comments.

Sincerely,


Deborah A. Pope



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

Ms. Deborah Pope
426 Iliaina Street
Kailua, Hawaii 96734

MAR 28 2000

Dear Ms. Pope:

Thank you for your letters dated October 6, 1998 and November 22, 1998 with comments on the Draft Environmental Assessment for Kawai Nui Education Center Initial State and the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment.

The Department's responses to your October 6, 1998 letter and comments are as follows:

Comments on the Environmental Education Center.

Response: The comments provided in your letter pertain to the development of the Environmental Education Center at the Diamond K Ranch site. The coalition of non-profit organizations' proposing that project decided to withdraw that proposal, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. Upon submittal, that proposal will require a separate environmental assessment; any comments and concern with that proposal can be addressed at that time.

The following language will be added to Section 4.4.8 on educational programs to emphasize the need for community involvement in the program.

"Section 4.4.8 Interpretive and Educational Programs and Facilities"

Para 2: "It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving community and government."

The Department's responses to your November 22, 1998 letter and comments are as follows:

Comment 1 & 2: Under the new management plan, what is DLNR's commitment to continue ranching in the Marsh? Will the Knotts, who have ranched Kawai Nui for 27 years, be allowed to continue ranching on a scale comparable to their current operation?

Response: The Department's plan is to continue indefinitely a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for, controlling vegetation in areas outside of the planned habitat restoration project. This use is anticipated to be long-term, but its tenure is contingent on that operation providing the expected benefits without serious negative impacts to the other resource values being managed. Livestock will be controlled by fencing and proper management to protect and exclude them from ponds, water delivery structures, facilities, public use areas and other important resources, such as archaeological sites.

This limited cattle grazing operation will provide benefits of 1) controlling grass and weeds in upland areas and areas outside ponds and developed facilities, 2) providing short grass feeding areas for waterbirds in areas near to ponds, and 3) providing additional security in the area and assistance with management activities. The Department recognizes that the continued use of cattle on the fringes of the project may have some negative impacts such as adding nutrient and animal wastes to the system but feels that the positive impacts that cattle grazing has in controlling vegetation will outweigh potential negative impacts on wetlands, streams and water quality. This management tool and future assistance will be done at no cost to the state. As was evident in the public meetings that occurred, continuing some form of cattle grazing along the outskirts of the marsh has the support of a large segment of the community.

In order to identify and mitigate the potential impacts that cattle grazing may have, the Department will work with the Natural Resources Conservation Service and Diamond K Ranch to develop a Livestock Management Plan that will address issues of proper stocking levels, grazing patterns, water quality and impacts to streams and wetlands. One aspect that will be considered in that planning process will be an option to relocate the cattle operations to the Kapaa Quarry side or other locations in the marsh. Pending the results of further community input and discussions and the recommendations from the cattle management planning process, the facilities presently used by the Knotts for existing ranching activities may be relocated to other areas around the marsh. The language in the Final EA will be changed to read:

"Facilities presently used by the Knotts for existing ranching activities may be relocated to other areas around the marsh."

Comment 3: If ranching is part of the Master Plan as indicated, can the Knotts obtain a lease, as opposed to a month-to-month revocable permit?

Response: The process under which the Department issues leases is established by Statute in HRS §171-14 and requires that disposition of public lands for long-term leases shall be by public auction. The Department can not issue a lease to the Knotts without putting the lease up to competitive bid via a public auction. If so, there is no guarantee that the Knotts would obtain the lease under these conditions.

Comment 4: Do the Knotts face the prospect of relocation of their home and cattle operation to a location elsewhere in the Marsh? If so, what are the circumstances which would cause this? To what site would they be relocated? Who would assume responsibility for relocation costs?

Response: If, after completion of the Livestock Management Plan and further community input and discussion, it is decided to move some or all of the ranching facilities to other locations in the marsh, the Department and Diamond K Ranch will work out a relocation plan and ways to fund the relocation. Under the Army Corps of Engineers Habitat Restoration Project, the Department is eligible to receive up to \$16,000 in credit against the state matching share requirement to cover costs for relocating Diamond K Ranch as a result of the development of the Habitat Restoration Project. In addition, the Department may be able to reduce permit payments in lieu of Diamond K Ranch expenses to relocate their operation. Other funding sources such as wildlife management development funds also may be available to cover costs of fencing and other amenities to manage livestock as determined in the Livestock Management Plan. Diamond K Ranch and other interested parties may also be able to provide in-kind services, materials or funding to help cover the costs of relocation.

Comment 5: I believe the Management Plan is deficient in assessing the cultural and historical significance of ranching in the Marsh.

Response: The Management Plan is not intended to discuss and evaluate all uses of Kawai Nui Marsh; this was done in the 1994 Kawai Nui Master Plan. This present document describes the Department's plans to implement the general actions outlined in the Master Plan. The Department plans to continue indefinitely a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for, controlling vegetation in areas outside of the planned habitat restoration project, and accordingly, will include a description of this in the document.

The following language on the role of ranching will be incorporated into the final EA in section 4.2.

"The Department's plan is to continue indefinitely a small-scale cattle and horse operation in the Marsh for the purpose of, and at a scale appropriate for, controlling vegetation in areas outside of the planned habitat restoration project. This use is anticipated to be long-term but its tenure is contingent on that operation providing the expected benefits without serious negative impacts to the other resource values being managed. Livestock will be controlled by fencing and proper management to protect and exclude them from ponds, water delivery structures, facilities, public use areas and other important resources, such as archaeological sites. This limited cattle grazing operation will provide benefits of 1) controlling grass and weeds in upland areas and areas outside ponds and developed facilities, 2) providing short grass feeding areas for waterbirds in areas near to ponds, and 3) providing additional security in the area and assistance with management activities."

The following language on the development of a livestock management plan will also be incorporated into the final EA in section 4.2.

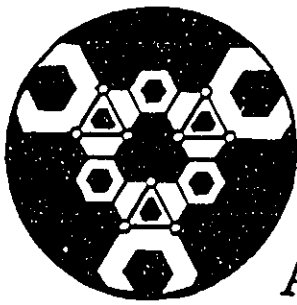
"A livestock management plan will be developed and periodically updated in cooperation with the Natural Resources Conservation Service and Diamond K Ranch to address issues of proper stocking levels, grazing patterns, water quality and impacts to streams, wetlands and other important resources such as archaeological sites. Management practices developed under the plan will be implemented and followed to reduce potential negative impacts of cattle grazing and keep them in balance with the positive benefits of vegetation control, production of short-grass bird-habitat, and management assistance that a cattle grazing operation contributes to the project."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439, who is coordinating the involvement of the Department's various programs in this project.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW



4676

ANDREW CHARLES YANOVIK AIA, APA, CSI
ENVIRONMENTAL SYSTEMS PLANNING AND DESIGN CONSULTATION

18 November 1998

Mr. Michael D. Wilson, Director and Chair
Department of Land and Natural Resources
State of Hawaii / Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawaii 96813

Re: Kawainui Marsh Master Plan

Dear Mr. Wilson,

Thank You for this opportunity to testify on this most important matter. As you well know, Kawainui was the largest wetland in Hawaii, and a major protector of Kailua Bay, before it was bifurcated by the dike wall 'roadway' insensitively designed and constructed by the US Army Corps of Engineers as sanctioned and supported by DLNR.

This unsightly and environmentally blightful injurious act, most unfortunately brings further shame to our generation for yet another devastation of irretrievable natural resources that unnecessarily and prematurely despoils our fragile landscape and aina. A more intelligent and sensible approach, as I have testified on several occasions, would have been to raise the homes (that were built too close to the makai boundary of the marsh without a sufficient buffer zone) on stilts, as some local banks required of new construction in the area.

Even though we are keenly aware of the very costly failings of such inept flood control devices as this 'dam' wall, and their major impacts on the coral and water quality of ocean bays like precious Kailua (which I propose should be renamed 'Maunawili Bay' to impress upon both our community and government minds, the essential life-giving importance of a great watershed ahupua'a and its interconnected interdependent elements in Nature that should not be severed), former civil servants of DLNR and their consultants adamantly imposed their introspective and irresponsible will and monetary powers in yet another criminal act of rape against Mother Nature. And SOBB, KHF, SMOA, and KNB, by their political alignments and inherent incompetence allowed the costs of

CENTURY SQUARE/SUITE 3011:1188 BISHOP STREET:HONOLULU, HAWAII 96813
CABLE ADDRESS: YANOPLAN/ (808) 545-7592 / (808) 533-4158

CHARTER MEMBER: BUCKMINSTER FULLER FOUNDATION
WOBO: WORLD ORGANIZATION OF BUILDING OFFICIALS

18 November 1998

Mr. Michael D. Wilson, Director and Chair
Department of Land and Natural Resources

Page 2

State of Hawaii / Kalanimoku Building Re: Kawainui Marsh Master Plan

mitigating restoration to be borne by future generations (our keikis and their keikis). And the KBAC is a very bad joke ('lawyerly deals' and courthouse shenanigans at the ultimate expense of precious natural resources), for which we will be scorned in the immediate future when retrospective realization occurs. There obviously has to be a more effective way to address these environmental systems planning and design problems in our communities in Hawaii nei. As I have testified in your presence on many occasions, DLNR should be playing a key role in this transformation in closing the gaps between 'what-is' and 'what-ought-to-be' in our precious and fragile life-giving environments.

The current proposal before you from The Audobon Society is a novel idea that was never discussed during the entire Master Planning process conducted by DLNR and their consultants. Surely, it will bring outside money into the State of Hawaii and that in itself is alluring bait, however the location that they are apparently demanding, is in fact a major problem. Please keep in mind that we could have had Ducks Unlimited restore and conserve the natural habitat of Kawainui as our largest wetland (as they had done in Canada and elsewhere with a great visual record of accomplishment) as strongly proposed by the Kaneohe Ranch (Randy Moore), however former personnel within DLNR and KHF were unfortunately opposed to that anti-development concept.

Now we once again have a situation which borders on near anarchy. The KHF has long lost its credibility in the Kailua community because of their political alignments, deceptiveness, and misrepresentations. They are not an effective trustworthy organization since they lost both the leadership guidance and integrity of Muriel Seto. They waived and embarrassingly waffled on the concept of including a 'Visitors Center' within the new Le Jardin Academy (to be located on the former Kailua Drive-In site) much to the dismay of SMOA and other solid community organizations who voted against KHF and for Le Jardin.

During the DLNR Master Plan process, the 'Visitor Center' location was designated at the corner of Kapaa Quarry Road and the Pali (Kalaniana'ole) Highway. However, now KHF claims that the soils there are unstable because they are composed of fill material from the Kailua Drive-In grading work. With the soils settlement over at least 30 years,

18 November 1998

Page 3

Mr. Michael D. Wilson, Director and Chair
Department of Land and Natural Resources
State of Hawaii / Kalanimoku Building Re: Kawainui Marsh Master Plan

the construction of a one or two story (at most) 'Visitor Center' will not be a problem -- guaranteed. For many years, we initially discussed the abandoned nursery on the Pali Highway (across from the Aloa Road intersection) and the termite ridden residence was demolished for this purpose (a scenic 'Visitor Center') by community volunteer groups. Now the Audobon Society asserts that there is no Kawainui Master Plan that they respect, because they claim that DLNR (or the State of Hawaii) did not approve same? This may very well be sheer nonsense.

While the Kawainui Master Plan was in process, I was doing Strategic Master Planning work for Castle Medical Center and I worked very hard to delineate the boundaries of the marsh with DLNR, COE, SLUC, the City, Kaneohe Ranch, and with Community input. The marsh boundaries were analyzed, calculated, and extended across the Pali Highway and were established on the basis of 100-year flood plain and topographical elevation lines. Long before all of this occurred, the original CMC Master Plan showed expansion of the hospital well into the marsh. CMC has been restricted in its necessary economic 'critical mass' survival plans for vital expansion by the Kukanono Community subdivision and now is being further threatened by the mislocated Audobon Society proposal. If CMC is curtailed from using the lands on the marsh side of this well respected and patronized medical center, then of course Castle will have to eventually intensify the density of their development on remaining lands at Waimanalo Junction, which will encroach into existing civic open space and scenic vistas, and give much more of an 'urban' rather than a 'suburban' or rural appearance.

I would hope that DLNR would give its utmost consideration to this rather urgent matter, and treat the Audobon Society proposal more comprehensively and more wholistically in terms of vital neighboring contextual environmental problems related to cause and effect as well as mitigation and prevention of future problems. For example, the State DOH is currently involved in severely impacting the nurturing and well-being of the HPU contextual environment in downtown Honolulu. As a direct consequence, HPU will probably ultimately expand by being forced to build on Conservation Lands along the well-preserved ultra-scenic Kamehameha Highway corridor on their Hawaii Loa Campus. Is this the kind of Hawaii that we really want to create -- full of blightful

18 November 1998

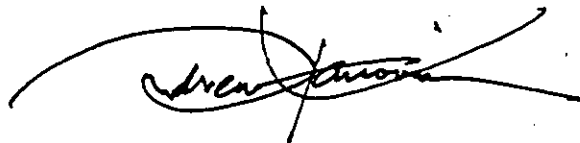
Page 4

Mr. Michael D. Wilson, Director and Chair
Department of Land and Natural Resources
State of Hawaii / Kalanimoku Building Re: Kawainui Marsh Master Plan

unresolved conflicts which manifest the premature devastation of our natural and man-made environmental resources? If so, then I guess, we're definitely on the right track ... but, do we really expect tourists to continue to come and enjoy with us?

Thank You once again for this opportunity to testify. Aloha.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew Yanoviak", with a large, sweeping flourish extending from the end of the signature.

Andrew Charles Yanoviak, AIA, APA, CSI

cc: Honorable Governor Benjamin J. Cayetano

Gary Gill, Director, Office of Environmental Quality Control



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

MAR 28 1999

Mr. Andrew Charles Yanoviak AIA, APA, CSI
Century Square, Suite 3011
1188 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Yanoviak,

Thank you for your letter dated November 18, 1998, with comments on the Department's Management Plan for Kawai Nui Marsh Draft Environmental Assessment (EA).

The comments provided in your letter appear to pertain to the development of the Environmental Education Center at the Diamond K Ranch site. The coalition of non-profit organizations' proposing that project decided to withdraw that proposal, without prejudice, pending completion of the wildlife habitat restoration project and further community input and discussion. Upon re-submittal, that proposal will require a separate environmental assessment; any comments and concern with that proposal can be addressed at that time.

Additionally, the following language will be added to Section 4.4.8 on educational programs to emphasize the need and community involvement in the program:

"Section 4.4.8 Interpretive and Educational Programs and Facilities"

Para 2: "It is envisioned that this objective will be fulfilled by programs carried out in both the natural settings of the Marsh (e.g., Na Pohaku O Hauwahine) and one or more constructed facilities adjacent to the Marsh and that the programs and facilities will be developed by various partnerships involving community and government."

Thank you for your comments. If you have any questions or require additional information, please contact Mr. Tom Eisen of my staff at 587-0439.

Sincerely,


DEAN UCHIDA
Administrator

cc: DOFAW

APPENDIX

Chapter 2. Site Analysis
1994 Kawai Nui Marsh Master Plan

2. SITE ANALYSIS

2.1 Geology

Kawai Nui Marsh has its origin in the mature phase of volcanic activity on the island of Oahu. During the late Tertiary Period of geologic time to the early Pleistocene Epoch (between 2 million and 1 million years before the present), a caldera 6 miles long and 4 miles wide indented the summit of the Ko'olau Volcano. Eventually, the lavas in the floor of the caldera sagged from withdrawal of support and formed the Kailua syncline behind Lanikai. (Stearns, 1985). The Kawai Nui Marsh was once at the center of this caldera and today is underlain by a volcanic plug of dense basaltic rock, the top of which has been measured to be reached at a depth of approximately 1.6 km. It is surmised that this dense rock prevents stream runoff and rainfall water entering the marsh from seeping down and out of this catchment basin. (Drigot, 1982).

On the south, west, and north sides, Kawai Nui Marsh is bounded by basaltic flows, dike complexes, cemented throat breccia, and talus slopes of the Kailua Volcanic Series and Ko'olau Volcanic Series. Within the caldera, the effects of rising volcanic gases, hot water and subsequent chemical weathering have changed the original pyroxene of the rocks to chlorite and clay minerals. (MacDonald and Abbott, 1970).

Following the maturing and collapse phase of the Ko'olau Volcano, volcanic activity ceased for a time, and streams carved deep amphitheater-headed canyons in the Ko'olau Volcano. The mouths of the streams from this time are today more than 6,000 feet below sea level. The streams gradually destroyed the caldera. This event was followed by marine sedimentation of valleys resulting from shifting ocean levels. (Stearns, 1985).

At Kawai Nui Marsh, marine deposits of coral sand or silt with sea shells are recorded at depths below 30 feet. These deposits have been identified as unconsolidated calcareous marine sediments which consist of very permeable beach sand of grains of worn coral, coralline algae, and shells with appreciable amounts of foraminifera and other marine organisms (Stearns, 1938). These findings indicate that from approximately six thousand to about 4,000 years before the present, the marsh was an open saltwater marine bay (see Figure 2-1). Gradually, as a sand barrier formed on the inland side of the coral reef, increasing amounts of alluvial sediment and soil were deposited in the lagoon. As the sand accretion and alluvial sedimentation increased, Kawai Nui became more and more a fresh water pond. Recent archaeological investigations of

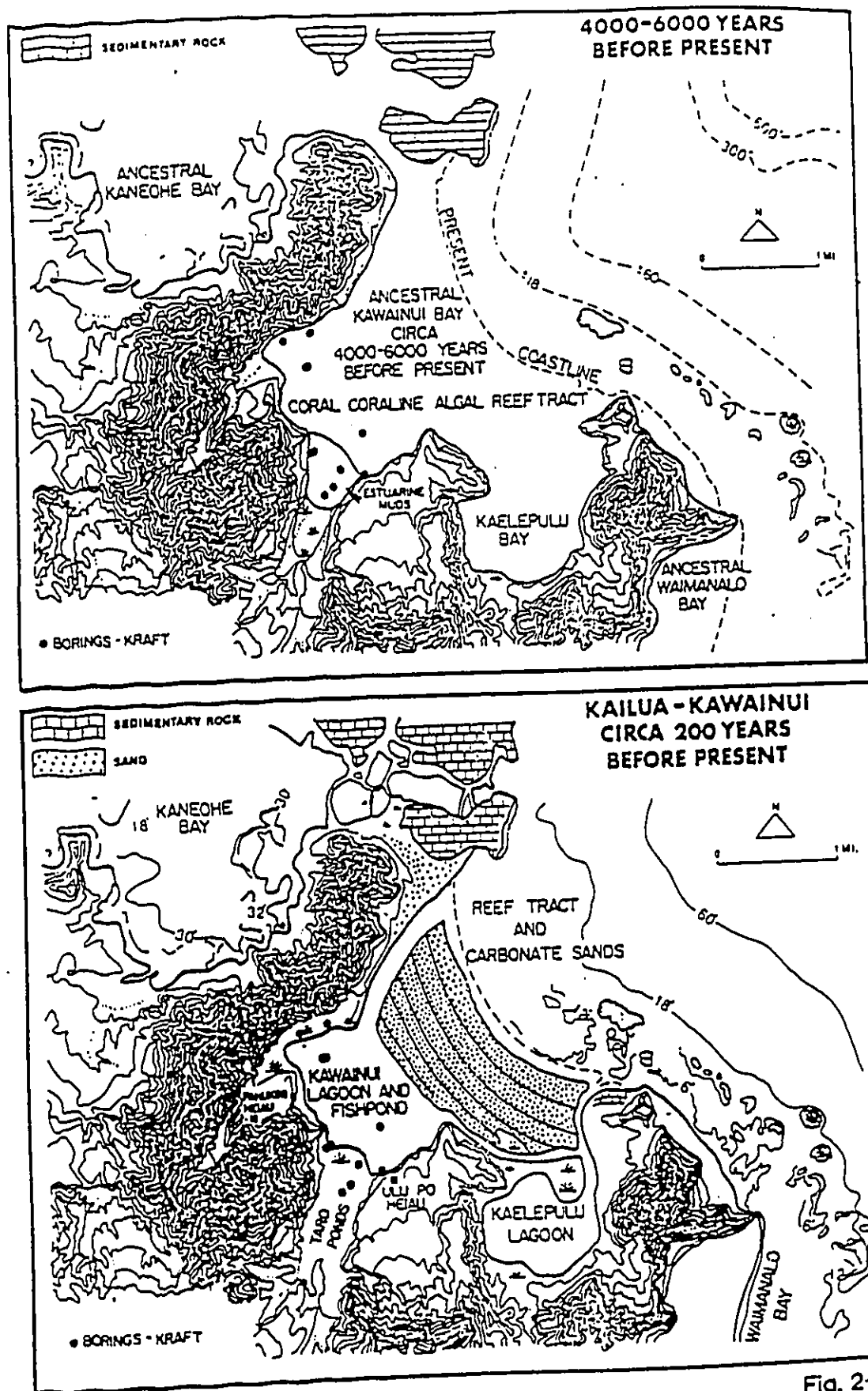


Fig. 2-1

Source : DPED from J.C. Kraft. 1982

the marsh by Athens and Ward (1991) indicate that the marsh basin was transformed primarily into a relatively closed freshwater system at about 200 B.C.

2.2 Soils

The soil conditions within the marsh vary considerably with depth from the surface. Borings taken in the marsh (Dames and Moore, 1961) indicate that a thick blanket of roots and peat overlay this area, to a maximum depth of 10 feet. Beneath this layer, to a maximum depth of 30 feet, are organic silts. Below this layer, basal deposits of either coral sand with shells or gray marine deposits of silt with sea shells are encountered. These borings confirm that Kawai Nui Marsh was formerly a marine embayment.

According to the U.S. Department of Agriculture, Soil Conservation Service (USDA-SCS), soils in Kawai Nui Marsh include Hanalei silty clay in the uppermost reaches (above the confluence of Maunawili and Kahanaiki Streams), Pearl Harbor clay from the stream confluence to the northeast until the area with open water, and the remainder simply designated marsh. There is also a variety of soils on the slopes above the marsh which have contributed to the infilling of the marsh basin as a result of erosional processes. Based on the USDA-SCS Mapping, the master plan area consists of the following soil classifications (see Figure 2-2):

Marsh (MZ) - Marsh soils consist of wet, periodically flooded areas covered dominantly with grasses, bulrushes, or other herbaceous plants. It occurs as small, low-lying areas along coastal plains. Water standing on the surface may be fresh or brackish, depending on the proximity to the ocean. This soil type is the most prevalent in the marsh, occupying about 60 percent of the master plan area.

Pearl Harbor clay (Ph) - This soil is commonly found on low coastal plains adjacent to the ocean. Within the master plan area, it can be found in the central portion of the marsh, between the Kukanono slope and the Kapaa Quarry Road slope. Characteristic of clay, permeability of Ph is very slow, runoff is very slow to ponded, and the erosion hazard is no more than slight. Workability is very difficult.

Hanalei silty clay, 0 to 2 percent slopes (HnA) - This alluvial soil is commonly found on stream bottoms and flood plains. Within the master plan area, this soil is found in the southern portion

of the marsh, and in the Maunawili wetlands. Permeability of this soil is moderate, runoff is slow, and the erosion hazard is no more than slight. As expected, flooding of this soil is a hazard.

Papaa clay, 35 to 70 percent slopes (PYF) - This soil is present along Kailua Road between the ITT parcel and the flood control levee, and also in the northwest corner of the marsh below Interstate H-3. The clays in this soil are very sticky and very plastic, and crack widely when dry. Permeability is slow, runoff is rapid, and the erosion hazard is severe.

Papaa clay, 20 to 35 percent slopes (PYE) - Similar to PYF, this soil is found on the slope below the Kailua Lutheran Church. This soil formed in colluvium and residuum derived from basalt. Runoff on this soil is slow to medium and the runoff hazard is slight to moderate.

Stony steep land (rSY) - Found on the entire Kukanono slope from Knott Ranch to Ulupo Heiau. This soil consists of a mass of boulders and stones deposited by water and gravity on side slopes of drainageways. The small amount of soil among the stones provides a foothold for plants.

Alaeloa silty clay, 15 to 35 percent slopes (AeE) - This soil occurs on smooth side slopes and toe slopes. Within the master plan area, this soil can be found on the toe slope below the Kapaa Quarry Road. Permeability of this soil is moderately rapid, runoff is medium, and the erosion hazard is moderate.

Alaeloa silty clay, 40 to 70 percent slopes (ALF) - Similar to AeE, this soil is found within the master plan area at the corner of Kailua Road and Kapaa Quarry Road. Runoff on this soil is rapid to very rapid, and the erosion hazard is severe.

Kawaihapai stony clay loam, 2 to 6 percent slopes (KlaB) - This soil occupies smooth slopes, which in this instance are found below Kapaa Quarry Road where the VO Ranch boards horses and cattle. Another small pocket of this soil is also located in the northwest portion of the marsh along the Kapaa Quarry Road. Runoff on this soil is slow and the erosion hazard is slight.

Kawaihapai clay loam, 2 to 6 percent slopes (KIB) - This soil is similar to KlaB, but with fewer stones. A small pocket of this soil is located in the northwest portion of the marsh along Kapaa Quarry Road.

Kokokahi clay, 6 to 12 percent slopes (KtC) - This soil is located on talus slopes and alluvial fans. Within the master plan area, a small portion of this soil is found in the northwest portion of the marsh along Kapaa Quarry Road. This soil is very sticky and very plastic, and cracks widely upon drying. Permeability is slow to moderately slow, runoff is medium, and erosion hazard is slight to moderate.

Waikane silty clay, 3 to 8 percent slopes (WpB) - WpB is a well-drained soil found on alluvial fans and terraces. Within the master plan area, this soil occurs on the Mokulana peninsula. Runoff on this soil is slow and the erosion hazard is slight to moderate.

Waikane silty clay, 40 to 70 percent slopes (WpF2) - This soil occupies a small knoll on the southern tip of the master plan area, within the Maunawili wetland. Soil of this type is found on steep terraces and alluvial fans. Runoff is rapid to very rapid, and the erosion hazard is very severe.

Detailed Land Classification - The University of Hawaii Land Study Bureau's Detailed Land Classification - Island of Oahu classifies soils by land type in which classifications are provided for an overall crop productivity rating, with and without irrigation, and for selected crop productivity ratings for seven crops. LSB ratings range from A to E, with A being the best. Within the master plan area, the northern end of Kawai Nui Marsh has a rating of Class E, and the southern end of the marsh and the Maunawili wetlands have a rating of Class C.

2.3 Topography

Elevations within the study area range from sea level to over 3,000 feet. In the lower elevations of Kawai Nui Marsh, topography is relatively flat, characteristic of an alluvial plain. Within the southernmost portion of the master plan boundary, Maunawili Stream courses through the wetland from 45 feet Mean Sea Level (MSL) down to 18 feet MSL near the highway. Where Maunawili and Kahanaiki Streams converge, elevation is approximately 5 feet MSL. Within the rest of the marsh, spot elevations average 4.9 feet elevation from the top of the vegetation mat. The mean long-term water level within the marsh has been reported to be 3.3 feet above mean sea level with a range of 2 to 4 feet. (Corps FEIS, 1992).

The only other variation in the topography of the central and northern portion of the marsh is the flood control levee. The top of the levee is presently between 9 and 10 feet MSL.

Kawai Nui Marsh is cradled on the west by the Oneawa Hills, and on the east by the Kukanono slope. The Oneawa Hills rise to 995 feet MSL above the marsh to a summit which is named Ulumawao. The Kapaa Quarry Road, which defines the western boundary of the Master Plan area, ranges from 60 feet MSL where it begins near the Kailua Drive-In Theater, down to 7 feet MSL near the access road to the Ameron HC&D quarry. Low portions of the road in this vicinity flood during marsh high water. Where the road ends at Mokapu Boulevard, elevation is 11 feet MSL. On the marsh side of Kapaa Quarry Road, the terrain slopes down to the marsh by as much as 40 percent in places. A prominent 125-foot peak above Na Pohaku O Hauwahine is the only variation in this relatively even slope.

On the Kukanono slopes, elevations range from 75 feet MSL down to 5 feet MSL at the marsh fringe, with slopes of 30 percent or more in places.

2.4 Climate

The climate of the study area is mild with fairly uniform temperatures throughout the year, with a mean annual temperature of 75°F (24°C), a maximum of 81°F (27°C), and a minimum of 68°F (20°C). The relative humidity ranges from 70 to 80 percent. The lower elevations in the study area receive greater amounts of solar energy than the higher elevations. Solar insolation is estimated to range from up to 300 calories per square centimeter (cm²) in the upper watershed area of Maunawili Valley to 375 calories/cm² in Kawai Nui Marsh.

Tropical air circulation in the central North Pacific results in the most prominent climatic feature of the study area, the tradewind flow in a general east to west direction. In general, the trades are more persistent in summer than in winter and stronger in the afternoon than at night. Wind direction and frequency information collected at Mokapu Point on Kaneohe Marine Corps Base Hawaii (KMCBH) (name change effective April 15, 1994) show that winds from a direction between north-northeast and east blow for approximately 86 percent of the time, winds are calm approximately 4 percent of the time, and southerly or Kona winds blow for approximately 10 percent of the time. However, the effects of terrain on surface winds are varied and profound, so that even neighboring localities elsewhere in Kailua can differ widely in their protection or exposure to winds from a particular direction (Atlas of Hawaii, 1983).

Under tradewind conditions the air is moist at elevations below the 4,000 to 5,000-foot temperature inversion layer. Vertical movement of air is restricted to this layer, thus clouds

develop at and below these elevations. The clouds form chiefly along the mountains where the incoming tradewind air is crowded together as it is forced up over the crest. The perpendicular orientation of the Ko'olau Range enhances cloud formation and the associated rainfall pattern. (M&E Pacific, 1990).

In general, this orographic effect produces the most intense rainfall in the study area nearest the ridgeline summit. Figure 2-3 depicts isohyet lines for the study area which show rainfall to increase steadily toward the pali cliffs. Rainfall data collected from State of Hawaii gauges throughout the study area is listed below in Table 2-1. As is evident from the data, median annual rainfall over the Maunawili drainage basin is estimated at 84 inches, while the median annual rainfall over urban Kailua averages near 40 inches.

Table 2-1 Median Rainfall at Five State Gauges within the Study Area (adjusted to common base period)				
State Key No.	Approximate Location	Month of June (inches)	Month of December (inches)	Annual (inches)
787.1	Upper Maunawili Valley	3.9	9.5	83.9
788.1	Pali Golf Course	4.3	8.9	85.6
790.6	Maunawili Subdivision	2.9	8.4	71.3
790.0	Olomana Subdivision	1.6	5.7	52.0
791.3	Kalaheo Avenue	1.6	4.9	40.6
Source: Rainfall Atlas of Hawaii, 1986				

The high rainfall towards the Ko'olau Range, coupled with a decrease in solar insolation due to greater cloud cover, results in the rainfall received in the upper watershed area exceeding the annual rate of evapotranspiration (water loss during photosynthesis). In the lower watershed, including the marsh, the reverse is true. A map of potential evaporation for Oahu (Ekern and Chang, 1985) estimated that approximately 70 inches of evaporation may be possible annually in the vicinity of Kawai Nui Marsh. This is an important consideration for water management planning of the marsh when it may be important to maintain minimum water levels during the dry season.

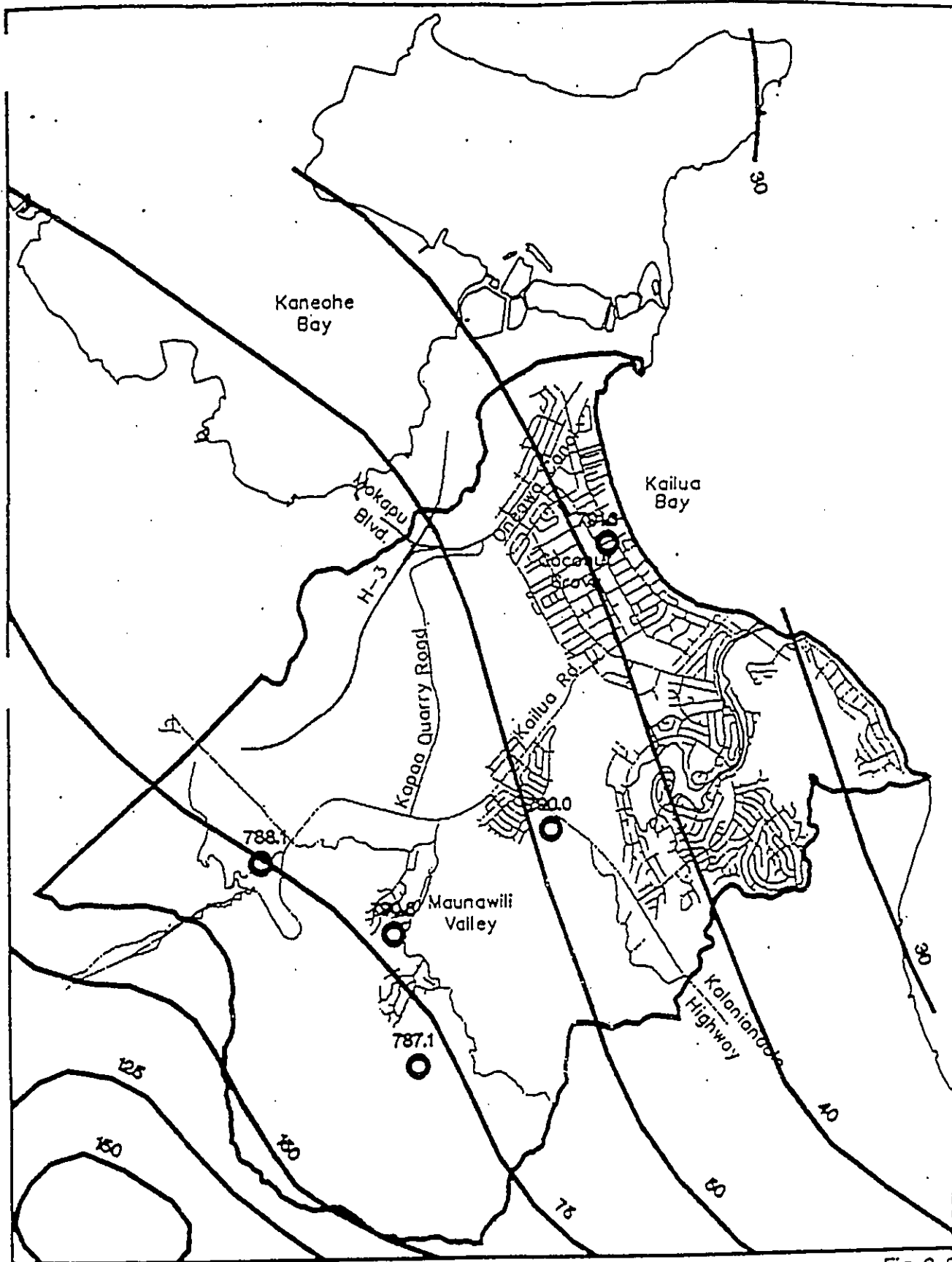


Fig. 2-3

Rainfall

KAWAI NUI MARSH MASTER PLAN

Legend

- Roads
- Shoreline
- Study Area

- 50 Isohyet Line
- 790.8 Rain Gauge Station

Source:
State of Hawaii, DLNR
Div. of Water and Land Development

0 2000 4000 6000
Scale in Feet

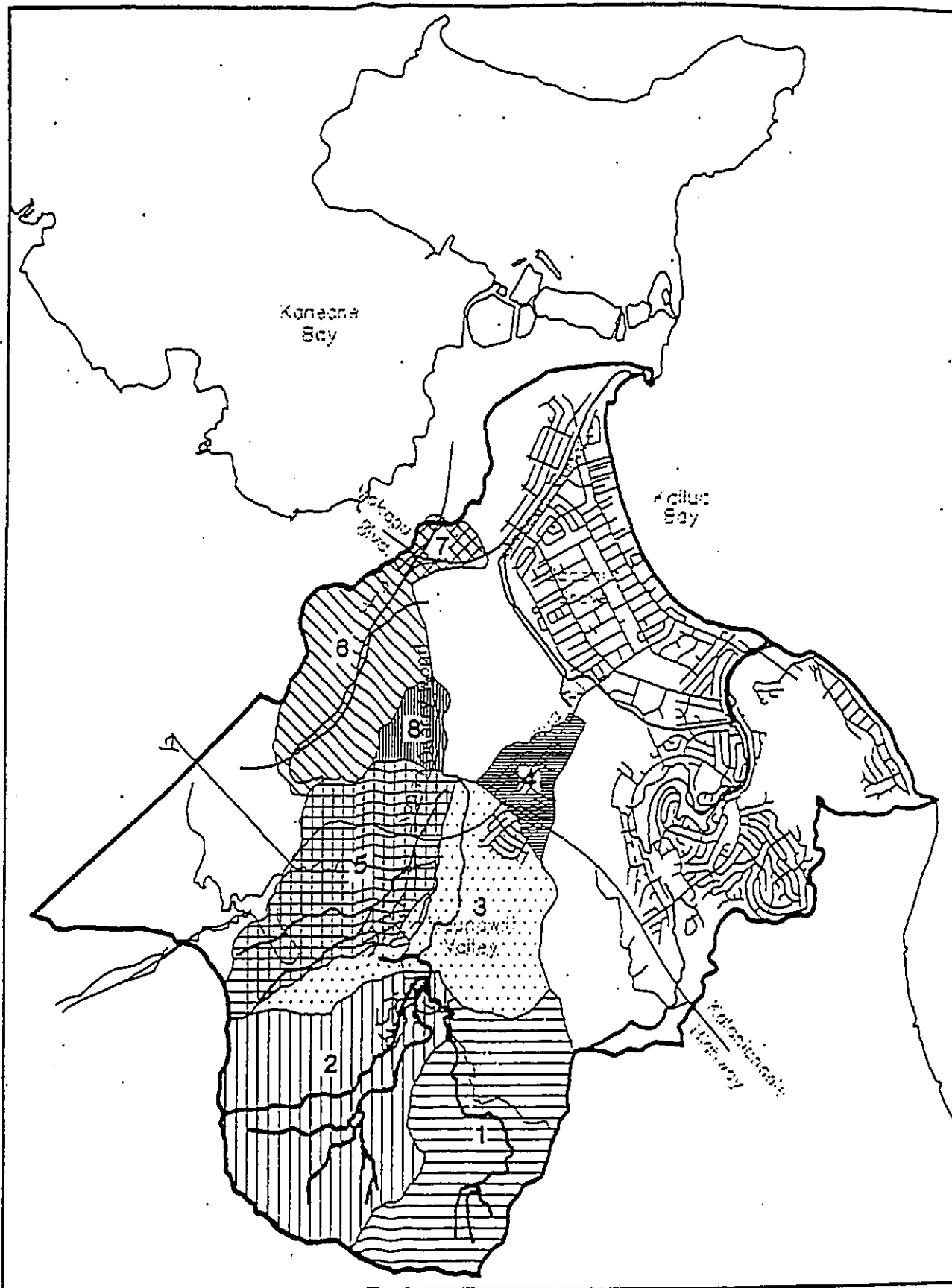
2.5 Hydrology

A major function of the marsh is as a flood basin which protects portions of Kailua. It also acts as a nutrient and sediment sink, protecting the waters of Kailua Bay. Kawai Nui Marsh drains an approximately 9.61-square mile area (see Figure 2-4 and sub-basin descriptions in Appendix E). The major tributaries that flow into the marsh are Maunawili Stream (sub-basins 1, 2, and 3 which drain 5.58 square miles), Kahanaiki stream (sub-basin 5 which drains 1.92 square miles), and Kapaa Quarry Stream (sub-basin 6 which drains 1.17 square miles) (see Figure 2-5). The remaining sub-basin drainage areas 4, 7 and 8 consist of small rivulets that drain into the marsh (RCE, 1994). The marsh flood storage capacity was estimated at approximately 3,000 acre-feet when the levee was constructed in 1966. Water is retained by an approximately 10-foot high, 6,800-foot long levee along the northernmost edge of the marsh until it can slowly drain out to Kailua Bay from Oneawa Canal (Corps FEIS, 1992).

Based on calculations by Smith (1978) and Swers (1987), the marsh has an estimated water budget of 9.5 mgd total input from all sources, a transpiration loss of 3.2 mgd and a 6.3 mgd discharge into Kailua Bay through Oneawa Canal.

During the almost three decades since construction of the protective levee, much of the drainage basin (Maunawili Valley) has become urbanized, resulting in the discharge of eroded soils from land clearing into Kawai Nui Marsh. In addition, for a time, the increased urbanization resulted in the need to discharge treated municipal sewage into the marsh from several outfalls. The sediments reduced the flood storage capacity of the marsh while the nutrients from the sewage stimulated massive growths of vegetation, further reducing flood storage and also inhibiting the movement of water through the marsh to the outlet channel. (Corps FEIS, 1992).

This reduced flood storage capacity was made evident on January 1, 1988 when floodwaters overtopped the levee and flooded several hundred homes in Coconut Grove. This prompted a reevaluation of the flood storage capacity of the marsh. Environmental Impact Statements (EIS) were prepared by the U.S. Army Corps of Engineers and by the City and County of Honolulu to support these agencies plans to improve the marsh's flood storage capacity. The result has been clearing of a flood control channel in the west-central portion of the marsh by the City and County of Honolulu, and a planned levee raise by the U.S. Army Corps of Engineers. The flood control improvements, consisting of a 6,100-foot long levee raise of up to 4.5 feet and a 6,300-



KAWAI NUI MARSH MASTER PLAN

Legend

— Roads	Area 1	Area 4	Area 7
— Shoreline	Area 2	Area 5	Area 8
— Study Area	Area 3	Area 6	
— Streams			

Watershed Areas and Streams

Source:
Resource Consultants & Engineers, Inc.

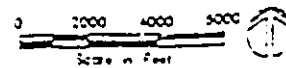


Fig. 2-4

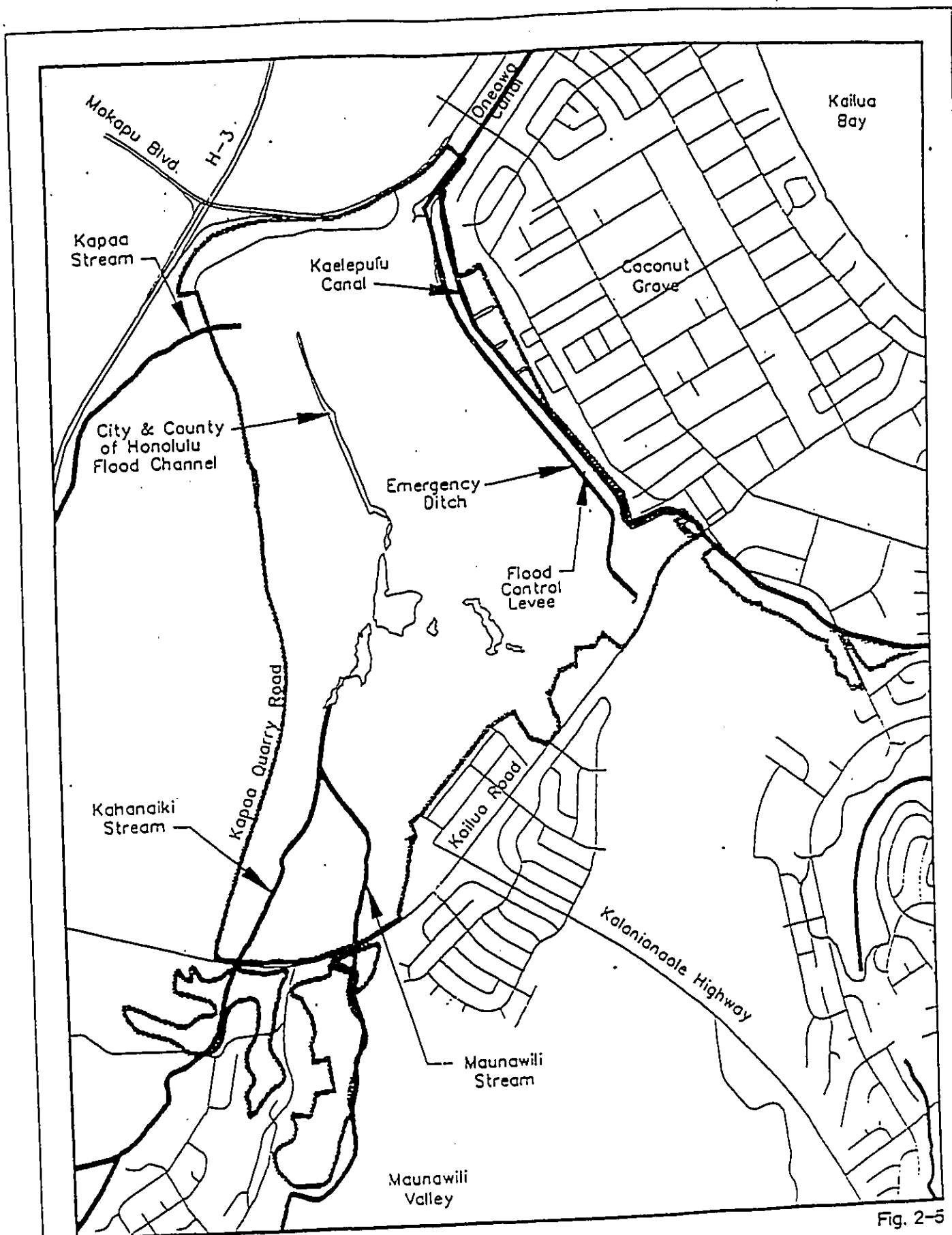


Fig. 2-5

KAWAI NUI MARSH MASTER PLAN

Hydrology

Source:
Wilson Okamoto & Assoc., Inc.

0 500 1000 1500 2000
Scale in feet



foot long concrete floodwall up to 4 feet in height on top of the raised levee, will achieve a 100-year level of flood protection (see Figure 2-6, 100-year inundation line).

Major findings of the City and County of Honolulu Final EIS (FEIS) were as follows: 1) the extremely thick growth of marsh plants creates hydraulic head losses through the marsh due to friction and physical obstruction, 2) associated with this resistance to flow is an increase in travel time of the water through the marsh with the result that more storage of the inflowing water occurs in the upper (southern) end of the marsh, and 3) tidal influence is not an important effect on the observed elevations of the water level throughout the majority of the marsh.

As part of this master plan, a sedimentation analysis was prepared to approximate the amount of sediment that will reach the marsh over time (see Appendix E). The analysis can be used for design of possible sediment basins and for long-term evaluation of the effects of sedimentation on the marsh. An average annual sediment yield for the watershed was computed at 1,049 tons/square mile, or 10,081 tons/year to the marsh. In addition, sediment delivery rates were also estimated for single flood events of 2-, 10-, 50-, and 100-year occurrence. This range of estimates produced total sediment delivery rates of 9.3, 24.2, 54.8, and 71.0 acre-feet per event, respectively. The average annual volume of total sediments (9.3 acre-feet/year) was found to compare very closely to the mineral sedimentation value of 10 acre-feet/year documented in the Corps FEIS, 1992.

2.6 Water Quality

Baseline water quality conditions in the marsh have been well-established by recent studies conducted during preparation of the City and County of Honolulu Kawai Nui Marsh Flood Damage Mitigation Project EIS, 1990. Water quality measurements taken by the City and County were made at eight locations spread over the wetland and within the two major streams. Measurements were made of nutrients, suspended solids and turbidity, temperature and dissolved solids, chlorides and conductivity, and heavy metals (M&E Pacific, 1990). In addition, a study to determine the impact of the quality of water draining out of Kawai Nui Marsh via Oneawa Canal on the recreational water quality of Kailua Bay was performed by the University of Hawaii Water Resources Research Center (WRRC). The WRRC study assessed the concentrations of various fecal indicator bacteria in four locations; the upper watershed, the marsh, Oneawa Canal, and the shoreline of Kailua Bay (Ahuna et al., 1993).



KAWAI NUI MARSH MASTER PLAN

Legend

- Roads
- Shoreline
- ▨ Master Plan Area
- ▨ 100-Year Inundation *

* The inundation limits shown are subject to approximations and limits of the Corps of Engineers ground survey and hydraulic model.

Fig. 2-6

100-Year Inundation

Source:
U.S. Army Corps of Engineers

0 500 1000 1500 2000
Scale in Feet



Water quality sampling and analysis conducted for the City and County of Honolulu EIS established three significant findings. First, the study confirmed previous trends reported concerning nutrient and suspended solids removed by the marsh. Measurements taken of nutrients indicated that the process of uptake by plants in the marsh, loss to sediments, and loss to the atmosphere remove over 90 percent of the inflowing nitrogenous and phosphoric nutrient loading. The amount of suspended solids discharged from the marsh is a much smaller proportion of the total input. Second, the study confirmed a reduction in nutrient mass loading due to the removal of sewage treatment plant discharges. Third, the study identified levels of heavy metals bound in the sediments, particularly copper, chromium, iron, nickel, and zinc (M&E Pacific, 1990).

Many of the heavy metals present in the marsh soils and sediments can be attributed to the volcanic geochemistry of the catchment regime, although urban pollution can be a contributor to some estuarine sediment concentrations. Therefore, the heavy metal burden is substantially greater at the upstream end of the Kawai Nui Marsh (see Table 2-2). Heavy metals are also concentrated through plant uptake into fibrous tissue in the biomass. Usually, heavy metals are present in insoluble forms and are therefore not very mobile (that is, they do not move readily into solution in the aquatic environment). The toxicity of precipitated or absorbed forms is not very great under circumstances normally encountered in aquatic environments because they remain bound to the sediment so long as the pH is neutral or slightly basic, becoming soluble only if the pH shifts to acidic. Commonly, acid conditions only result when the sediments are exposed to the air. Therefore, the potential for metal toxicity in the environment is generally only of concern during vegetation dredging, drying, and landfilling activities.

Table 2-2
Sediment Heavy Metals in Kawai Nui Marsh (mg/kg dry wt.)*

Station	As	Cd	Cu	Cr	Hg	Ni	Pb	Ag	Zn
Southern Marsh	1.44	0.34	35.9	56.7	0.08	53.0	12.4	0.28	35.2
Central Marsh	0.50	0.35	9.2	9.8	0.03	17.0	6.0	0.36	6.8
Near Airplane Park	0.40	0.38	41.4	48.5	0.03	86.6	6.8	0.45	33.2

* Data obtained from City and County FEIS, Kawai Nui Marsh Flood Mitigation Project

According to the recent WRRC study, concentrations of three indicator bacteria (fecal coliform, *Escherichia coli*, and enterococci) exceeded the established recreational water quality standards below urbanized Maunawili and within the marsh (see Table 2-3). Water samples were taken at the confluence of Maunawili, 'Ainoni, Makawao, and Olomana Streams, and downstream within Maunawili and Kahanaiki Streams where they cross under Kailua Road. Concentrations of *Clostridium perfringens*, an indicator of water polluted with fecal wastes, increased downstream of urban areas but were not present at levels indicating sewage discharge. The concentrations were also elevated at the transition point of the marsh with Oneawa Canal. The salinity at this site was 7 parts per thousand (ppt), indicating some tidal influence (Ahuna et al., 1993).

Table 2-3
Geometric Mean of Fecal Indicators Obtained from Samples Taken in the Master Plan Area, Expressed in Colony Forming Units (CFU)/100 mL*

Sample Site	Fecal Coliform	E. coli	Enterococci	C. perfringens
Maunawili Stream/Kailua Road	906	759	566	12
Kahanaiki Stream/Kailua Road	1,126	906	752	38
Oneawa Canal, Mauka	316	169	153	8
Kaelepulu Canal/Kaha Park	103	52	153	43
Levee Emergency Ditch, East	46	37	81	8
Kaelepulu Canal/Kailua Road	362	124	149	22

* Data were obtained from UHM-WRRC report by Ahuna & Fujioka, October 1993. Measurements were taken between 1/91 and 3/92.
 ** USEPA freshwater standards for water quality compliance are as follows:
 Fecal coliform = 200/100 mL, E. coli = 126/100 mL, Enterococci = 33/100 mL;
 C. perfringens = 50/100 mL

An increase in the concentrations of all three indicator bacteria as well as *C. perfringens* was measured within the Oneawa Canal towards Kailua Bay. Salinity within the canal ranged from 7-15 ppt. The likely source for this increase in all indicator bacteria including *C. perfringens* was feces from the ducks which concentrate at the site where water from the marsh enters the canal. The effect of the elevated concentrations of indicator bacteria on Kailua Bay was measured only at the beach site opposite the mouth of the canal, where concentrations of enterococci bacteria exceeded the recreational standard. None of the increase in indicator bacteria in Oneawa Canal

was attributed to cattle grazing in the southern end of the marsh. This is likely due to the distance of the grazing activity from Oneawa Canal and to the vegetation barrier between the two.

2.7 Flora

Vegetation within the marsh consists almost exclusively of alien and introduced species. This is reflected in the vegetation of the study area as well, although native species begin to predominate toward the pali cliffs. Within Maunawili Valley, woodland and mixed fruit tree species are present along the lower slopes of Mount Olomana and surrounding both sides of the Pali Highway hairpin turn. These areas consist of 100 percent alien introduced species. Undisturbed areas behind agricultural land within Maunawili Valley consist of talus slope with mixed woodland species, about 75 percent native and 25 percent alien. Above this, the rock face of the pali also consists primarily of native species, including ohia, kuwelu, and hamakua pamakani.

Most of the remaining ridges in the study area consist of scrub forest vegetation. This vegetation type is present on the slopes of Mount Olomana, on Pu'u O Ehu above urban Kailua, on Kaiwa Ridge above Enchanted Lakes, and on the Oneawa Hills above the marsh and Kalaheo High School. Plant species common to this vegetation type include koa haole, Christmas berry, and Java plum. All other areas are classified as urban vegetation. (See Figure 2-7). A complete listing of dominant vegetation types within the study area is included in Appendix C.

Within the master plan boundary, most of the area is unofficially designated wetland by the Corps of Engineers. Based on a generalized wetland boundary which was delineated but not for regulatory use, the only master plan areas not within the wetland boundary include the levee, fill areas such as the Model Airplane Park and City and County Baseyard, and the toe of the slopes below Kapaa Quarry Road, below Kukanono subdivision, and at Mokulana peninsula. Total acreage of wetland within the master plan area is approximately 858 acres.

The Kawai Nui Marsh wetland is characterized by four major categories of vegetation (see Table 2-4 and Figure 2-8): California grass bog meadow in the southeastern and southwestern perimeter of the marsh, open water plants in the central marsh, and bullrush and sawgrass floating mats in the northern portion of the marsh. The Bullrush/sawgrass and California grass communities form thick, dense floating mats in places which can support the weight of people and cattle, and which allow for the growth of non-wetland plants while covering deep areas of water. Water hyacinth and water lettuce are found in open water areas within the marsh and its

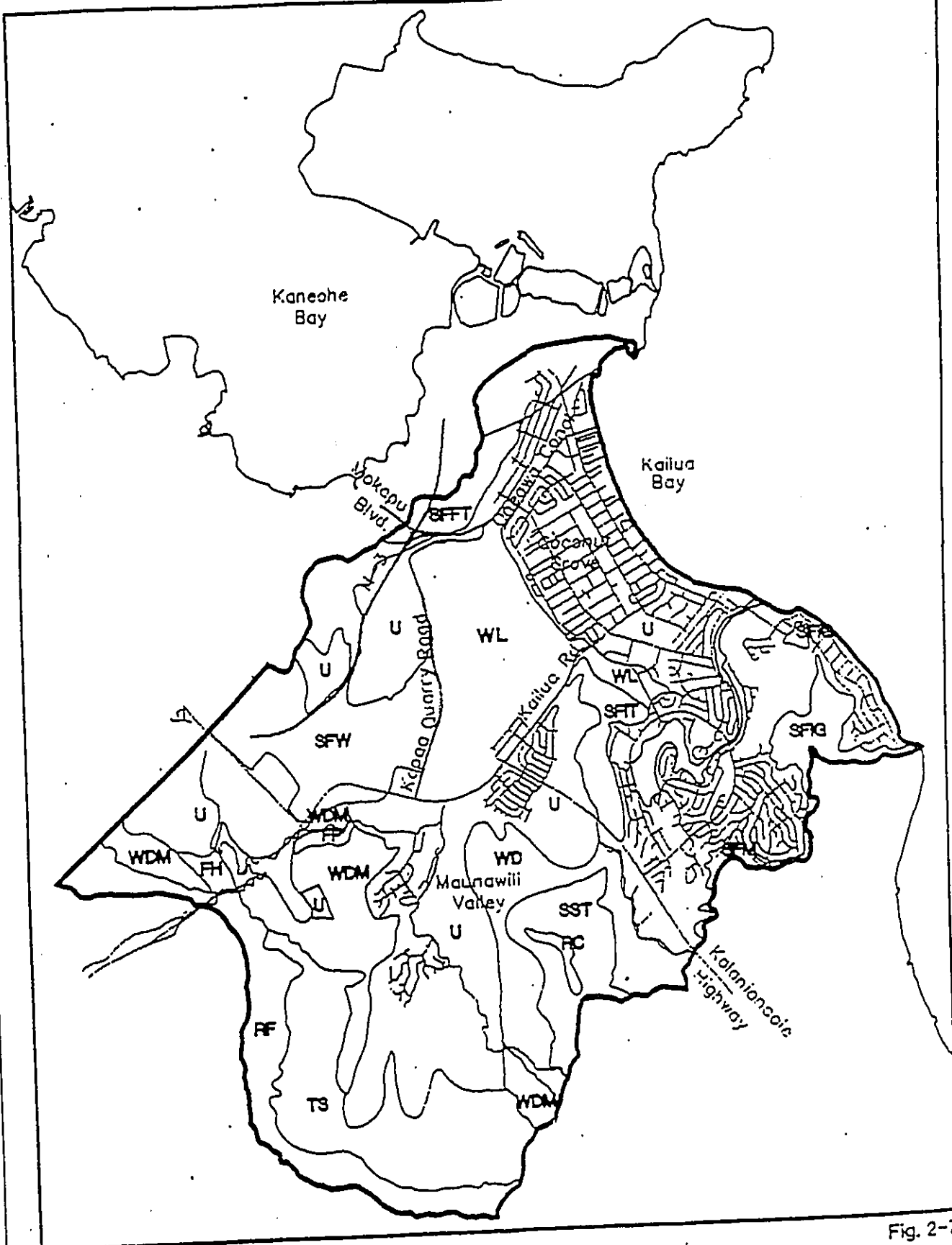


Fig. 2-7

KAWAI NUI MARSH MASTER PLAN

Legend

- Roads
- Shoreline
- Study Area

- FH Forest/Hau
- FP Forest/Planted
- RF Rock Face/Scant to Heavy Vegetation
- RC Rock Outcrop
- SFTT Scrub Forest/Fringing Big Trees
- SFTI Scrub Forest/Intermittent Big Trees
- SFTG Scrub Forest/Intermittent Grass Patches
- SFW Scrub Forest, Mixed

- SFW Scrub Forest/Wooded Swales
- SST Scrubland/Scattered Trees
- TS Talus Slope/Mixed Woodland
- U Urban
- WL Wetland
- WD Woodland
- WDM Woodland/Mixed Fruit Trees

Study Area Vegetation Classifications

Sources:
Wilson Okamoto & Assoc., Inc.
and Evangeline Funk

0 2000 4000 6000
Scale in Feet



periphery. These plants are notorious for clogging waterways and encroaching into wildlife habitat in Kawai Nui Marsh. A fifth category is made up of mixed forest exotic trees, found on the slopes surrounding Kawai Nui Marsh. This category includes trees like large banyan, monkeypod, hau, koa haole, and African tulip.

Table 2-4 Vegetation Classifications in Kawai Nui Marsh		
Classification	Common Name	Scientific Name
Open Water Plants	water hyacinth	<i>Eichhornia crassipes (mart.) Solms</i>
	cattail	<i>Typha angustata Bory & Chau</i>
	water lettuce	<i>Pistia stratiotes L.</i>
California Grass Community	California grass	<i>Brachiaria mutica</i>
	kalo (taro)	<i>Calocasia esculenta L.</i>
	sugar	<i>Saccharum officinarum L.</i>
	Job's tears	<i>Coix lachryma-jobi L.</i>
	ahuawa haole	<i>Cyperus alternifolius L.</i>
	Egyptian papyrus	<i>Cyperus papyrus</i>
	bamboo	<i>Phyllostachys nigra</i>
	elephant grass	<i>Pennisetum purpureum Schumach.</i>
Sawgrass Community	sawgrass (uki)	<i>Cladium leptostachyum Nees & Meyen</i>
	paperbark	<i>Melaleuca quinquenervia Blake</i>
Bullrush Community	bullrush	<i>Schoenoplectus californicus</i>
	red mangrove	<i>Rhizophora mangle L.</i>
	neke	<i>Cyclosorus interruptus Ito</i>
Mixed Forest Exotics	banyan	<i>Ficus microcarpa L.</i>
	coconut	<i>Cocos nucifera L.</i>
	hau	<i>Hibiscus tiliaceus L.</i>
	ivory gourd	<i>Coccinia grandis</i>
	monkeypod	<i>Samanea saman Merr.</i>
	African tulip	<i>Spathodea campanulata Beauv.</i>
	octopus tree	<i>Schefflera actinophylla</i>
	Java plum	<i>Syzygium cumini</i>
	koa haole	<i>Leucaena leucocephala (lam.) de Wit</i>
	norfolk pine	<i>Araucaria heterophylla Franco</i>
Source: Funk, 1993		



Fig. 2-8

KAWAI NUI MARSH MASTER PLAN

Legend

- Roads
- Shoreline
- Master Plan Area

- Open Water Plants
- California Grass Community
- Sawgrass Community

- Bullrush Community
- Mixed Forest Exotics

Vegetation Classifications

Source:
Wilson Okamoto & Assoc., Inc.
Evangeline Funk

0 500 1000 1500 2000
Scale in Feet



East of the marsh is the Pu'u O Ehu wetland, a remnant floodplain that once linked Kawai Nui Marsh to Kaelepulu Pond. Because it is subject to tidal variation which exposes mudflats and concentrates invertebrates during low tide, the area periodically attracts a variety of foraging waterbirds, including four endangered endemic waterbird species. The Pu'u O Ehu wetland is bordered along its length by a thick growth of red mangrove (*Rhizophora mangle*) which separates the waterway from the marsh proper. A broad band of Indian fleabane (*Pluchea indica*) marks the transition between wet and dry substrates. Pickleweed (*Batis maritima*) forms an herb zone inside the fleabane on flats bordering areas of standing water. (Engilis, 1992).

The wetland areas in lower Maunawili, which were once contiguous with Kawai Nui Marsh, are now separated from the marsh by Kalaniana'ole Highway. These wetlands consist of two areas which border Maunawili and Kahanaiki Streams and are characterized by pasture land (primarily California grass) bordered by Hau, elephant grass, Job's tears, paspalum/wedelia, and a variety of tree species including banyan, African tulip, and guava. The wetland designation forms the master plan area boundary on the south side of the highway. (Funk, 1993).

2.8 Fauna

There are four endemic, endangered Hawaiian waterbird species that nest, feed, rest and breed in Kawai Nui Marsh. They are: the Hawaiian Stilt or ae'o kukuluao (*Himantopus mexicanus knudsenii*), Hawaiian Coot or alae ke'oke'o (*Fulica americana alai*), Hawaiian Gallinule or 'alae 'ula (*Gallinula chloropus sandvicensis*), and the Hawaiian Duck or koloa maoli (*Anas wyvilliana*). (See Figure 2-9). In addition, the Blackcrowned Night Heron, the Great Frigatebird, a variety of seasonal migratory waterfowl, and a variety of introduced urban and forest birds are prevalent in the Marsh (see Table 2-5).

The Department of Land and Natural Resources, Division of Forestry and Wildlife has taken bird counts from specific locations in the marsh since 1975. Counts are conducted on a seasonal basis, once in summer (August) and once in winter (January). Table 2-6 lists bird counts taken around the flood control levee, within the central marsh, and around Kawai Nui Stream since preparation of the 1983 Kawainui Marsh Resource Management Plan. As indicated by the table, cattle egrets have been the most numerous wetland bird species counted during this period, followed by mallards, the Hawaiian Coot, and in recent years, the Lesser Golden Plover.

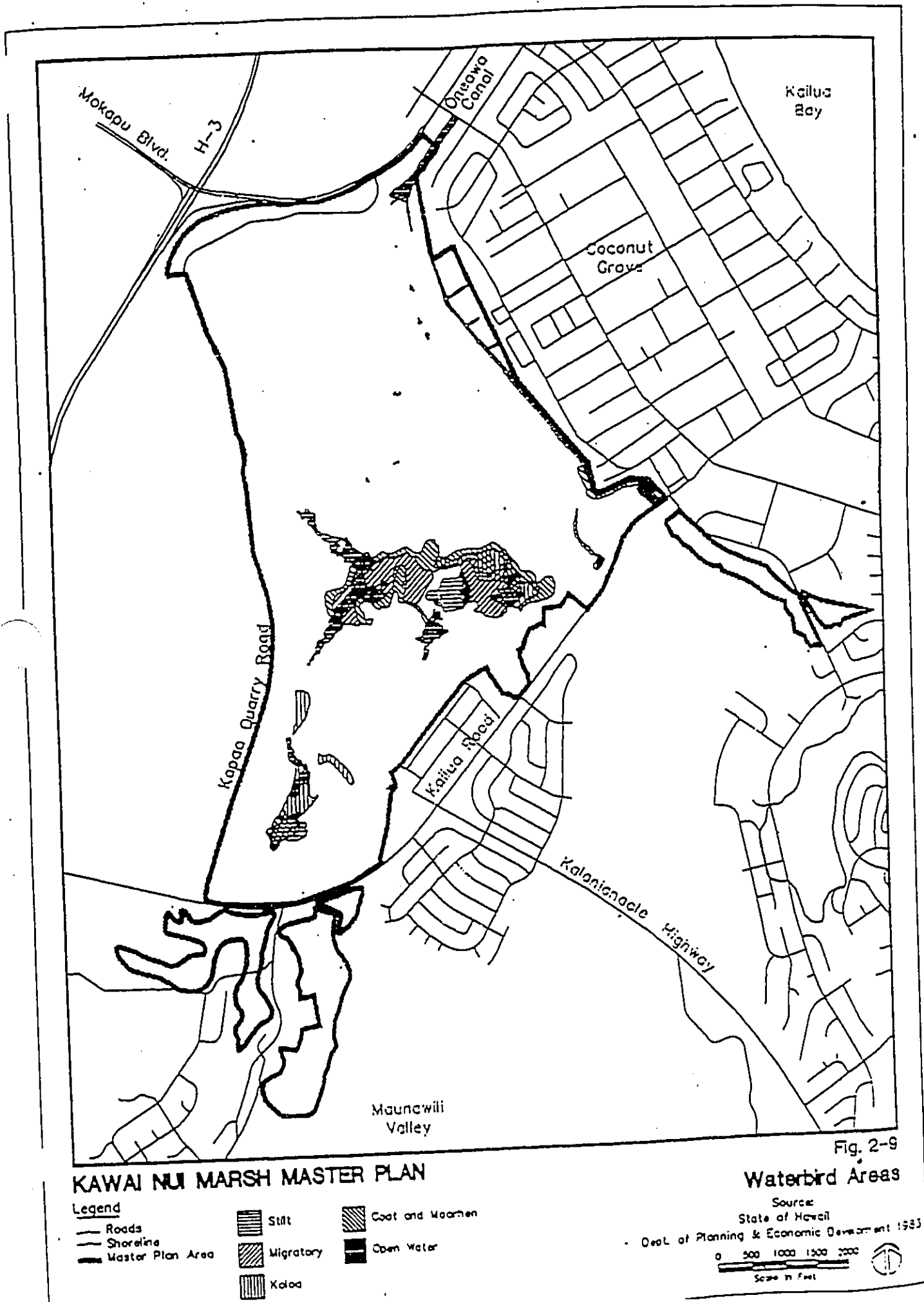


Table 2-5
Birds Recorded at Kawai Nui Marsh*

Common Name	Scientific Name	Hawaiian Name
ENDEMIC Hawaiian Coot Hawaiian Stilt Hawaiian Gallinule Hawaiian Duck	<i>Fulica Americana alai</i> <i>Himantopus mexicanus knudseni</i> <i>Gallinula choloropus sandvicensis</i> <i>Anas wyvilliana</i>	'alaekē'ōkē'ō ae'ō kukulu'ao 'alaē'ula kolōa maoli
INDIGENOUS Black-crowned Night Heron Great Frigate Bird	<i>Nycticorax nycticorax hoactli</i> <i>Fregata minor palmerstoni</i>	auku'u 'iwa
MIGRATORY Golden Plover Mallard Duck Canada Goose Emperor Goose Lesser Scaup Ring-necked Duck Green-winged Teal American Widgeon Redhead Wandering Tattler Sanderling Ruddy Turnstone Northern Shoveler Pintail Duck	<i>Pluvialis dominica</i> <i>Anas platyrhynchos</i> <i>Branta canadensis</i> <i>Chen canagica</i> <i>Aythya affinis</i> <i>Aythya collaris</i> <i>Anas crecca</i> <i>Anas americana</i> <i>Aythya americana</i> <i>Heteroscelus incanus</i> <i>Caladris alba</i> <i>Arenaria interpres</i> <i>Anas clypeata</i> <i>Anas acuta</i>	kolea kolōa-piwai -- -- -- -- -- -- -- -- 'ulili huna-kai 'akekeke kolōa-mona kolōa-mapu
INTRODUCED Rock Dove Spotted Dove Barred Dove Melodious Laughing Thrush Red-vented Bulbul Shama Thrush Japanese Bushwarbler Japanese White Eye Common Myna House Sparrow House Finch Spotted Munia Northern Cardinal Red-Crested Cardinal	<i>Columba livia</i> <i>Streptopelia chinensis</i> <i>Geopelia Striata</i> <i>Garrulax canorns</i> <i>Pycnonotus cater.</i> <i>Copsychus malabaricus</i> <i>Cettia diphone</i> <i>Zosterops japonicus</i> <i>Acridotheres tristis</i> <i>Passer domesticus</i> <i>Carpodacus mexicanus</i> <i>Lonchura punctulata</i> <i>Cardinalis cardinalis</i> <i>Parcaria coronata</i>	-- -- -- -- -- -- -- -- -- -- -- -- -- --

* List adapted from U.S Army Corps of Engineers EIS (1992), Conant (1981), and Drigot et al. (1982).

Table 2-6
Waterbird Counts at Kawai Nui Marsh*
From DLNR, Division of Forestry and Wildlife
1984 to 1992 (summer/winter**)

Bird Species (Common Name)	1984	1985	1986	1987	1988	1989	1990	1991	1992
Hawaiian Duck	-/-	7/-	-/3	-/-	7/2	-/-	-/8	-/2	4/9
Hawaiian Coot	-/1	6/4	4/14	3/3	10/1	58/12	-/12	-/3	12/11
Hawaiian Moorhen	-/-	7/3	-/6	-/-	7/2	3/-	-/-	-/4	3/2
Hawaiian Stilt	-/-	2/-	-/4	2/2	11/6	4/2	-/4	-/2	3/1
Black-crown Night Heron	-/35	12/5	1/9	2/2	4/3	6/-	-/4	-/5	7/8
Cattle Egret	-/8	23/12	356/336	4/4	156/26	35/26	-/134	-/46	31/141
Mallard	-/-	1/4	4/-	4/4	16/16	2/26	-/2	-/16	-/10
Mallard Hybrid	-/-	2/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Domestic Duck	-/-	1/11	-/8	12/-	17/41	-/7	-/38	-/5	6/-
Domestic Geese	-/-	-/-	-/-	-/-	2/-	-/3	-/-	-/-	-/-
Unidentified Duck	-/3	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Lesser Golden Plover	-/6	-/10	-/15	-/-	-/3	-/5	-/16	-/18	-/17
Northern Pintail	-/-	-/-	-/-	-/-	-/4	-/-	-/-	-/-	-/-
Northern Shoveler	-/-	-/-	-/-	-/1	-/-	-/-	-/-	-/-	-/-
Scaup Species	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/3	-/-
* Counts are compiled from three locations; the marsh, the levee, and Kaelepulu Canal									
** Summer Testing = August									
Winter Testing = January									

Exotic insect, fish and invertebrate species dominate the marsh's aquatic environment. Open water areas are dominated by the omnivorous tilapia, top minnows and other "mosquito fish". The oriental rice eel (*Monopterus albus*), introduced to Hawaii before 1900, is also present in the marsh, as are small mouth bass. The dominant invertebrates are the Louisiana crayfish (*Procambarus clarkii*) and the pond snail *Physa*.

Despite the predominance of exotic species, it is believed that several native species of fish inhabit Oneawa Canal. These include the gobies o'opu naniha and o'opu akupa, milkfish ('awa), silversides (aholehole), mullet ('ama'ama), and barracuda (kaku). Species identified at the head of the channel include lizardfish, papio, oio, uouoa, and various species of crab and prawns. At

least two species, the goby o'opu nakea (*Awaous stamineus*) and the shrimp opae kalaole (*Aryoida bisulcata*), migrate from Oneawa Channel through the marsh as part of their diadramous life cycles (see Table 2-7). Endemic gobies and shrimp are found in very small numbers in Maunawili Stream (communication, Division of Aquatic Resources, 1994).

Table 2-7
Aquatic Fauna Recorded in the Study Area*

Common Name	Scientific Name	Hawaiian Name
ENDEMIC		
Goby	<i>Awaous stamineus</i>	o'opu nakea
Eleotrid	<i>Eleotris sandwicensis</i>	o'opu okuhe
Flagtail	<i>Kuhlia sandwicensis</i>	aholehole
Mountain shrimp	<i>Aryoida bisulcata</i>	opae kala'ole
Hawaiian prawn	<i>Macrobrachium grandimanus</i>	opae oeha'a
Pond snail	<i>Melanoides spp.</i>	--
INDIGENOUS		
Goby	<i>Stenogobius genivittatus</i>	o'opu naniha
Mullet	<i>Mugil cephalus</i>	--
Papio ignobilis	<i>Caranx sp.</i>	--
Lizard fish	<i>Saurida gracilis</i>	--
Kaku	<i>Sphyræna barracuda</i>	--
Pointed tail goby	<i>Oxyurichthys lonchotus</i>	--
Grass shrimp	<i>Palaemon debilis</i>	--
Long-eyed swimming crab	<i>Podophthalmus vigil</i>	--
Blue-spot crab	<i>Portunus sanguinolentus</i>	--
Hapa crab	<i>Thalamita crenata</i>	--
INTRODUCED		
Tilapia	<i>Tilapia mossambica</i>	--
Mosquitofish	<i>Gambusia affinis</i>	--
Milkfish	<i>Chanos chanos</i>	awa
Guppies	<i>Poecilia sp.</i>	--
Carp	<i>Cyprinus carpio</i>	--
Crayfish	<i>Procambarus clarkii</i>	--
Oriental Rice Eel	<i>Monopterus albus</i>	--
Smallmouth bass	<i>Microppterus dolomieu</i>	--
Swordtail	<i>Xiphophorus helleri</i>	--
Chinese Catfish	<i>Clarias fuscus</i>	--
Loach	<i>Misgurnus anguillicaudatus</i>	--
Toad	<i>Bufo marinus</i>	--
Tahitian prawn	<i>Macrobrachium Lar</i>	--
Samoan crab	<i>Scylla serrata</i>	--

* List adapted from U.S Army Corps of Engineers EIS (1992) and Drigot et al. (1982).

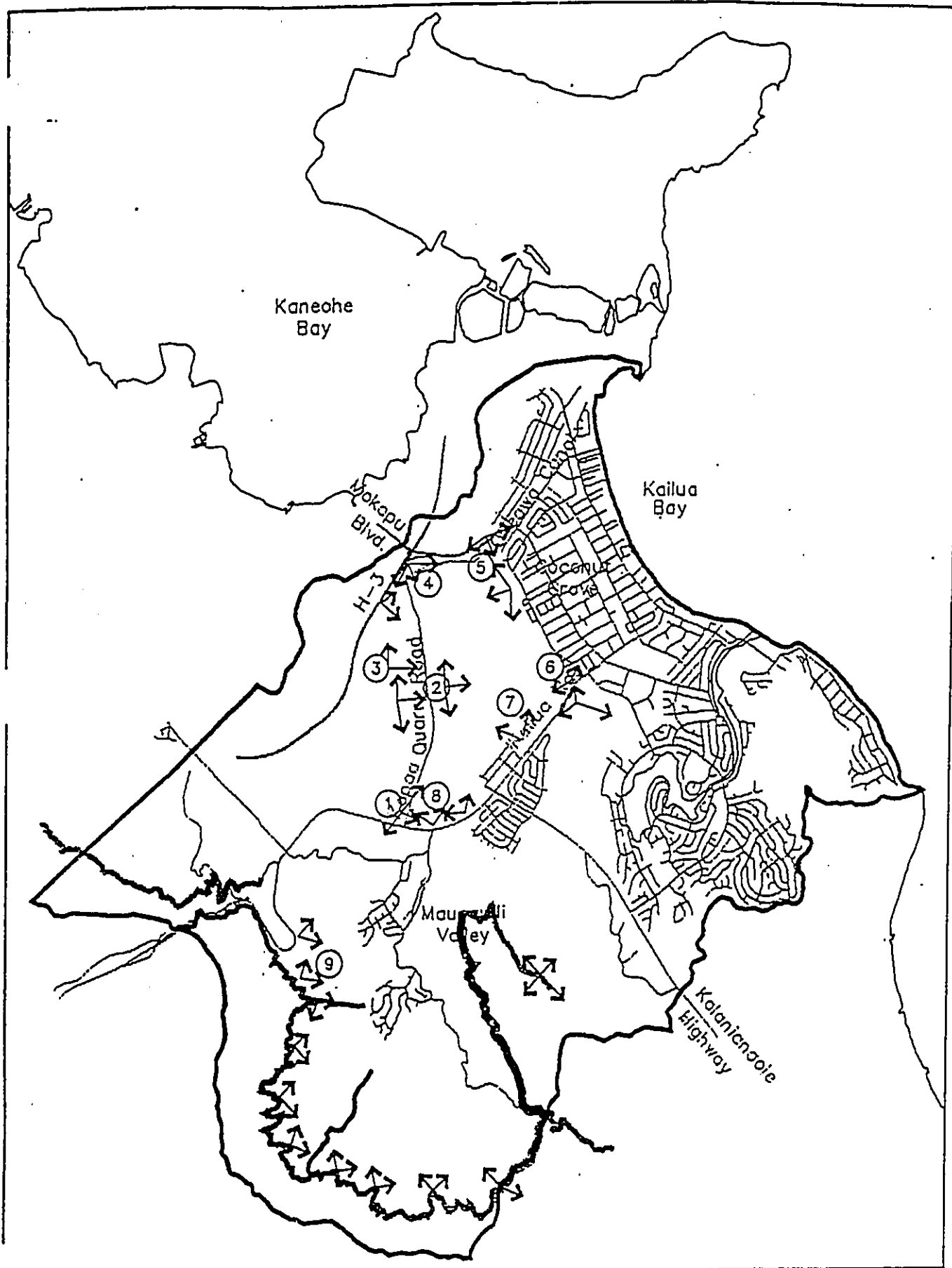
2.9 Viewplanes

Viewplanes of Kawai Nui Marsh consist of accessible locations along roads or trails which afford overlooks of special aesthetic quality or significance. An example of the former is views from Kailua Road near the Maunawili Stream looking makai over the marsh. This view is easily available to motorists traveling mauka or makai. An example of views with special cultural significance can be seen from both Ulupo and Pahukini Heiau.

Within the study area, existing viewplanes are limited to accessible areas at higher elevation (see Figure 2-10). These viewplanes include two improved lookouts along Pali Highway, and two hiking trails which provide superior vantage points to those who expend some effort. The hiking trails include the steep and rugged trek to the peak of Olomana, and the relatively level and sedentary walk along the recently completed 8-mile Maunawili Demonstration Trail, in the back of Maunawili Valley. The Olomana peak supplies a panoramic 360-degree view of the Windward coastline. The Maunawili trail overlooks the valley and the marsh, and into Waimanalo from certain places. The photographs on the following pages depict views from the Maunawili Demonstration Trail and other locations overlooking the marsh. The photo numbers correspond to viewing locations depicted on Figure 2-10.

Within the Master Plan area, noteworthy viewplanes include those along Kapaa Quarry Road, from Ulupo Heiau, from behind Castle Medical Center, and from Na Pohaku O Hauwahine. To a lesser extent, good viewing into the center of the marsh is available elsewhere along the flood control levee and slopes above the marsh, provided that vegetation is not obstructing. In general, views of the open water areas are desirable since the open water greatly enhances the aesthetic value of the viewplanes.

Although the interconnection of viewplanes between the three heiau -- Ulupo, Pahukini, and Holomakani -- have been emphasized orally, written sources primarily indicate that the three heiau were constructed around the marsh as part of the settlement of Kawai Nui. No documentation exists to confirm the interconnection of viewplanes between the heiau.



KAWAI NUI MARSH MASTER PLAN

Legend

— Roads
— Shoreline
— Study Area



Trail Not Constructed/Completed



Existing Trail



Proposed Trail



Viewplanes



Corresponds to viewplane photo number

Fig. 2-10

Viewplanes and Trails

Source:
Wilson Okamoto & Assoc., Inc.
and DLNR Na Ala Hele

0 2000 4000 6000
Scale in Feet

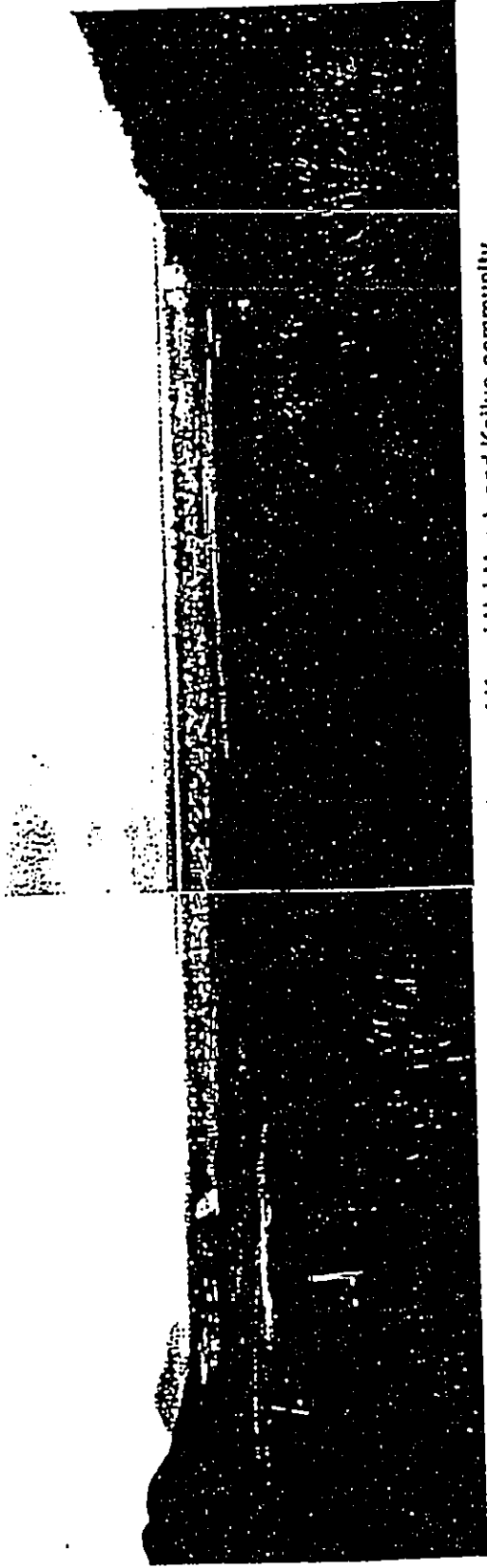




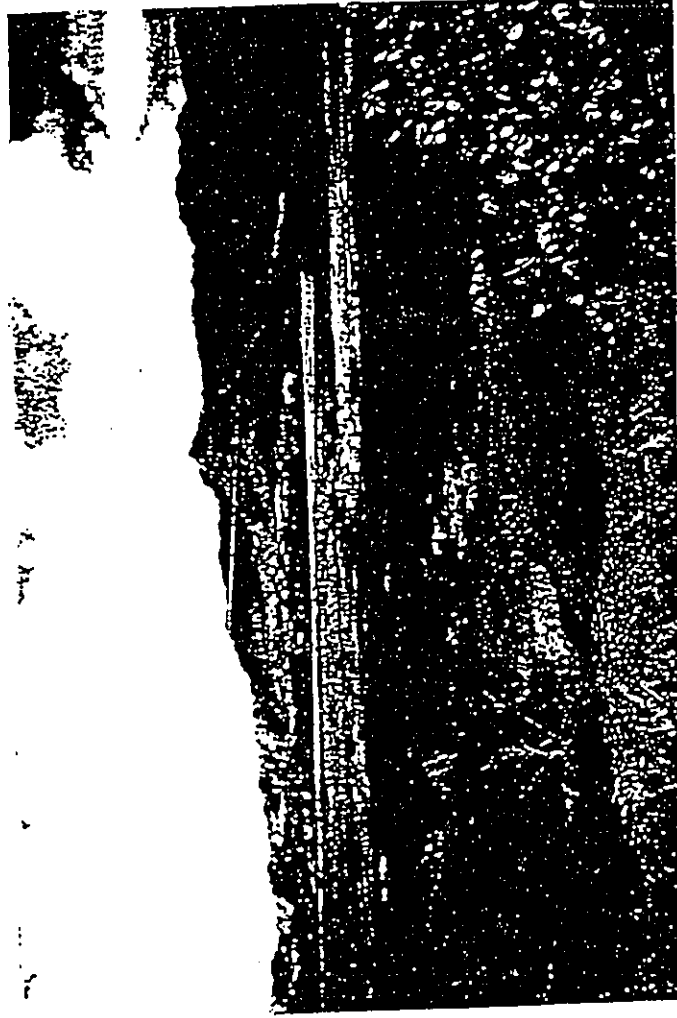
① Northeast view from lower quarry road slopes overlooking Kawai Nui Marsh (proposed visitor center location)



② Eastward view from Na Pohaku O Hauwahine overlooking Kawai Nui Marsh.



③ Eastward view from Pahukini Heiau overlook area of Kawai Nui Marsh and Kailua community.



④ Southward view from the Mokapu Boulevard off-ramp overlooking Kawai Nui Marsh.



⑤ Southwest view of Kawai Nui Marsh from vicinity of levee near Kalaheo Park.



⑥ Eastward view from the levee overlooking the JTT wetlands.



⑦ Northward view of Kawai Nui Marsh from Utupo Heiau



⑧ Southwest view of Kawai Nui Marsh from Mokulana Peninsula



⑨ Panoramic view of Kāwal Nui Marsh, community of Kallua, and Mount Olomana from the Maunawili demonstration trail.

2.10 Historic Sites

Through the accumulated work of archaeologists from the State Historic Preservation Division, the Bishop Museum, and private individuals and organizations, an abundance of known and recorded archaeological sites is present within the study area (see Figure 2-11). A full record of archaeological sites known to date is included in Appendix D of this document. Both pre- and post-contact in nature, these sites indicate the degree to which the early Hawaiians and later human settlers were attracted to the natural abundance of the Ahupua'a of Kailua.

Within Kawai Nui Marsh itself, numerous archaeological sites have been identified and recorded through surveys beginning in 1977. The majority of these sites are located on the Kukanono slope. Some of the site features recorded during these surveys consist of agricultural terraces, retaining walls and wall remnants, platforms, enclosures, and a probable water channel (see Figure 2-12 and Table 2-8).

Kawai Nui Marsh as a whole is a significant pre-European contact and historic site of Hawaiian occupation as evidenced by legend, historic documents, archaeological research, extant agricultural systems, ceremonial sites, and habitation areas. Legends associated with Kawai Nui Marsh include: *menehune*, a legendary people who accomplished great works at night; a *mo'o*, guardian spirit of Kawai Nui fishpond who took the shape of a large lizard; and, the *makalei*, a supernatural fish-attracting tree. (Kelly and Nakamura, 1982).

Among the famous ali'i who lived at Kailua and in the Kawai Nui area, dating back to the 16th century, were Kakuhihewa and Kualii. In 1795, Kamehameha I, during his struggle to unify the Hawaiian Islands, utilized the resources of Kawai Nui to feed his army.

During pre-contact and early post-contact periods, uses within Kawai Nui Marsh included a 440-acre fishpond, 250 acres of taro lo'i and 'auwai, heiau, and habitation and kula (dry-land) agricultural areas along the slopes. With the decline of Hawaiian population in the post-contact period, many of these resources were abandoned. However, the agricultural resources, in particular, were revitalized in the last half of the 19th century by Chinese farmers who developed rice into the second most important industry in Hawaii, the first being sugar.

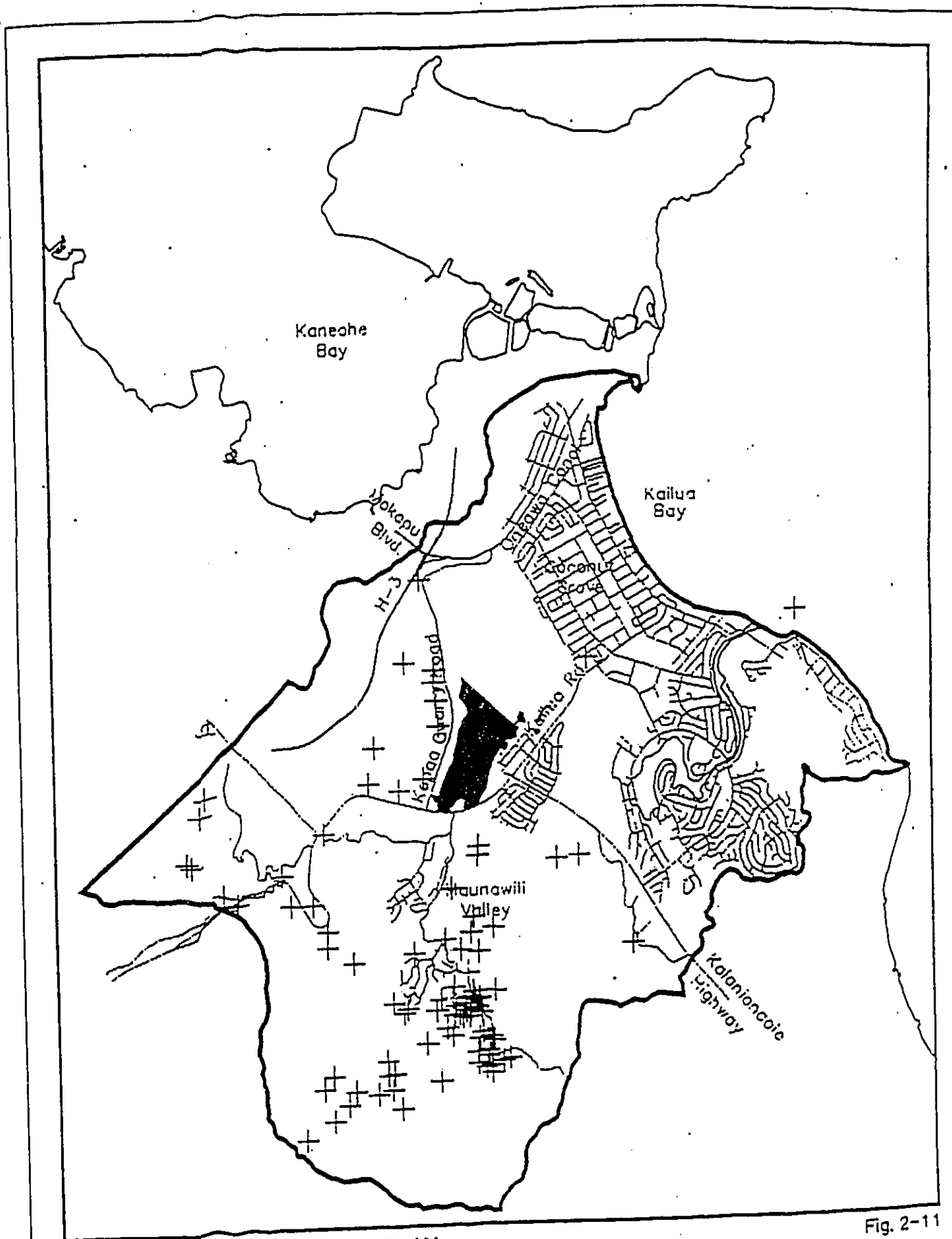


Fig. 2-11

KAWAI NUI MARSH MASTER PLAN

Legend

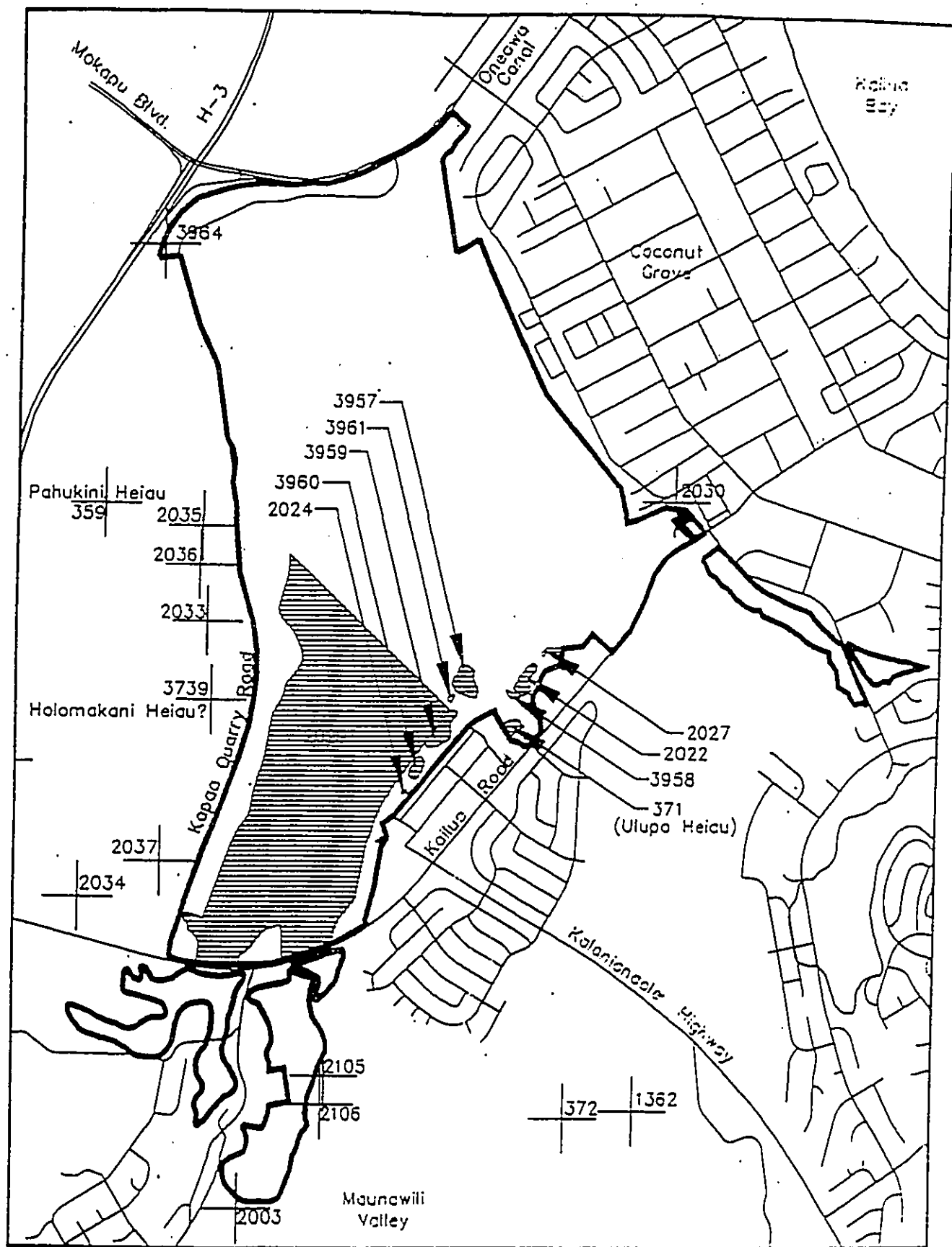
— Roads
 — Shoreline
 ■ Study Area

+ Archaeological Site
 ⊕ Archaeological Site

Study Area Archaeological Sites

Source:
 Wilson Okamoto & Assoc., Inc.
 from State Historic Preservation Division

0 2000 4000 6000
 Feet
 Scale in Feet



KAWAI NUI MARSH MASTER PLAN

Legend

- Roads
- Shoreline
- Master Plan Area
- + Archaeological Site
- Archaeological Site

Fig. 2-12

Archaeological Sites

Source:
Wilson Okamoto & Assoc., Inc.
from State Historic Preservation Division

0 500 1000 1500 2000
Scale in Feet



Table 2-8 Master Plan Area - Archaeological Sites			
State Site # / BPBM Site #	Source	Site Name/Description	TMK/Owner
80-11-0370 / NA	McAllister. (1933)	Kawainui Marsh: once a large inland fishpond belonging to the Ali'i; Hauwahine was the goddess (mo'o) of the pond	4-2-16:01 City and County
80-11-0371 / 50-Oa-G6-1	McAllister (1933)	Ulupo Heiau: religious structure; large open terrace, springs at the nw corner, inclosures and mounds on top	4-2-13:2 State of HI
80-11-2022 / 50-Oa-G6-32	Clark (1980) Cordy (77-78) Ewart & Tuggle (1977)	Kawainui Terraces 2022: series of terraces, long retaining wall, historic house ruins, charcoal dates in the range of A.D. 353-655 and A.D. 529-965.	4-2-13:38 State of HI
80-11-2023 / 50-Oa-G6-33	Clark (1980)	Kawainui Cluster 2023: extremely rocky area; retaining walls, L-shaped rock alignment, terraces, a level terrace or platform, an old road bed; excavation yielded carbon date of 8th century	4-2-13:10 State of HI
80-11-2024 / 50-Oa-G6-34	Clark (1980) Ewart & Tuggle (1977)	Makali'i Slope Cluster 2024: a terrace, small stone mounds, an old road bed run above the site: wall (Ewart & Tuggle, 1977) may be related to this	4-2-13:10 State of HI
80-11-2026 / 50-Oa-G6-36	Clark (1980) Ewart & Tuggle (1977)	Kapaloa Agricultural Terrace 2026: a large agricultural terrace, walls single-course high, rusting crane north of site	4-2-13:10 State of HI
80-11-2027 / 50-Oa-G6-37	Clark (1980)	Kukanono Habitation Site 2027: stone-walled enclosures are probable prehistoric residential structures, linear pile of rocks, retaining wall/terrace, small terraces, surface artifacts	4-2-13:38 State of HI
80-11-2028 / 50-Oa-G6-38	Clark (1980)	Ulukahiki Walls 2028: two walls meet at a right angle, one runs along an old-road bed, behind Castle Hospital, probably historic	4-2-06:4 Castle Hospital
80-11-2029 / 50-Oa-G6-39	Clark (1980) Cordy (1977)	Kawainui Marsh Site 7: large agricultural complex of rectangular walled fields, probable water channel; excavation yielded basaltic glass A.D. 1738 +34 years, also large taro root stains and pollen	4-2-13:10, 22, 4-2-16 City and State
80-11-2031 / 50-Oa-G6-41	Athens (1983)	Kawainui Slope Site 2031: surface artifacts showing evidence of prehistoric occupation, corrected carbon dates range A.D. 1240-1385	4-2-13:38 State of HI

Table 2-8 Master Plan Area - Archaeological Sites			
State Site # / BPBM Site #	Source	Site Name/Description	TMK/Owner
80-11-3957 / 50-Oa-G6-32	Clark (1980) . Cordy (77-78) Ewart & Tuggle (1977)	Kawainui Agricultural Complex 3957: dryland agricultural terraces, mounds, small c-shaped structures, walls, a walled depression, historic structure remains, small adze found on surface	4-2-13:38 State of HI
80-11-3958 / 50-Oa-G6-32	Clark (1980) Cordy (1977)	Kukanono Terraces 3958: in the midst of a hau, are a rivulet, terraces, a wall parallel to the rivulet, a wall perpendicular to the first wall and crossing the rivulet	4-2-13:38 State of HI
80-11-3959 / 50-Oa-G6-32	Clark (1980) Cordy (77-78) Ewart & Tuggle (1977)	Miomio Agricultural & Habitation Complex: mounds, dryland agricultural terraces, linear walls, historic house foundation, prehistoric basalt mirrors and other basalt artifacts, large boulder grindstone, historic artifacts	4-2-13:38 State of HI
80-11-3960 / 50-Oa-G6-32	Clark (1980) Cordy (1977)	Pohakupu Agricultural Cluster 3960: a large lo'i, 40 X 30m, a stone and earthen platform, a stone-lined channel, stone mounds	4-2-13:38 State of HI
80-11-3961 / 50-Oa-G6-32	Clark (1980) Cordy (1977)	Kukanono Cluster 3961: historic terraces and retaining wall, stone mounds and a stone-lined canal along marsh edge	4-2-13:38 State of HI
80-11-3962 / 50-Oa-G6-34	Clark (1980) Ewart & Tuggle (1977)	Makalii Historic Site 3962: remains of 3 historic buildings	4-2-13:10 State of HI
80-11-3963 / 50-Oa-G6-34	Clark (1980) Ewart & Tuggle (1977)	Makalii Mounds 3963: unusual earthen mounds, may be natural	4-2-13:10 State of HI
80-11-3965 / 50-Oa-G6-36	Ewart & Tuggle (1977)	Pohakea Terrace 3965: low stone terrace perpendicular to stone wall	4-2-13:10 State of HI

Kawai Nui has been established as an area of early human occupation in pre-contact Hawaii. Roughly 1,500 years ago, a site along the southern portion of Kawai Nui, near Ulupo Heiau, was occupied by the Hawaiians, according to archaeologists. Thus, Kawai Nui is significant in our understanding of prehistoric Polynesian migration, settlement and cultural development. (Kelly and Nakamura, 1982).

The State Historic Preservation Officer and the Keeper of the National Register have determined that the entire Kawai Nui Marsh is eligible to be listed on the National Register of Historic Places (Corps FEIS, 1992). This determination is based on the marsh's role as a major economic component of a larger prehistoric, historic, and cultural socio-economic unit (ahupua'a). Material evidence which verifies this role includes the presence of two large Hawaiian heiau, Ulupo and Pahukini, extensive wetland agricultural systems, terraced hillslope dryland agricultural systems, habitation sites; walls; etc. In addition, the location of a third heiau, Holomakani, is believed to have been identified in a 1988 survey of the slope north of the former Kailua Drive-In. This feature consists of a large rock terrace which may be the Holomakani Heiau as described by McAllister (1933).

Ulupo Heiau is located on the eastern edge of Kawai Nui Marsh, adjacent to the YMCA. Ulupo Heiau is recognized for its massive construction, its association with the Hawaiian occupation of the marsh, and its cultural value in the prehistoric Hawaiian traditions. The heiau measures 140 feet by 180 feet across, and 30 feet in height, and commands a sweeping view of Kawai Nui Marsh. With no enclosed or walled areas remaining, Ulupo Heiau is simply a platform of uneven stonework that slopes at a forty-five degree angle along two of its sides. Because of its location adjacent to fertile farm land, Ulupo may have been an agricultural heiau. (James, 1991)

Ulupo means "night inspiration". The heiau is said to have been built in one night by menehune who passed the rocks, which average 18 inches in diameter, from hand to hand over a great distance. The source of the rock is said by some to be Kualoa, while others contend that the rock came from Ewa or Waianae. A "Menehune Pathway" of flatter stones runs from south to north, leading down to a spring at the northern corner of the heiau.

Ulupo Heiau was listed on the National Register of Historic Places in 1972 and was listed on the Hawaii Register in 1981 as the Ulupo Heiau State Monument. Presently, many Hawaiians use the site for cultural expression, and tourists also visit the site for appreciation of Hawaiian culture. The site is currently being maintained by the Kailua Hawaiian Civic Club, curators of Ulupo Heiau.

Earlier called Makini and Mo'okini, Pahukini Heiau is presently known as Pahukini, meaning "many drums". Though little is known concerning the origins or uses of the heiau, it is said to have been built by Chief Olopana about A.D. 1100. It is a walled-in structure, thought to be a

Luakini type or human sacrificial heiau, perhaps dedicated to the god Ku. Burials are known to have occurred within the platform area. (James, 1991).

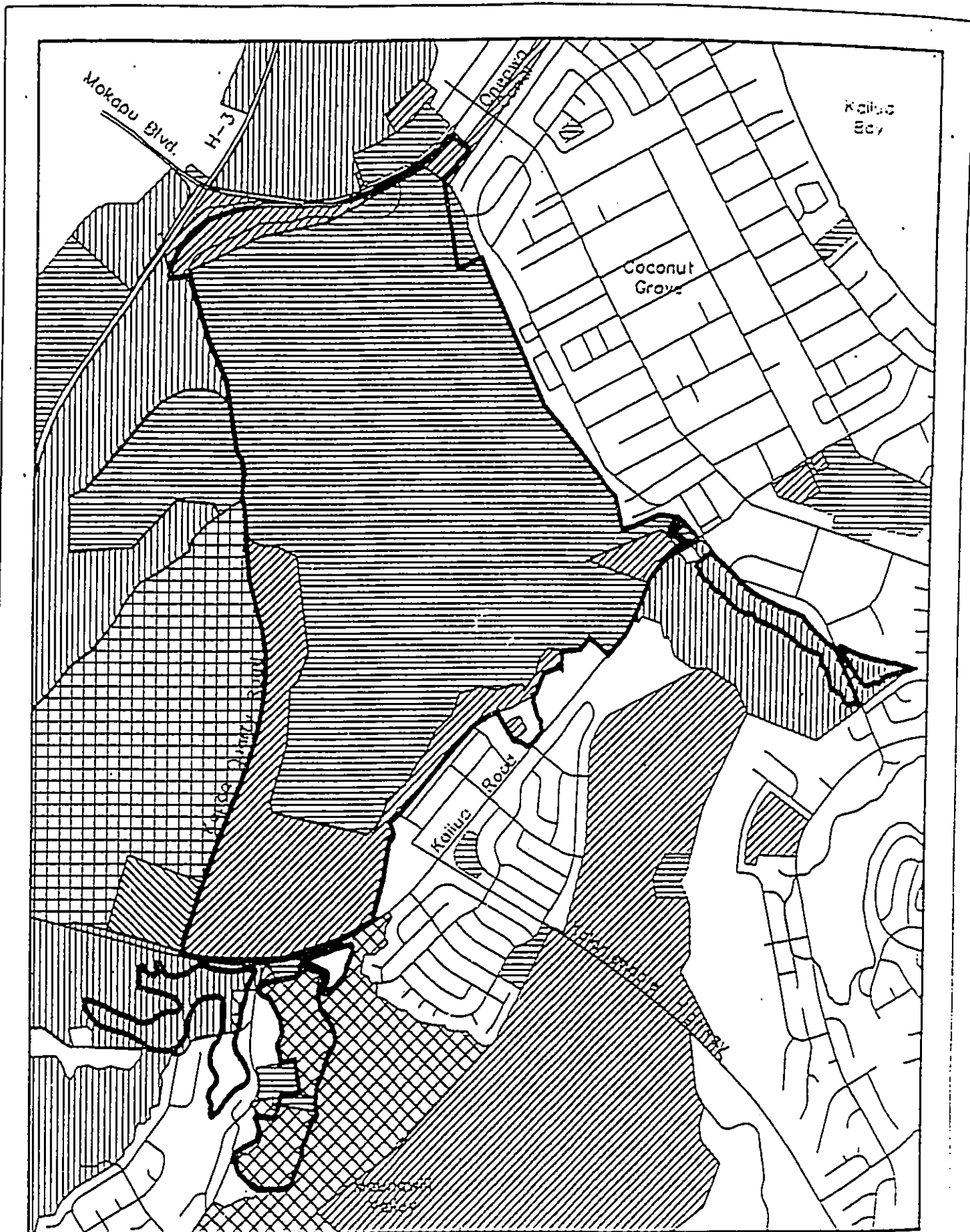
One of the largest religious sites on the Windward side, measuring about 110 feet by 175 feet, Pahukini Heiau was originally positioned along a ridge. However, the city landfill has now piled up around the temple, filling in valleys and changing the contours of the original landscape. The heiau still affords an excellent view of the northern end of Kawai Nui Marsh and out to the ocean.

Curators of Pahukini Heiau are Ameron HC&D and the Lani-Kailua Business and Professional Women's Club (BPW). A chainlink fence surrounding the heiau was installed by the City and County for protection purposes. A plaque has been placed near the heiau by the BPW, and a Hawaii Visitors Bureau sign is also located near the heiau.

Also, although not a formally recognized site, a large rock formation called Na Pohaku O Hauwahine which is associated with Hawaiian legends is located on a promontory along Kapaa Quarry Road that extends into the marsh. The name translates literally as "the stone of Hauwahine". The Hawaiians revered Hauwahine as the mo'o or guardian spirit of Kawai Nui pond, who assured the continued productivity of the pond. Pollution in the form of sewage and other rubbish was considered to be an insult to the mo'o. Because of this, the Hawaiians took care to periodically clear the pond, thus assuring themselves a continuing supply of mullet and other aquatic life upon which they depended (Drigot et al., 1982). Na Pohaku O Hauwahine provides a sweeping view of Kawai Nui Marsh's open water habitat.

2.11 Land Ownership

The City and County of Honolulu is the landowner for the majority of the master plan area, holding approximately 750 acres in the central and northern portions of the marsh (see Figure 2-13). Over the past decade, the State of Hawaii has acquired a total of 187 acres within the master plan area in accordance with economic recommended actions of the 1983 Resource Management Plan. Other parts of the master plan area are owned by Castle Trust Estate (Pu'u O Ehu wetland and Kahanaiki Stream wetland) and by YY Valley Corporation (Maunawili Stream wetland). A small portion of the Kahanaiki wetland between Aulua Road and Maunawili Road is privately owned by two landowners. Also, the Ko'olau Lodge Masonic Temple Association owns a 2.56-acre triangular parcel in the Maunawili wetland near the bridge along Kailua Road.



KAWAI NUI MARSH MASTER PLAN

Fig. 2-13

Legend

- | | | | |
|--------------------|------------------|---------------------|-----------------|
| — Roads | C & C Honolulu | Castle Foundation | Other (Private) |
| — Shoreline | State of Hawaii | Castle Trust Estate | |
| — Master Plan Area | Y Y Valley Corp. | Kaiser Family Trust | |

Land Ownership

Source:
State DLNR
City Real Property Data

0 500 1000 1500 2000

2.12 Existing Land Use

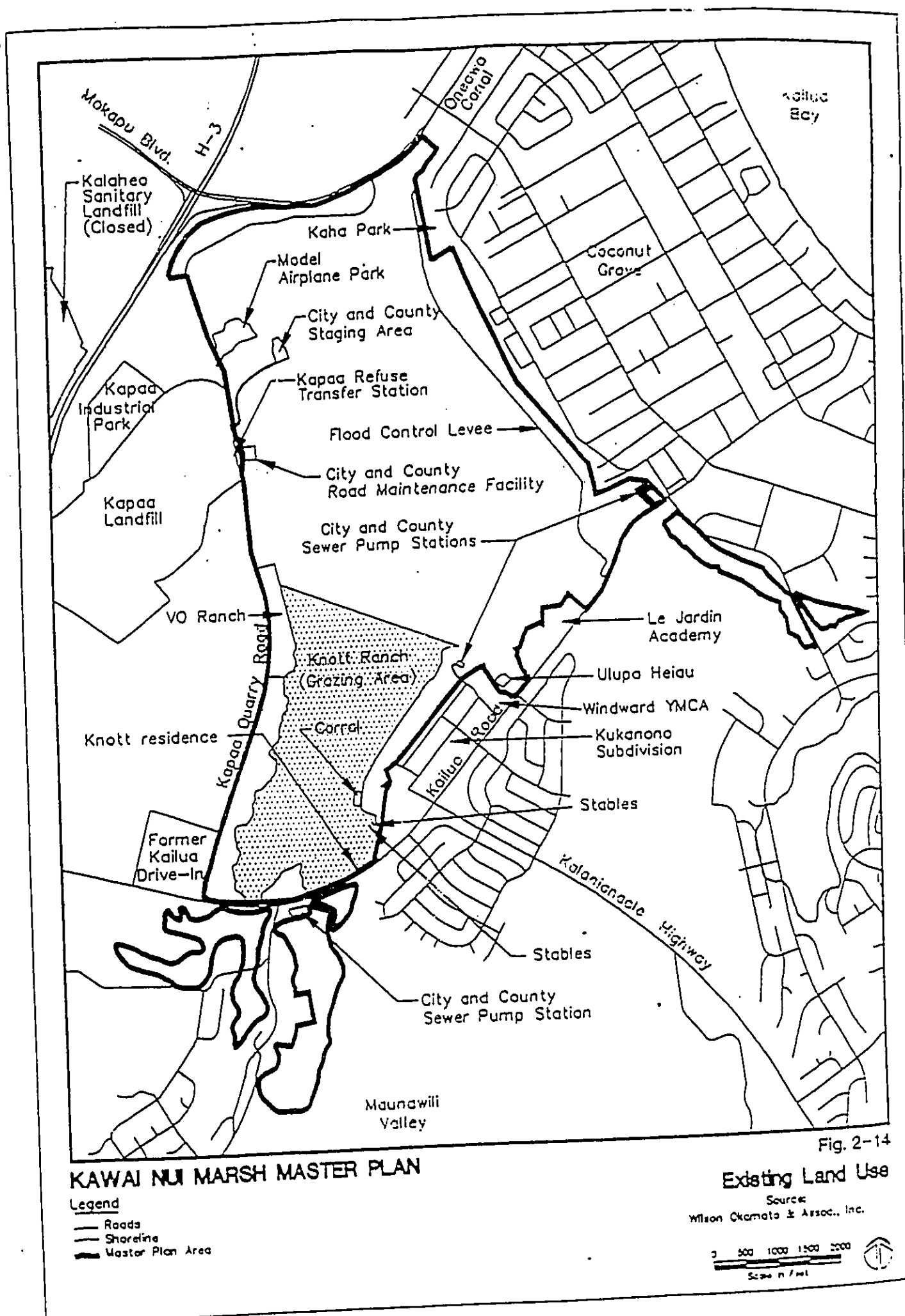
Approximately 80 acres in the southern portion of the marsh, north of Kailua Road, are used for cattle grazing by the Knott Ranch (see Figure 2-14). This area has been used for ranching activities since 1971. Approximately 50 to 100 head of cattle currently graze on California grass in this area. In addition to their economic benefit, the cattle control the California grass which probably helps to preserve the open water wildlife habitat. The ranch operator is currently occupying the premises via a State revocable permit on a month-to-month basis.

Two model airplane clubs, with a combined membership of 125 members, use the Kawai Nui Model Airplane Park, located along Kapaa Quarry Road. Peak usage primarily occurs on Thursdays by a group of retired flyers, and on Sundays when they may attract about 100 people. Model airplane enthusiasts have been using the cleared area of fill land on the western boundary of the marsh since 1968. Improvements in the form of grassing and grading were accomplished by the Department of Parks and Recreation in 1970. In January 1974, further work was completed including a sprinkler system.

Most of the walking, jogging and bicycling within the Master Plan area occurs on the existing flood control levee. The levee is presently one of the best and most accessible vantage points for viewing the marsh and is used by joggers, walkers, and bicyclists. It offers a scenic, quiet, peaceful terrain, without the obstruction and hazards of walking in an urban environment. The levee is restricted to vehicular traffic by a gate, except to City and County maintenance personnel. Access is not denied to those who wish to walk or jog. The construction of the Corps of Engineers levee raise and floodwall will minimally affect the current recreational use. The levee raise may actually provide slightly improved views into the Marsh, while the four-foot wall will detract somewhat from aesthetic views at the base of the levee while walking.

Along the marsh side of Kapaa Quarry Road is the VO Ranch operated by the Cash family. This ranch has a revocable permit with the State but has been in ranch use for 26 years. Improvements to the area consist of fenced enclosures and stables for horses and cattle, and a maintenance shed. The Cash family has maintained the area between the marsh and their facilities, keeping it well grazed and maintaining open views of the marsh.

Bordering the west side of Kawai Nui Marsh is an industrial park which is accessible from Kapaa Quarry Road via a paved road. To the southwest of the industrial park, this gravel road leads



to a quarry and rock crushing operation run by Ameron HC&D on the west side of the Interstate H-3 highway. On the east side of the Interstate H-3 highway, Ameron has been removing overburden and expects to begin quarrying this side within the next ten years. Ameron HC&D leases both areas from the Trustees of the Estate of Harold K.L. Castle. Although the lease for the active quarry expires in the year 2012, additional reserves may extend operations past this date.

Residential communities which border the marsh include Kalaheo Village to the north along Mokapu Boulevard, Coconut Grove to the northeast, and Kukanono subdivision to the southeast.

Located northwest of the marsh across Kapaa Quarry Road is the City and County of Honolulu Kapaa Refuse Transfer Station. This station is located at the eastern base of the City and County of Honolulu Kapaa Sanitary Landfill, which is near capacity and scheduled for closure soon. However, the refuse transfer station is anticipated to be a long-term use. Regarding the landfill, lessee Kapaa Energy Partners has constructed a grid collection system on the surface of the landfill to extract methane for commercial purposes. This is anticipated to be a long-term use.

Located north of the marsh and the Interstate H-3 is the Kalaheo Sanitary Landfill site which was closed in 1990. The City and County of Honolulu Department of Public Works is currently preparing a closure plan for this landfill. Kalaheo High School occupies a portion of the hillside to the northwest of the marsh, across Mokapu Boulevard. Kawai Nui Neighborhood Park, also called Kaha Park, occupies about 4 acres west of the southern end of Oneawa Canal. This park is used primarily as a soccer playing field.

In addition to the pump station located within the Master Plan Area below Kukanono, there is a pump station along Aulua Road which borders the Maunawili wetland. Other public facilities which occupy areas between the marsh and Kailua Road include a number of churches, the Windward YMCA, and the Le Jardin Academy.

2.13 State Land Use

Under the State Land Use District classifications, most of Kawai Nui Marsh is located in the Conservation District (see Figure 2-15). Exceptions to this include the slopes of Oneawa Hills on the marsh side of Kapaa Quarry Road (hereinafter referred to as the Kapaa Quarry Road slopes), the Kukanono slopes, Mokulana peninsula, the ITT parcel, and the Kalaheo parcel, all

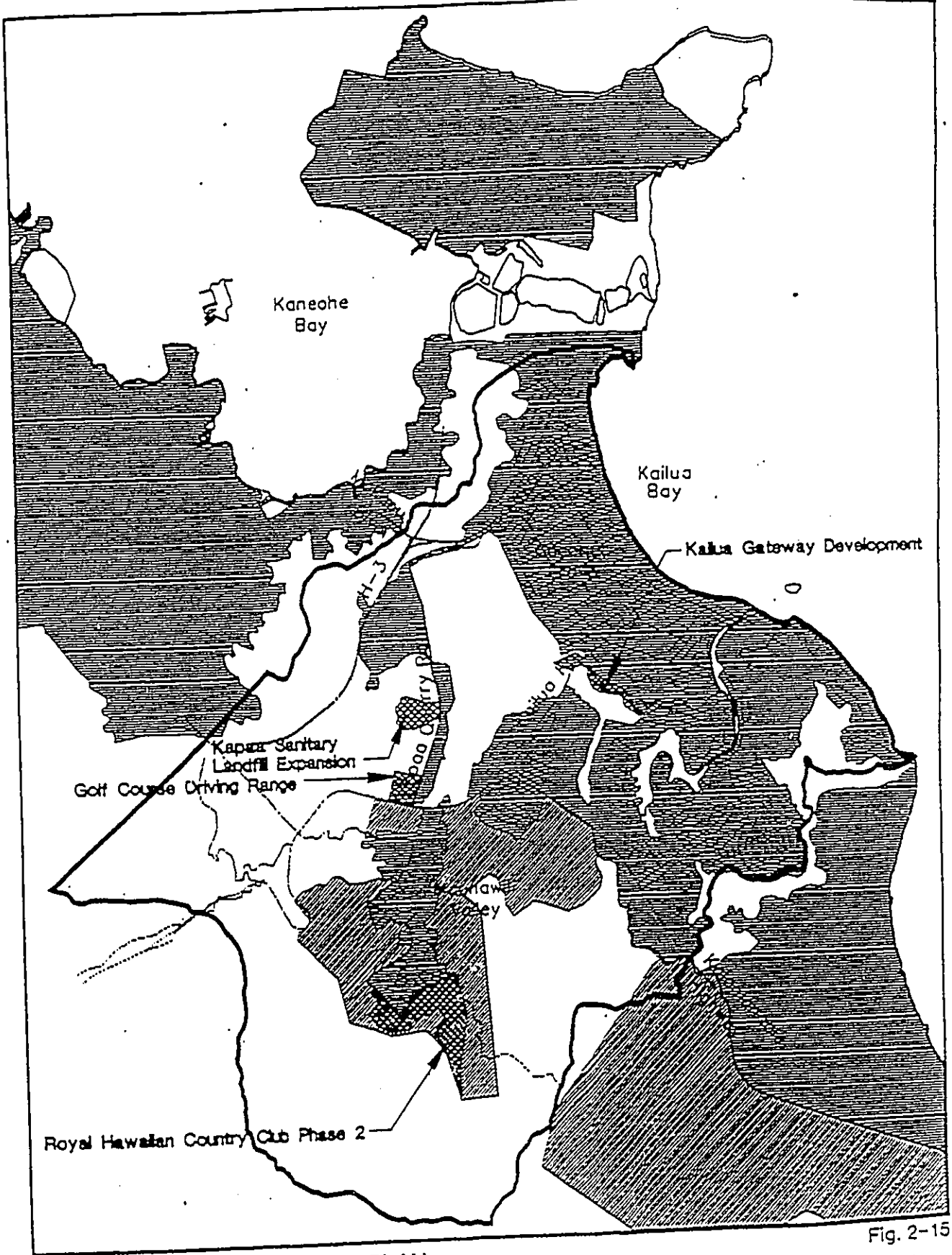


Fig. 2-15

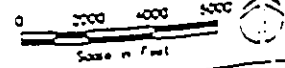
KAWAI NUI MARSH MASTER PLAN

Legend

- Roads
- Shoreline
- Study Area
- Urban
- Agriculture
- Conservation
- Proposed Uses

State Land Use and Proposed Uses

Source:
Office of State Planning
From State Land Use Commission map:



of which are designated "Urban". Consideration should be given to reclassifying these areas to Conservation to better ensure their protection. The majority of the Maunawili wetlands area is designated Agricultural, with the exception of wetland east of Kahanaiki Stream, which is designated Urban. This area should also be reclassified to Conservation.

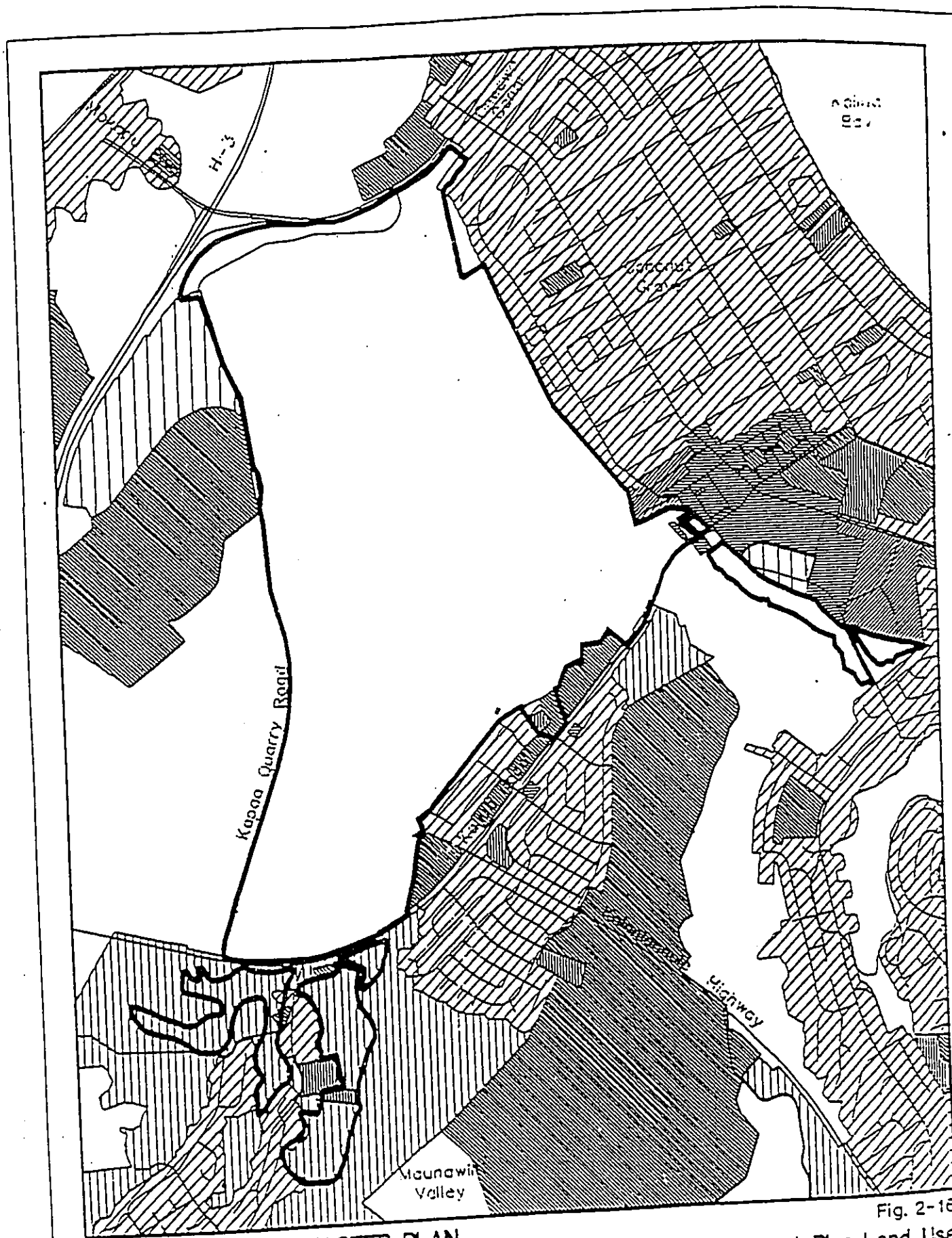
2.14 City and County of Honolulu Development Plan Land Use

On the City and County of Honolulu Development Plan Land Use map, almost the entire Kawai Nui Marsh and Pu'u O Ehu wetland areas within the master plan boundary are designated Preservation (see Figure 2-16). The only exceptions include a narrow piece of property within the ITT parcel designated Commercial, Ulupo Heiau which is designated as Park, and areas east and north of the heiau which are designated Public Facility and Residential. Within the Maunawili and Kahanaiki wetlands, the primary designation is Agricultural. Small areas within the Kahanaiki wetland are designated Public Facility and Residential, and a small area adjacent to the Maunawili Community Park is designated Park.

2.15 City and County of Honolulu Zoning and Special Management Area

City and County of Honolulu zoning map designations follow the Development Plan very closely. The entire Kawai Nui Marsh and Pu'u O Ehu wetland area within the master plan boundary is designated Preservation, with the several exceptions indicated above. The only difference is the lands surrounding Ulupo Heiau are all designated Residential. The State of Hawaii is attempting to address this threat to the visual integrity of the heiau by purchasing lands on the marsh side of the landmark. Within the Maunawili wetland portions of the master plan boundary, the majority of the area is designated Country. The only exception is a small portion of City and County property adjacent to the Maunawili Neighborhood Park, designated Preservation. (See Figure 2-17).

The City and County of Honolulu Special Management Area boundary encompasses the entire master plan boundary, with the exception of most of the Kahanaiki wetland and small portions of the Maunawili wetland (see Figure 2-18).



KAWAI NUI MARSH MASTER PLAN

Legend

Roads	Residential	Industrial	Preservation
Shoreline	Apartment	Agricultural	Public Facility
Master Plan Area			

Development Plan Land Use

Source:
City & County of Honolulu
Dept. of Land Utilization

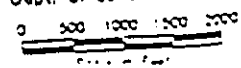


Fig. 2-16

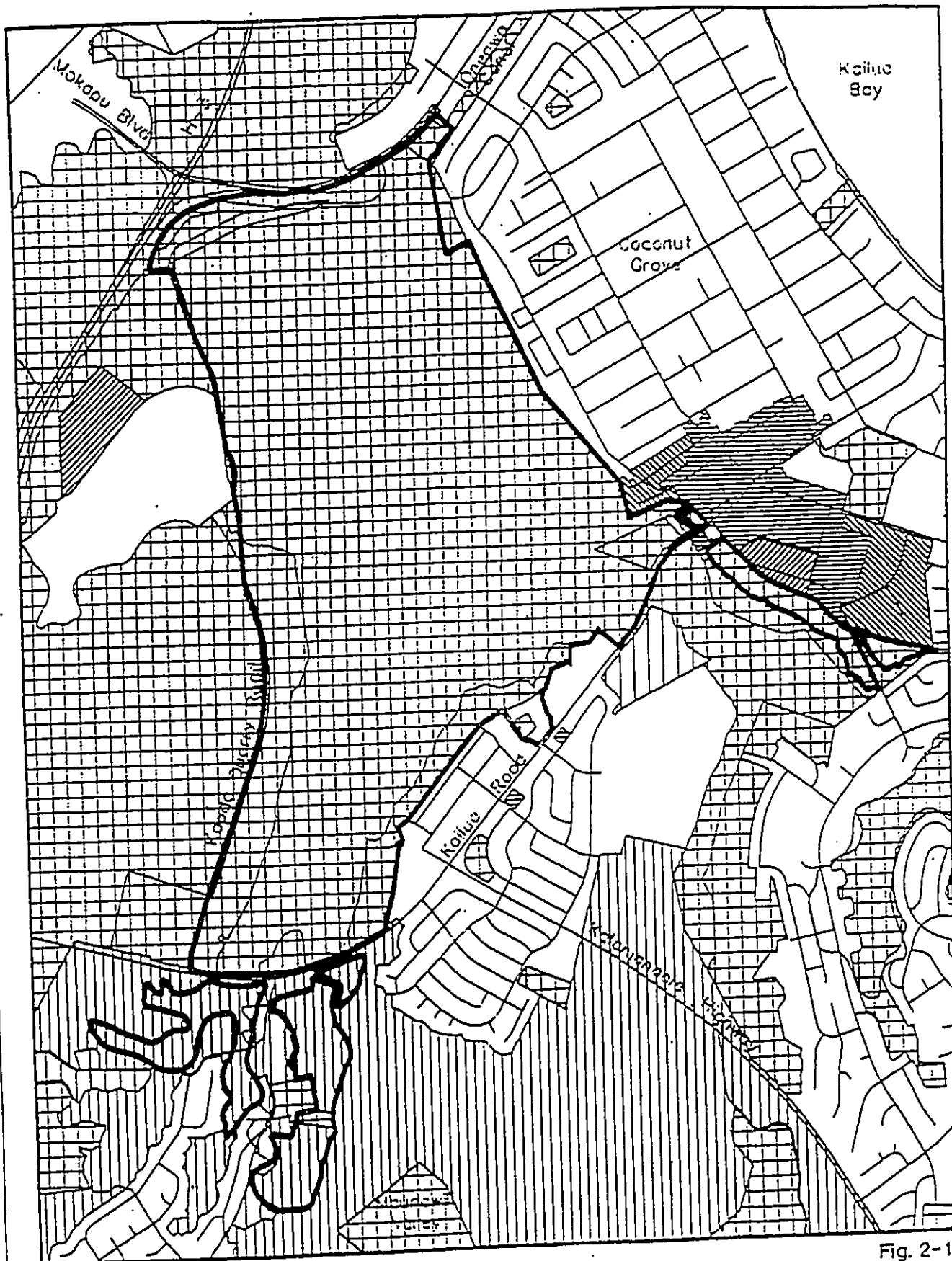


Fig. 2-17
Zoning

KAWAI NUI MARSH MASTER PLAN

Legend

— Roads
— Shoreline
— Master Plan Area

Residential
Apartment
Business

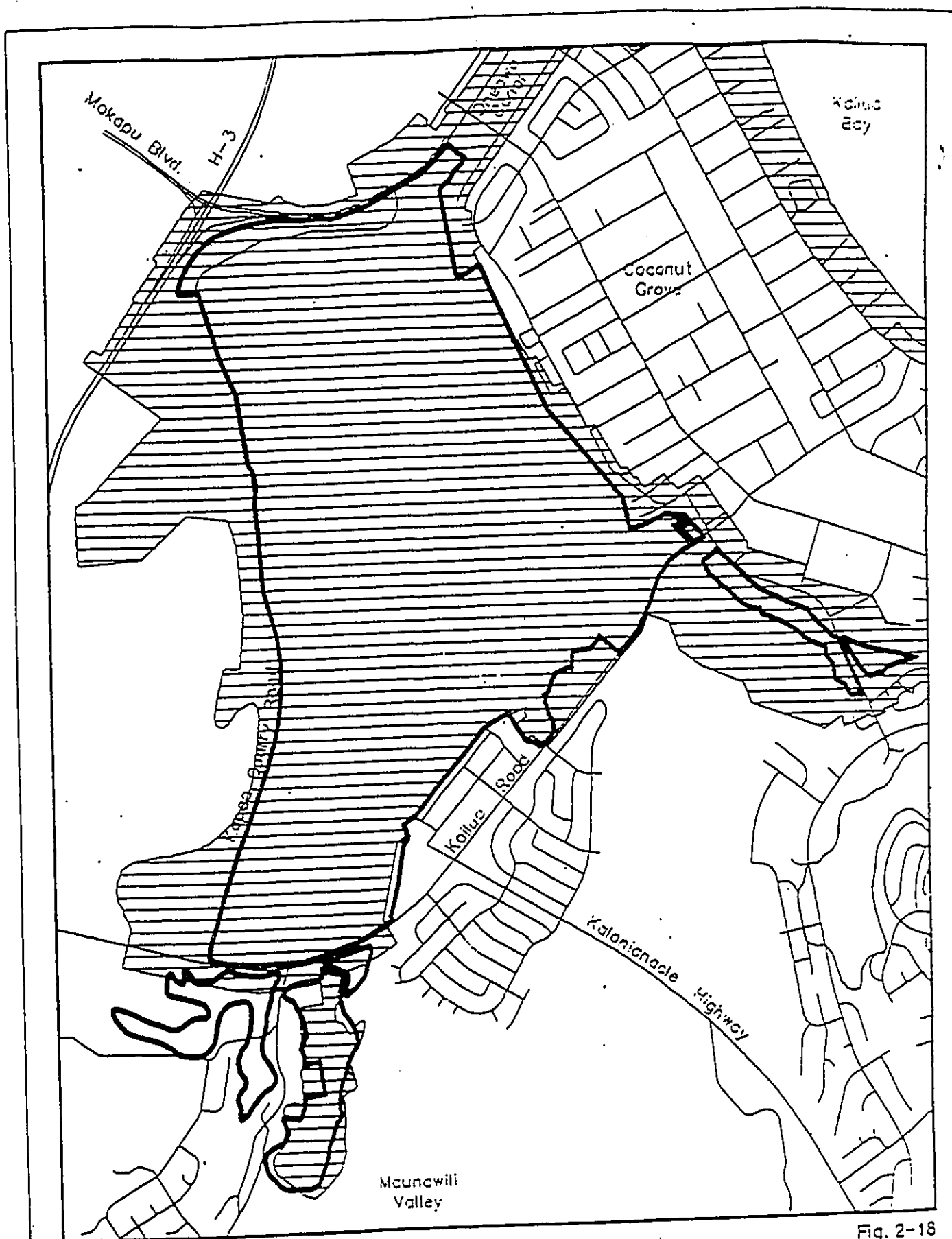
Industrial
Agricultural
Country

Preservation

Source:
City & County of Honolulu
Dept. of Land Utilization

0 500 1000 1500 2000
Scale in Feet





KAWAI NUI MARSH MASTER PLAN

Legend

- Roads
- Shoreline
- Master Plan Area



Special Management Area

Fig. 2-18
Special Management Area

Source:
City & County of Honolulu
Dept. of Land Utilization

0 500 1000 1500 2000
Scale in Feet

