

2004-02-08 FONSI
KOIEIE FISHPOND REVITALIZATION PROJECT

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FINAL ENVIRONMENTAL ASSESSMENT
for
Kō'ie'ie Fishpond Revitalization Project
Ka'ono'ulu, Kīhei, Maui, Hawai'i



Prepared for:
Department of Land and Natural Resources
State of Hawai'i
Land Division
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Honolulu, Hawai'i 96809

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January 2004

Preface

This Environmental Assessment has been prepared in support of an application for a Conservation District Use Application Permit for the proposed revitalization of Kō'ie'ie *Loko I'a* (fishpond). The project proposes to restore, rebuild, revitalize and maintain this ancient Hawaiian fishpond. The site is owned by the State of Hawai'i, zoned Conservation Lands (sub-zone resource) and is listed in the Hawai'i Register of Historic Places (June 1996) and in the National Register of Historic Places (December 1996). As such, this assessment has been prepared in accordance with Chapter 343, Hawai'i Revised Statutes and in accordance with the following rules and regulations:

1. Chapter 343, Hawai'i Revised Statutes, and the Environmental Impact Statement Rules, Chapter 200, Department of Health, Hawai'i Administrative Rules; and
2. Chapter 13-5-2, Hawai'i Administrative Rules, Conservation District.

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1. PROJECT INFORMATION

1.1 PURPOSE OF THE REQUEST

This Environmental Assessment has been prepared in support of an application for a Conservation District Use Permit (CDUP) in order to allow for revitalization of the historic Kō'ie'ie Fishpond by the applicant with the greater Maui community. The project is located along the shoreline of Ka'ono'ulu Ahupua'a in north Kihei, Maui. The fishpond is considered submerged lands that are state-owned. Unlike many coastal fishponds, Kō'ie'ie does not have a specific Tax Map Key (TMK) number but is identified as being bounded to the north, west and south by the sea and on the east by Parcels 85, 87 and 147 of TMK: (2) 3-9-001. The proposed project requires work to be conducted within areas zoned State Conservation Lands and the site is listed in the Hawai'i Register of Historic Places (June 1996) and in the National Register of Historic Places (December 1996). As such, this assessment has been prepared in accordance with Chapter 343, Hawai'i Revised Statutes.

1.2 PROJECT PROFILE

Proposed Project:	Revitalize, Repair and Restore Kō'ie'ie Fishpond
Zoning:	Conservation, sub-zone: Resource (R)
Project Area:	Approximately 3 acres
Access:	South Kihei Road at Kalepolepo County Beach Park and South Kihei Road at the Hawaiian Islands Humpback Whale National Marine Sanctuary Headquarters and Education Center

1.3 LAND OWNER

Name: State of Hawai'i Department of Land and Natural Resources
Address: Land Division, Maui Land Office
54 South High Street, Room 101
Wailuku, HI 96793
Phone: (808) 984-8100

1.4 APPLICANT

Name: 'Ao'ao O Nā Loko I'a O Maui
(Association of the Fishponds of Maui)
A 501C3, non-profit organization
Contact: Kimokeo "Bully" Kapahulehua
Address: PMB 110
P.O. Box 959
Kihei HI 96753
Phone/Fax: Phone: (808) 875-9059; Fax (808) 874-3815

1.5 CONSULTANT

Land Use Planners: Farber & Associates
2722 Ferdinand Ave.
Honolulu, HI 96822
Phone/Fax: Phone/Fax: (808) 988-3486

1.6 ACCEPTING AGENCY

Agency: State of Hawai'i Department of Land and Natural Resources
Land Division, Conservation Branch
P.O. Box 621
Honolulu, Hawai'i 96809
Phone/Fax: Phone: (808) 587-0377

2. PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND

Hawaiian fishponds (*loko i'a*) and fishtraps are unique cultural resources and food production systems developed and refined by pre-Western and post-Western contact Hawaiians. Although practically every culture has practiced aquaculture to some degree, the ancient Hawaiians and their extensive system of fishponds are cited as one of the premier examples of successful fish farming in the world. Nowhere is there found such a diversity and profusion of aquacultural devices as in prehistoric Hawai'i. Fish, crustaceans, shellfish, and seaweed were some of the products of the totally indigenous aquacultural system.

The ancient Hawaiian fishponds were part of the complex, integrated and sustainable farming system that ran within each land division (watersheds in effect), *ahupua'a*, which divided the islands into self-sufficient and sustainable wedge-shaped units that extended from the mountains to the sea.

There are two general types of fishponds, saltwater and freshwater, with six main styles. The salinity of the water served as an important element determining type of construction as well as what types of food that could be raised and their level of productivity.

Observing that brackish water conditions—the nutrient-rich combination of fresh and salt water—were the most productive, the Hawaiians generally constructed the fishponds by building a rock wall across entrances to bays or

indentations of the shoreline next to the mouth of a stream, near freshwater springs or in the sea enclosing anywhere from an acre to 523 acres of water. In other instances the fishponds were constructed from two points along the shoreline, in the shape of a half-circle. The massiveness of some of the ponds clearly suggest that pond building was intensive, lengthy and costly in terms of material, manpower, feeding, housing, etc. Archaeological studies reveal that the highest frequency of fishpond wall lengths are between 1,200 and 2,000 feet—the average wall containing 33,719 cubic feet of stacked rocks and coral fill. Historical accounts (Kamakau 1976) note that, “Making of the large fishponds required the labor of more than 10,000 men.”

The six main styles of fishponds as identified by Kikuchi (1973) include:

Type I: *Loko Kuapā*: A fishpond of littoral water whose side or sides facing the sea consist of a stone or coral wall usually containing one or more sluice gates.

Type II: *Loko Pu'uone*: An isolated shore fishpond usually formed by the development of barrier beaches building a single, elongated sand ridge parallel to the coast and containing one or more ditches and sluice gates.

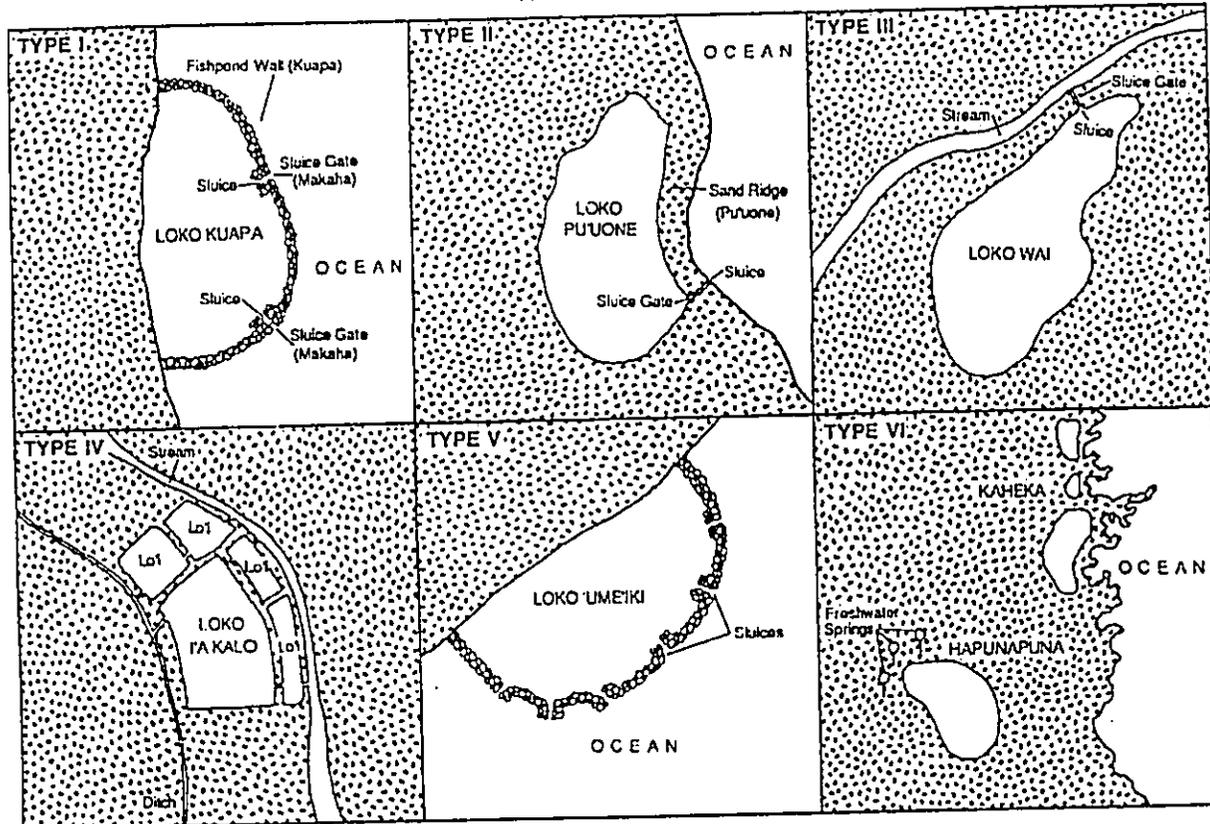
Type III; *Loko Wai*: An inland freshwater fishpond which is usually either a natural lake or swamp, which can contain ditches connected to a river, stream, or the sea, and which can contain sluice gates.

Type IV: *Loko I'a Kalo*: An inland fishpond utilizing irrigated taro plots.

Type V: *Loko 'Ume'iki*: A fishtrap which is similar to a Type I loko kuapā and has various combinations of inward and outward leading lanes.

Type VI: *Kāheka* and *Hāpunapuna*: A natural pool or holding pond.

Six Main Types of Hawaiian Fishponds



Modified from Apple and Kikuchi (1975) and Costa-Pierce (1987).

Figure 1 - Six Main Styles of Hawaiian Fishponds (DHM Planners, Inc 1989).

Not only were the fishponds an integral part of the traditional subsistence economy but they also played a significant role in the spiritual, cultural, and political lives of the people. To the native Hawaiians there is a direct spiritual connection between man, god(s) and nature. The natural environment of the *'āina* (land) and *kai* (sea) and all things contained within it are perceived to be sentient, divine and ancestral forms that have extrasensory perception, and interrelate with people as family. Thus to Hawaiians, nature is not only conscience, *ke ea o ka 'āina* (life-force of the land), but much of it is divine.

Fishponds have declined statewide in importance and value as the result of many contributing factors such as population changes and migration, urban development and environmental factors. Prior to western contact (1778) it is estimated that there were over 480 fishponds statewide with an estimated annual yield of 1,991,520 lb./yr. As recent as 1900, there were 99 fishponds in operation with an estimated annual yield of 682,464 pounds (Cobb 1901). A state-wide inventory in 1990 revealed that of the 480 fishponds, only 25 are considered in excellent condition, 97 in fair to good condition, 126 fair to poor condition and 200 fishponds had no existing evidence of surface remains (DHM Planners 1990). On Maui it is estimated that 44 fishponds once flourished; today 1 fishpond is considered in excellent condition, 13 in fair to good condition, 14 in fair to poor condition and 16 cannot be found (Ibid.)

This regrettable state of the fishponds can be attributed to a number of environmental factors such as lava flows, tsunamis and storms, land erosion (due to deforestation, agriculture and grazing) filling in ponds with silt, mangroves and other vegetation inundation. Other factors include change in land tenure and destruction from urban development.

Fishponds have declined statewide in importance and value yet many of them are in restorable condition and can be a vehicle for providing employment, economic opportunity, fisheries enhancement, education and cultural values for the people of Hawai'i.

Recently there has been a growing movement statewide to restore and reuse these cultural treasures. On Moloka'i, community-based organizations have restored three fishponds and once again are cultivating fish and other

aquaculture products within fishponds and hosting visitors from throughout the world interested in these ancient sustainable systems. On Maui, fishponds in Hana have been successfully restored and are once again producing fish.

Kō'ie'ie Fishpond is a Type I, *loko kuapā*. The *loko kuapā* are the largest, most numerous of the shoreline fishponds and considered the apogee of the Hawaiian aquacultural devices. Unlike a fishtrap, which is open to sea, the *loko kuapā* was a closed and controlled system utilizing solid walls and the development of sluice gates or *mākāhā*. As William Kikuchi noted (1973), the development of the *mākāhā* was the most distinct feature of the Hawaiian aquacultural system; it makes the fishpond more highly efficient as it allowed water to flow in and out of the pond, but kept the fish in. Thus with the development of the *loko kuapā* style fishpond, the ancient Hawaiians leaped from merely catching and trapping fish to growing fish in what amounted to manmade estuaries controlled at all times of the tide—a very advanced and productive form of aquaculture.

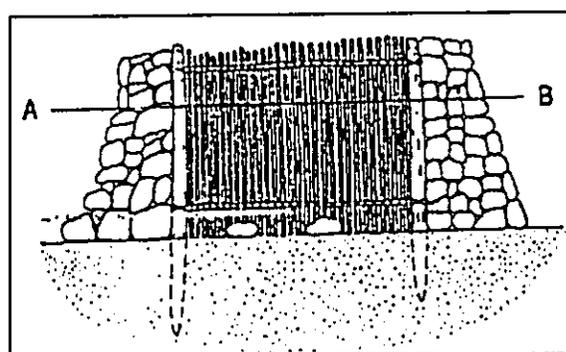


Figure 2:
Side View of Mākāhā. Line A-B
indicates water level (Summers 1964).

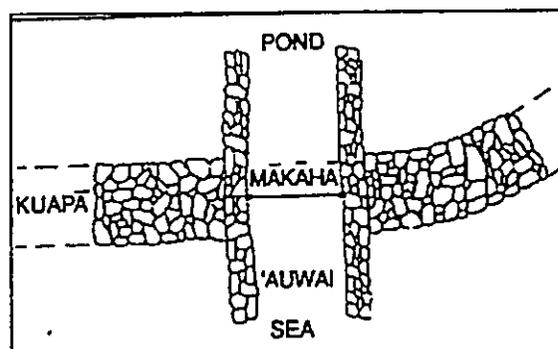


Figure 3:
Top view of 'auwai o ka mākāhā
(Summers 1964).

The *mākāhā* was formed like a lattice, made of sticks vertically aligned and as close as possible, so no fish greater than half an inch in thickness could pass

through them, while the water and young fry could pass freely in and out. Traditionally the *mākāhā* were not movable. In post-western contact times, the *mākāhā* evolved to a sluice with double movable gates that permitted trapping a fish between the gates for added convenience.

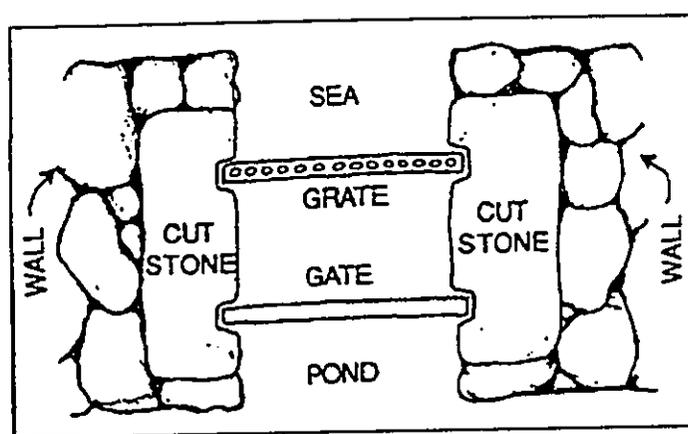


Figure 4: Top view of modern double-grate *mākāhā* (Kelly 1975).

Summers (1964) notes that the location of the *mākāhā* has no correlation to the size of the fishpond. Sluice gates appear to have been placed according to the currents, so to provide for optimum circulation and reducing natural silting (Ibid.).

Kikuchi (1973) surveyed 69 fishponds and found that the number of *mākāhā* ranged from 1 to 7, with 1 and 2 the most frequent number.

The *loko kuapā* wall consisted of basalt, coral boulder and rocks. The walls are double faced with smaller rocks and coral fragments (*ili'ili*) used to fill the interior between the inner and outer wall facings. The facing rocks were placed in an interlocking fashion (*ho'oniho*) to form the two facings of the wall. Kikuchi

(1973) noted that fishpond wall lengths varied from 150 feet to 6,300 feet, with the highest frequency between 1,200 and 2,000 feet. The walls of a *loko kuapā* are not submerged at high tide; the water may approach the top of the wall, but it never covers it completely (Ibid.). Wyban (1995) states that the ancient fishponds have wall facings that are usually one rock thick. A prevalent characteristic of the rock walls were their sloping faces. Kikuchi (1973) notes, that the seaward walls have a larger slope than the inner face. This enabled the wall to withstand wave energy more efficiently. Another technique in the reduction of wave energy are the wall's semi-permeable construction. Fishpond rocks walls are solid but porous and do allow for percolation of seawater, allowing wave energy to be absorbed and dissipated.

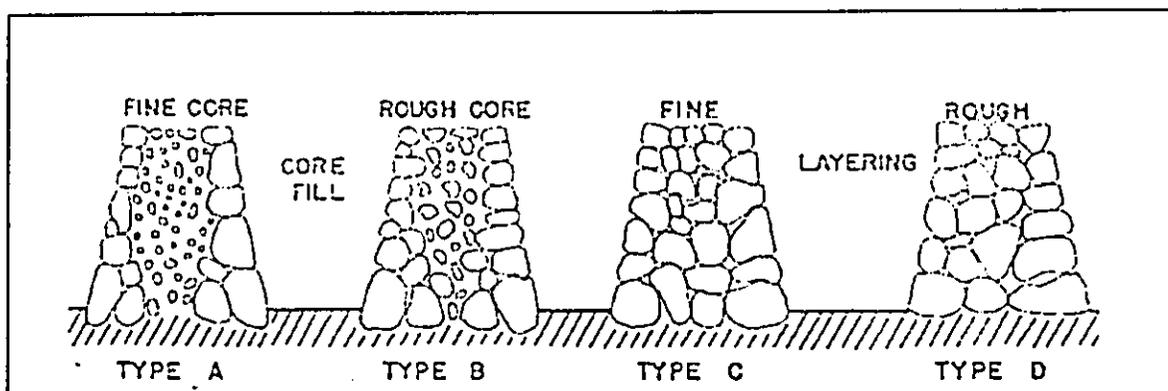


Figure 5: Cross-sections of double-wall construction with fill (Kikuchi 1976).

2.2 PROJECT PURPOSE

The purpose and objective of the proposed project is the repair, reconstruction and maintenance of Kō'ie'ie Fishpond. The pond will be restored and maintained for cultural, educational, historical and recreational purposes. It is intended that this restoration and maintenance will involve broad-based community support and involvement. Historical accounts, oral histories and remembrances of area residents associated with Kō'ie'ie Fishpond will provide interpretive lessons to the public about Hawaiian fishpond aquaculture operations, *ahupua'a* (land and water resource management), and the history of the pond, the people and events associated with the development of the Kihei area.

Revitalizing this cultural treasure will increase people's awareness about the Hawaiian fishponds and in turn teach and convey the wisdom embodied in them: aquaculture and marine sciences, resource management, history, and Hawaiian cultural practices. The ancient Hawaiians were masters of their land and water resources that today have so much to teach us about ecology, our link with the past and sustainable approaches to managing our dwindling island resources.

2.3 LOCATION

Kō'ie'ie *Loko I'a* (also known as Ka'ono'ulu Kai Fishpond and Kalepolepo Fishpond) is located along the shoreline of Ka'ono'ulu Ahupua'a, Kula District, in north Kihei, Maui. It is a *loko kuapā* type pond. Unlike many coastal fishponds, Kō'ie'ie does not have specific a Tax Map Key (TMK) number assigned to it, but it is defined by being bounded to the north, west and south by the sea and on the east by Parcels 85, 87 and 147 of TMK (2) 3-9-001.

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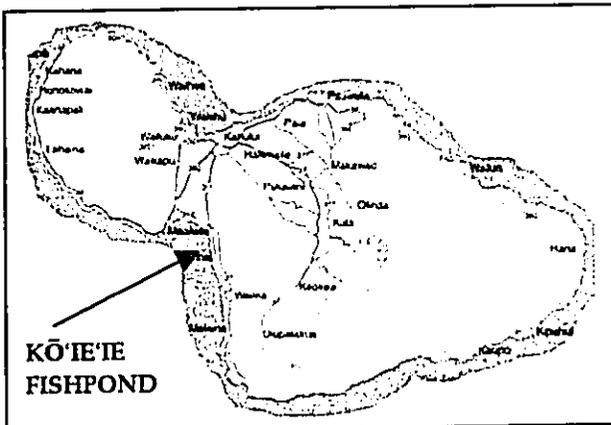
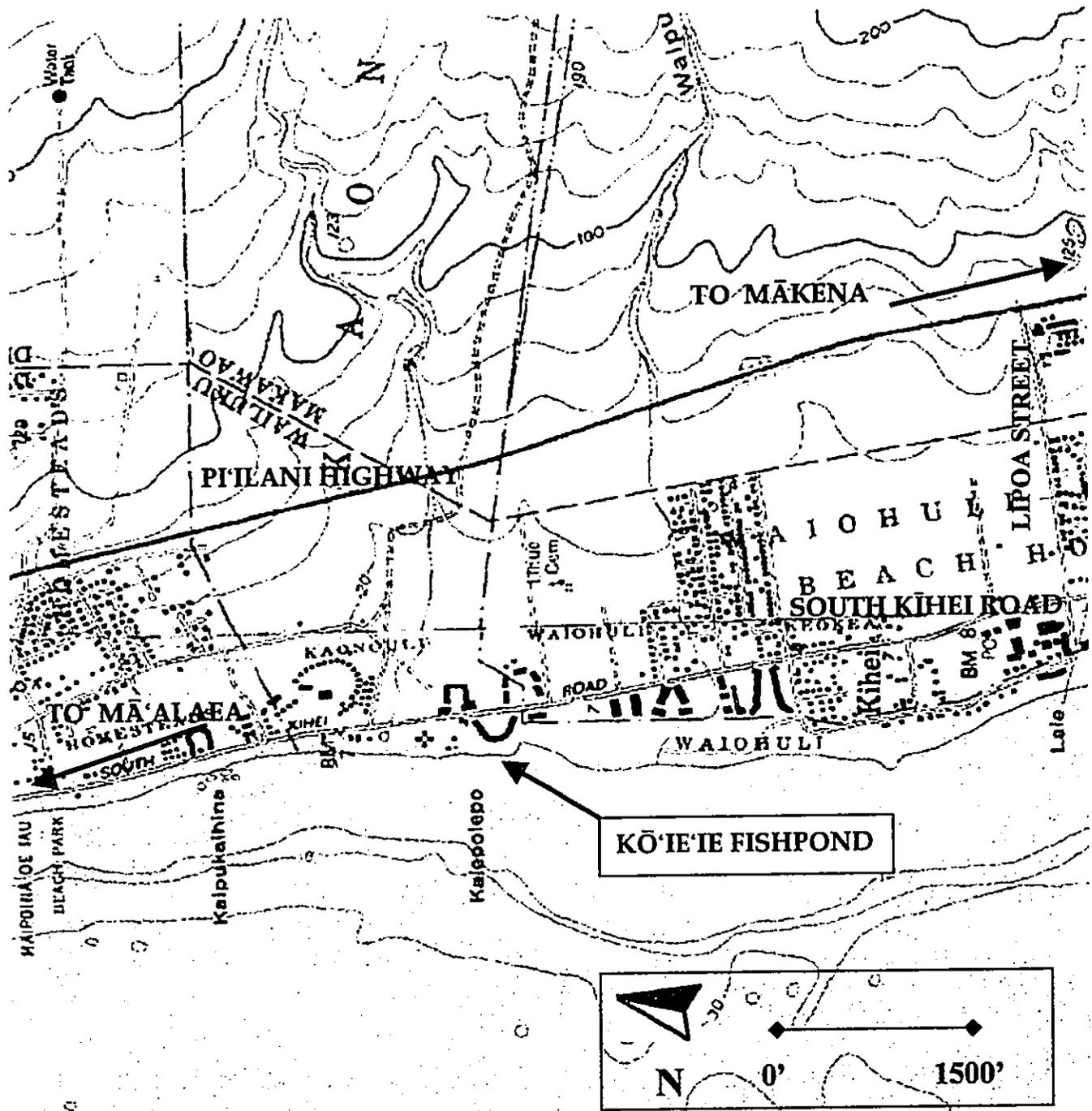


FIGURE 6A
REGIONAL LOCATION

KŌ'IE'IE FISHPOND
KA'ONO'ULU KIHEI, MAUI

FINAL ENVIRONMENTAL ASSESSMENT
2004
FARBER & ASSOCIATES

2.4 EXISTING USE

The subject property is presently a deteriorated fishpond; walls are damaged by the forces of nature and altered by man. The fishpond basin waters and adjacent beach areas are well used by the general public. Activities at the site include swimming, wading, snorkeling, diving, spear fishing, net throwing, subsistence fishing, *limu* (seaweed) gathering, small boat (kayaks, canoes) launching.

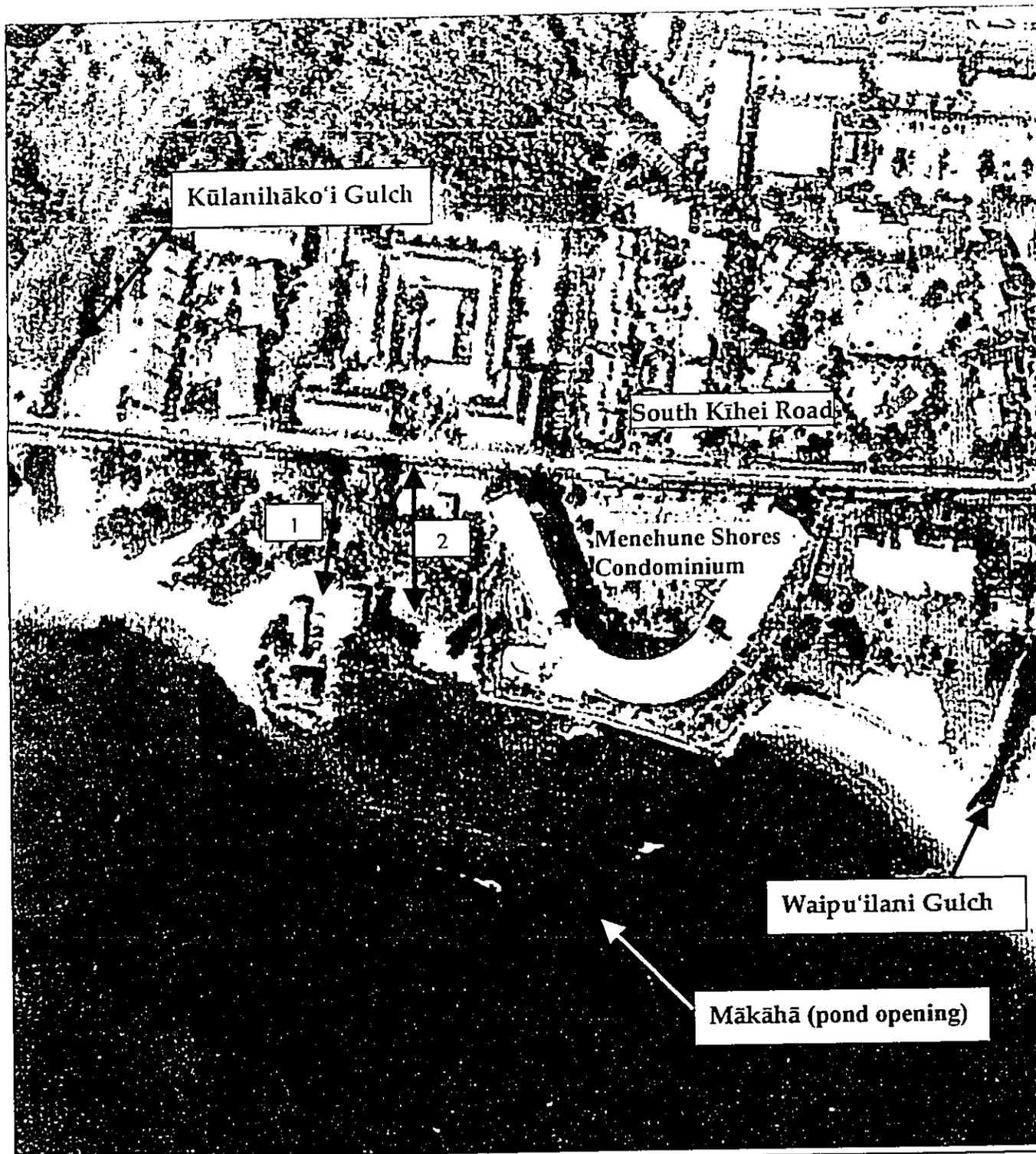
2.5 LAND USE ZONING

State Land Use Classification:	Conservation, sub zone: Resource
Kihei-Mākena Community Plan:	Park
County Zoning:	N/A. Conservation Lands fall under State jurisdiction. Adjacent shoreline properties are zoned "Park," "Hotel" and "Multi-Family."
Special Designations:	Shoreline Management Area (SMA). This fishpond is located outside State shoreline boundaries thus SMA rules do not apply.

2.6 ACCESS

1. Primary access to the fishpond is via Kalepolepo County Beach Park that lies immediately adjacent to the fishpond and fronts South Kihei Road.
2. Secondary access is from the Hawaiian Islands Humpback Whale National Marine Sanctuary via South Kihei Road.
3. Beach access from both north and south of the project site.

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1

Hawaiian Islands Humpback Whale National Marine Sanctuary and public access point.

2

Kalepolepo County Beach Park and public access point.

FIGURE 6b

KŌ'IE'IE a.k.a. KALEPOLEPO FISHPOND

Ka'ono'ulu, Kīhei, Maui

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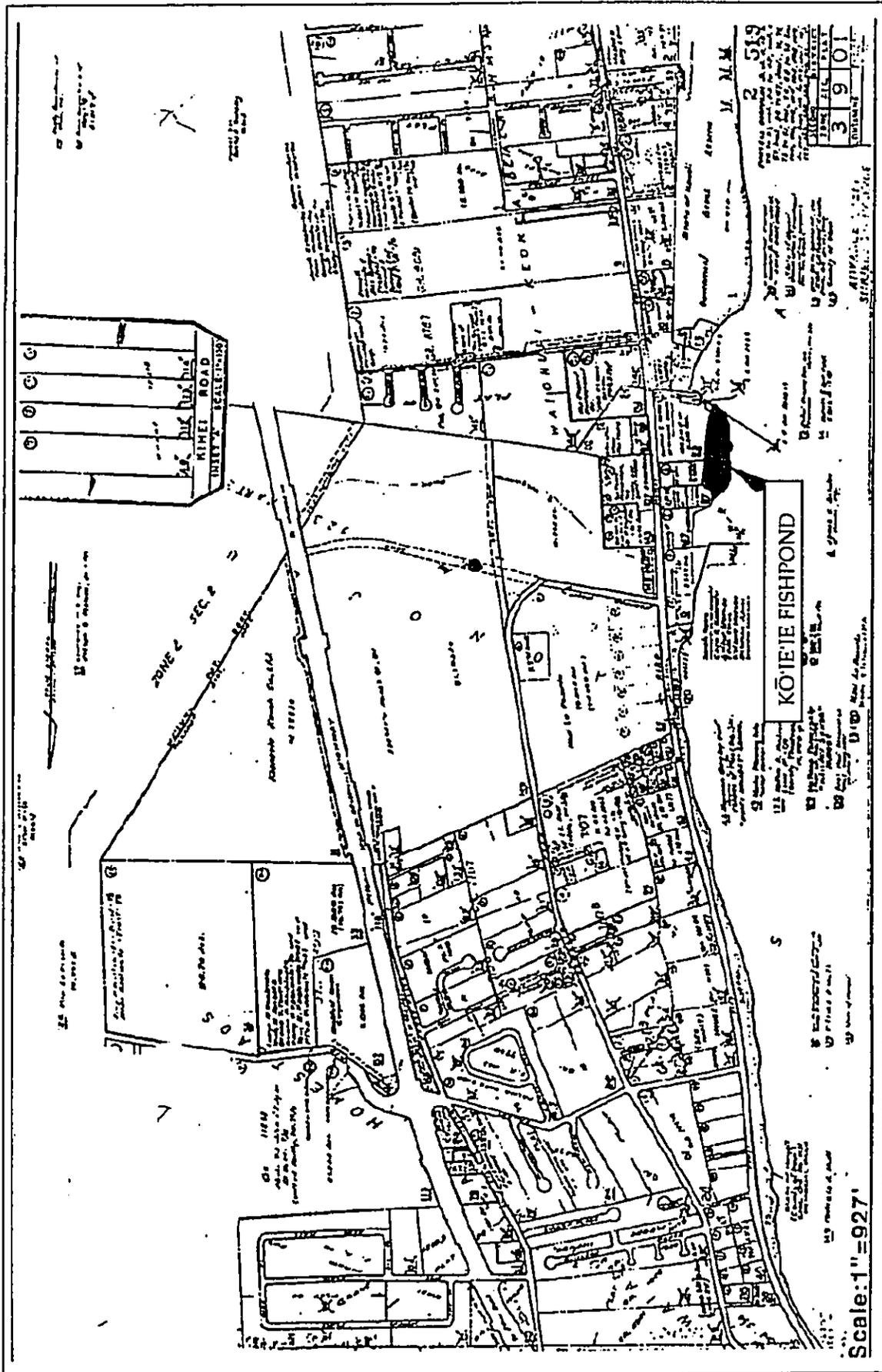
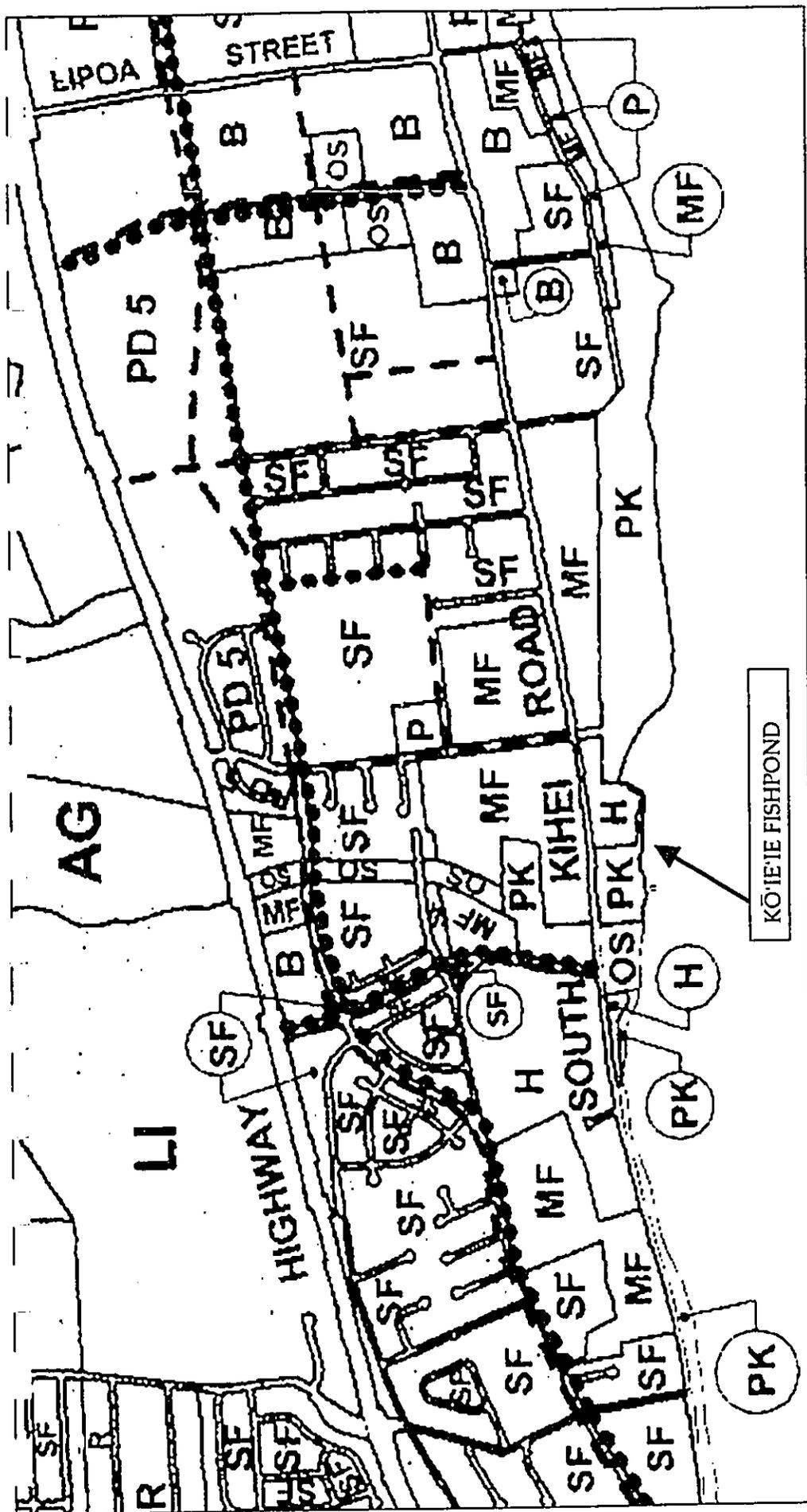


FIGURE 7
TAX MAP KEY PLAT 3-9-001
KŌ'IE'IE FISHPOND, Ka'ono'ulu, Kīhei, Maui

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SF	Single Family	AG	Agriculture
MF	Multi-family	AGAct15	Rural
H	Hotel	R	Rural
B	Commercial	PD	Project District
BMF	Business Multi-family	OS	Open Space
BI	Business/Industrial	C	Conservation
SBR	Service Business/Residential	P	Public/Coast-park
LJ	Light Industrial	PK	Park
HI	Heavy Industrial	PK	Park/Self Course
A	Airport	PK	Kalia Pond NW
AG	Agriculture	PK	Roadway Plan



FIGURE 10
KĪHEI LAND USE MAP - COUNTY OF MAUI
KŌ'IE'IE FISHPOND
 (Maui County Planning Dept. 1998)
 FINAL ENVIRONMENTAL ASSESSMENT, FARBER & ASSOCIATES 2004

PROPOSED PROJECT AND ALTERNATIVES CONSIDERED

3.1 PROPOSED PROJECT

'Ao'ao O Na Loko I'a O Maui is proposing to revitalize Kō'ie'ie Fishpond.

Revitalization involves:

- The restoration, repair and reconstruction of the fishpond wall and two *mākāhā* (sluice gates),
- Periodic post-construction maintenance of the wall and basin,
- Management of the fishpond for cultural, historic preservation and interpretive purposes and for those non-commercial activities that currently take place at the site, i.e., swimming, wading, snorkeling, subsistence fishing, *limu* gathering, netting, small boat launching, beach going, walking, jogging, etc.

The proposed project will produce a continuous fishpond wall approximately 1,170 feet (357 m) in total length; an average wall height ranging between 5 to 6 feet (1.5 to 1.8 m); a base width between 14 and 16 feet (4.3 to 4.9 m) tapering to a wall width of between 4 to 6 feet (1.2 to 1.8 m) at the crown. The restoration will follow the original wall alignment where possible. The slope of the outside wall will approximately 35 degrees, the inside wall slope approximately 20 degrees. The stones to rebuild the wall are available onsite (on the existing fishpond wall footprint, immediately adjacent to the pond wall and within the fishpond basin. Two *mākāhā* will be created. Their openings will be about 5 feet wide. Locations of the *mākāhā* will be: 1) at the existing pond opening, and; 2) at the north-west corner of the pond wall in a location to optimize the prevailing water-related energy patters to maximize water circulation and exchange (see App A:

Circulation Studies of Hawaiian Fishponds).

Terms Defined. Restore and rebuild refer to the physical aspects of the site. Revitalization refers to activities within the functional operations of the fishpond. The following are definitions that were adapted from Carol Wyban and her plan for the restoration of Kahana Fishpond, O'ahu (Wyban 1995):

Restore: refers to rebuilding of a site to replicate a physical state duplicating a previous period in history.

Rebuild: refers to building and reinforcement of the physical integrity of the site. Features of the design may differ from those of previous history due to environmental changes within the fishpond and adjoining areas.

Revitalize: refers to bringing the site back to productivity in terms of aquaculture production and establishing activities that were in existence in a previous era.

Restore, rebuild, revitalize will involve the following actions:

- 1) The physical retrieval, movement and alignment of wall foundation rocks from within the pond basin and adjacent original wall footprint using manually operated equipment, i.e. 'ō'ō [spade], cargo nets, floating flatbed pontoon;

To restore wall foundations, it is necessary to remove the surface rock and sand to look for vestiges of foundation stones. In areas where the foundation exists, the alignment and wall design will be followed and replicated.

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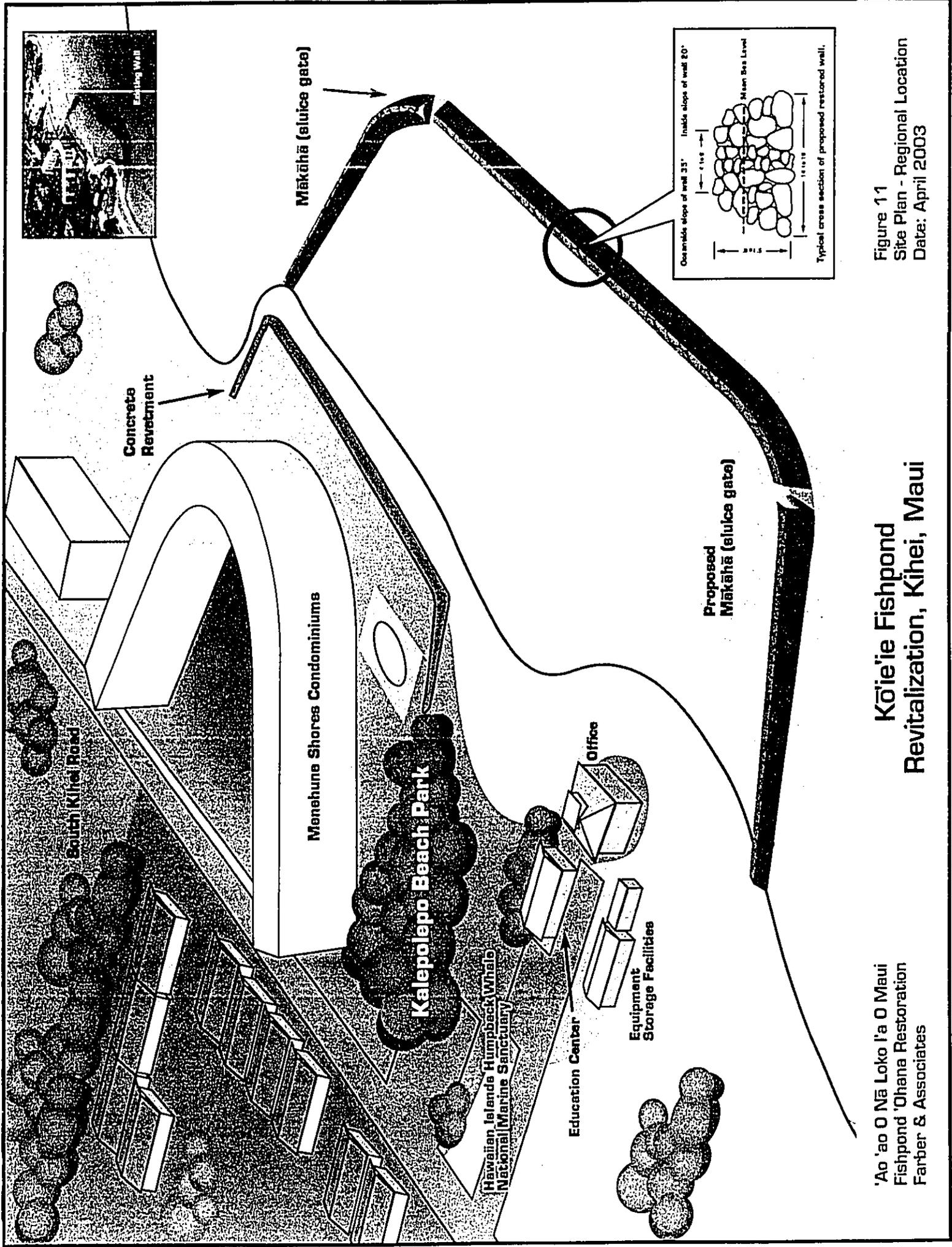


Figure 11
Site Plan - Regional Location
Date: April 2003

Kōie'ie Fishpond Revitalization, Kīhei, Maui

'Ao 'ao O Nā Loko I'a O Maui
Fishpond 'Ohana Restoration
Farber & Associates

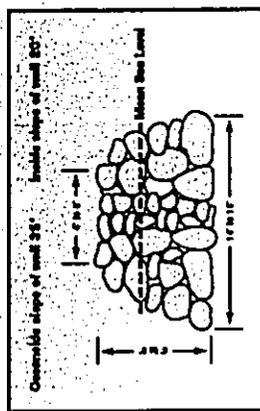
In the process of wall restoration, if a foundation is not found the wall foundation will be rebuilt in similar design and boulder size consistent with archaeological findings.

- 2) The manual movement of *'ili'ili* (smaller rocks, pebbles, loose coral) within the fishpond basin;
- 3) Restoration and reconstruction of the pond wall using existing onsite rock and *'ili'ili* using manual labor;
- 4) Fabrication and placement of historically-accurate facsimiles of movable *mākāhā* (sluice gates). The precise location(s) of the original *mākāhā*, are not known. They will be sited based upon the archaeological survey findings and ocean engineering studies to optimize pond water circulation and exchange. Size of the *mākāhā* openings will be approximately 5 feet in width, which is consistent with the existing pond opening and allow for easy access to ocean waters and optimum water exchange.
- 5) Periodic post-construction maintenance activities include the manual replacement of wall stones dislodged as a result of heavy surf action, and the manual removal and disposal of seasonal *limu* from the fishpond basin.
- 6) Revitalization. Because of changes in the physical environment within and surrounding the site and the prevalent and existing uses at the site, not all aspects of revived activities are possible to duplicate. The fishpond waters will not be used for aquaculture as was its original purpose because it would require exclusive and restricted use of the fishpond waters. The main

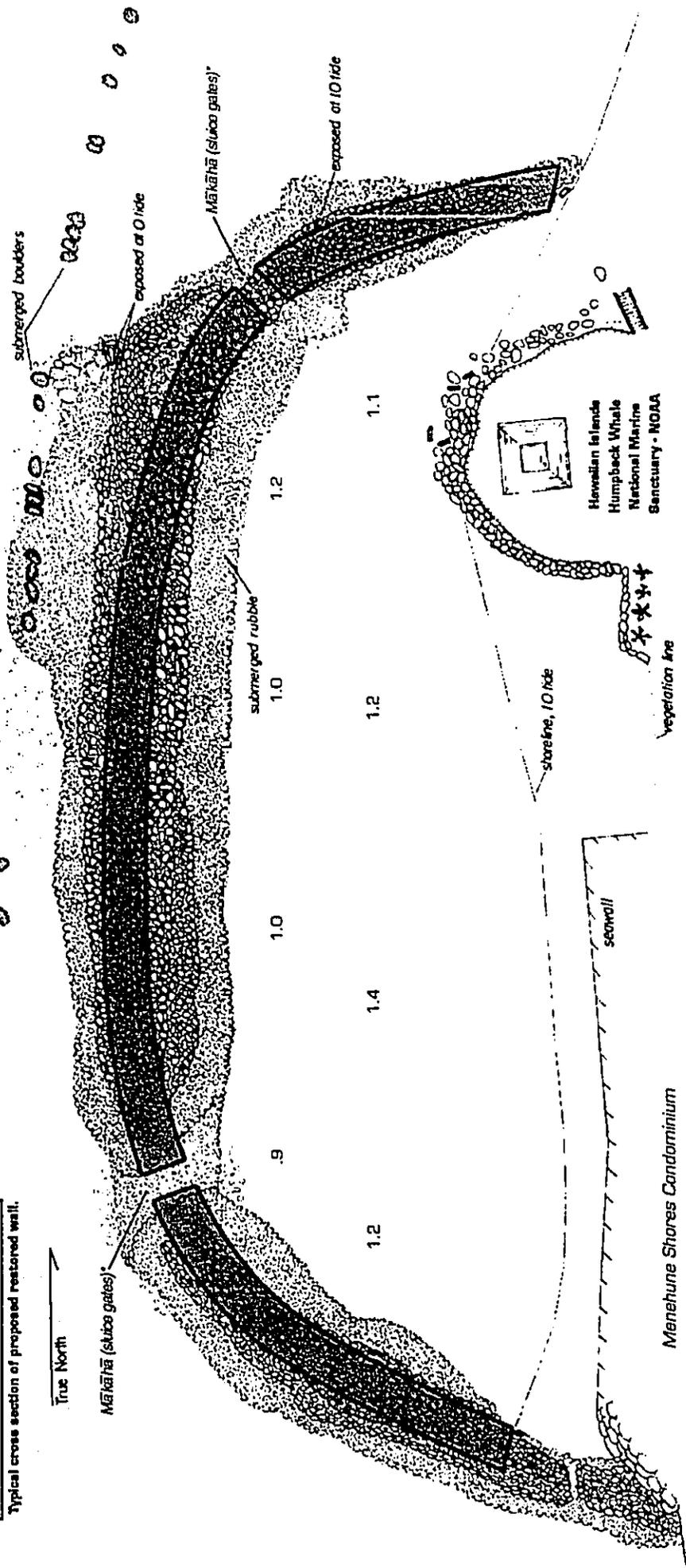
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*Original pond openings (makaha) uncertain. Openings to be approximately 5 ft. wide, however details and exact locations to be determined based on archeological survey, ocean engineering studies and pond restorers.

The wall remnants consist of boulders from 1 to over 3 feet in diameter. The existing length of the wall is approximately 1,172 feet, width range from 141 to 39 feet. The fishpond basin is about 3 acres in size. Currently the wall is submerged at high tide. Original wall height is 1' to 2' feet above high tide or about 5 to 8 feet above the existing reef flat.



Typical cross section of proposed restored wall.



0 30meters
Pond depth in meters (SHPD 1996)

Kalepoko Park

Manehune Shores Condominium

Source: Plan view, archeological survey map by Theresa K. Dohnam. August 2002

Hawaiian Islands
Humpback Whale
National Marine
Sanctuary - NOAA

Figure 12
Site and Revitalization Plan
Date: April 2003

Kōie'ie Fishpond Revitalization, Kihei, Maui

'Ao 'ao O Nā Loko I'a O Maui
Fishpond 'Ohana Restoration
Farber & Associates

activities associated with the physical revitalization at Kō'ie'ie will consist of maintaining the pond wall and assuring the current uses and the site continue unimpeded. Traditional activities at the site that currently take place include subsistence fishing, netting, *limu* gathering. Activities that were not part of the traditional use of fishponds will include walking tours and interpretive demonstrations of traditional fishpond practices, education and outreach for the community to understand and appreciate the cultural and historical context in which this fishpond operated and flourished. Water-related recreational activities include beach going, swimming, wading, snorkeling, and diving.

- 7) Interpretive Programs. The site is particularly valuable because it is one of the few fishponds in the entire state that is so easily accessible to the general public. Educational and interpretive programs involve: participation of the Kihei community and the residents and visitors of Maui in the revitalization efforts, collection of historical, cultural and community information about the site, developing interpretive material (signage and brochures) for self-guided tours, hosting school children and community organizations, conducting community work days and watershed (*ahupua'a*) land and water resource management awareness education programs, web site publications, holding lectures and participating in fairs and other community events.

Kō'ie'ie Fishpond is listed in the Hawai'i Register of Historic Places (June 1996) and in the National Register of Historic Places (December 1996). The applicant is committed to restoring the fishpond in a condition replicating a period when Kō'ie'ie *loko i'a* was a working and productive fishpond. However, recreating the past is not entirely possible because of changes in the

physical environment, existing society and the fact that this fishpond had many alterations to it through time. History is not static. The question is how to interpret the past most honorably taking modern considerations into account.

This ancient fishpond is a cultural treasure; the aim is to retain, enhance *malama* (care for) the cultural significance of the place, and to include provisions for its security, its maintenance, and its future. Our approach is based, first and foremost, on respect for the existing fabric, that is, to acknowledge the site as a cumulative physical record of human activity embodying cultural beliefs, values, materials, and techniques.

The proposal has taken these historical and cultural issues into consideration. To assure authenticity, the applicant has had an underwater archaeological survey conducted on the pond (see Appendix B: Archaeological Survey), and undergone paleoenvironmental coring to the fishpond basin to determine the age of the pond. *Kūpuna* (elders) in the area have been consulted, oral histories recorded (see Appendix C: Cultural Impact Assessment) and historic photos of the area and fishpond have been used. Based on this research and evidence uncovered, it appears that the fishpond has had numerous wall configurations, it was much larger at one point as much of the *ma uka* (inland) pond basin has accreted, turned to land, and subsequently developed (Menehune Shores Condominium, Hawaiian Islands Humpback Whale National Marine Sanctuary). However, the existing integrity of the fishpond is significant: the footprint of the wall is intact and the amount of rocks, abundant. This information serves to inform the restoration effort in how to reconfigure the pond, its alignment, and wall dimensions.

Contemporary issues considered in formulating this proposal include the following:

- 1) Water circulation. It is imperative that the circulation within the restored fishpond is maintained to assure high water quality and exchange and sand, sediment and *limu* transport. Historically, the number, size and placement of *mākāhā* varied from pond to pond. Our research has not conclusively indicated the number or location of this pond's *mākāhā*. We propose to include two *mākāhā* to assure good water circulation and sediment transport within the fishpond basin and to also allow for easy access to and from the ocean for human activities. Their locations will be set based on computer modeling of currents and tides in the area to assure optimal circulation (see Appendix A: Circulation Studies of Hawaiian Fishponds). In addition, the proposed plan calls for reconfiguring the wall so it will not extend onto the beach, terminating instead at minus two feet (-2.0 ft.) below medium (0 ft.) tide. This will further aid in longshore water, sediment and *limu* transport.

- 2) Access. The fishpond is state-owned and fronts a county beach park. The South Kīhei area is a popular destination for ocean related activities such as beach going, swimming, snorkeling, diving, fishing, *limu* gathering, leisure walking and jogging. As such, the pond wall will not extend onto the beach, terminating instead at minus two feet (-2.0 ft.) below medium (0 ft.) tide. This will assure beach accessibility will continue unimpeded. In addition, the two proposed *mākāhā* will increase access to and from the beach and the open ocean for swimmers, divers, kayaks, canoes, etc.

- 3) Purpose. Traditionally, the ancient fishponds were used for aquaculture purposes. Their access was restricted and their products reserved for chiefly consumption. Even today, reuse of ancient ponds for aquaculture requires exclusive use to assure their success. Kō'ie'ie Fishpond is a relatively small

pond, just under 3 acres. Given the heavy use of the pond and its immediate areas for ocean recreational activities, reuse for aquaculture would not be the highest and best use for the fishpond.

3.1.1 WORK SCHEDULE

Restoration work is anticipated to begin once all of the required Federal, State and County permits have been issued. The work is anticipated to take approximately 18 months to complete. Labor will come from a core group of paid experts, craftsmen and volunteers. There will be short-term construction related impacts to the surrounding environment. These impacts and the standard mitigation measures to control these impacts are described in Section 4 of this report.

3.1.2 COMMUNITY SUPPORT

Support for the project has come from many diverse groups and organizations including Governor Linda Lingle, Hawaiian Islands Humpback Whale National Marine Sanctuary, Jean-Michel Cousteau and the Kihei Community Association (see Appendix D: Agency and Pre-consultation Letters). In addition support for the project was also voiced by the Maui community-at-large through a random telephone survey conducted in 2002. 350 Maui residents were surveyed. When asked if fishponds on Maui should be preserved for Hawaiian culture and educational purposes, 55% strongly agreed, 27% agreed, 12% were neutral and 1% disagreed. Details of the survey can be found in Appendix E.

3.2 ALTERNATIVES CONSIDERED TO PROPOSED ACTION

The restoration and reuse of Kō'ie'ie Fishpond as proposed in this Draft Environmental Assessment is the most appropriate action for this site.

Alternatives considered during the planning of this project include:

1. Alternative site – finding another fishpond on Maui to restore and reuse for interpretive purposes;
2. Alternative reconfiguration – restore the fishpond wall at Kō'ie'ie following the existing footprint and *mākāhā* "as is;"
3. Alternative Use - Restore the fishpond for aquaculture use;
4. Alternative Purpose – Restore the fishpond for commercial purposes;
5. No Action Alternative – no alteration or modification to Kō'ie'ie Fishpond.

3.2.1 Alternative site

There are no suitable alternative sites that will accomplish the goals and objectives of the proposed project or result in fewer disturbances to the natural environment. The selection of Kō'ie'ie fishpond for revitalization was based upon its relatively good condition, high community interest, historic integrity (see: National Register Criteria, page 59), the absences of major natural resource constraints (wetlands, heavy siltation/vegetation inundation) and it's easy accessibility- unlike most fishponds, there are no public access issues.

2.2.2 Alternative reconfiguration

Wall. Restore the fishpond wall at Kō'ie'ie following the exist footprint and *mākāhā* "as is." This alternative would rebuild the wall approximately 5 to 6 feet onto the existing beach at both the south and north terminus of the wall. Such an encroachment, particularly on the southern end would create a barrier to pedestrians using this beach. In addition, the wall would limit water exchange and circulation within the fishpond basin. During periods of heavy *limu* inundation, this could prevent *limu* from leaving the fishpond basin as it now does via trade wind driven currents.

Mākāhā. As is, there is one opening in the pond wall. Archaeological reconnaissance work was inconclusive in determining if this opening was at one time a functioning *mākāhā*. Given that we do know this pond was rebuilt and reconfigured a number of times throughout its history and that it was much larger than it is today, there is a high probability that the pond contained more than a single *mākāhā*. The proposal calls for the creation of two *mākāhā* to assure good water circulation within the fishpond basin and to also allow for easy access to and from the ocean.

2.2.3 Alternative Use

Restore the fishpond for aquaculture use. Such an alternative would require exclusive use of the fishpond waters that are State-owned submerged lands which front a county beach park. This would deny the public use of these waters that is a popular site for beach going activities, i.e. (swimming, wading, subsistence fishing, snorkeling, diving, small boat launching). In addition, because this is a relatively small fishpond (approximately 3 acres) it has a limited production capacity, thus it is unlikely that it could ever be a viable aquaculture operation.

2.2.4 Alternative Purpose

Restore the fishpond for commercial purposes. Reusing the site as a commercial venture through reuse as an aquaculture facility, tourist site or recreational venture. This fishpond is owned by the State of Hawai'i. The beach park fronting the fishpond is owned and maintained by Maui County. Commercial use of the site would limit access and recreational uses at the site. Such an alternative would be antithetical to this area and its existing land uses. The

fishpond is a public resource and as such this proposal seeks to maximize its potential benefits (education, historic and cultural preservation, recreation and community building) through a community-based, non-profit organizational structure.

2.2.5 No Action Alternative

No alteration or modification. Kō'ie'ie Fishpond is presently a deteriorated pond; the walls are damaged by the forces of nature, alterations by man and general neglect. This is atypical of the coastal fishponds found throughout the state that have not been maintained. Yet, relative to many of the coastal fishponds, Kō'ie'ie is intact and restorable. While the walls have deteriorated, the outline (footprint) of the pond is clearly visible and the rocks needed to rebuild are within the general vicinity of the original wall and within the fishpond basin. Restoring this pond now is a comparatively reasonable undertaking in terms of costs, time, organizational capacity, labor, materials and environmental impacts.

The No-Action alternative will result in the further deterioration of the fishpond wall and basin. With a No-Action alternative, the eventuality of time- the tides and currents, storm and human activity in this dynamic ocean environment would further deteriorate this pond, making the likelihood of it ever being restored less likely. It will contribute to the loss of the site's cultural and archaeological value. Furthermore, with No-Action, the integrity of the wall and basin will be lost to future generations and makes any future revitalization efforts increasingly unlikely due to the increased costs to restore because of the additional deterioration. Thus ultimately, no action is to knowingly destroy this culture treasure.

4. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATING MEASURES

4.1 PHYSICAL ENVIRONMENT

4.1.1 Land Use

Existing Conditions. Kō'ie'ie Fishpond is located within North Kihei, on the leeward shore of Maui. North Kihei is characterized by a patchwork of existing multi- and single-family residences, condominiums, commercial and resort development. Development in the area has occurred in a linear pattern between the shoreline and Pi'ilani Highway, a two-lane principal road that runs from Mokulele Highway to Wailea. South Kihei Road is a two-lane urban collector road that provides service along the shoreline in this area and accessibility to the fishpond via Kalepolepo Beach Park and the Hawaiian Islands Humpback Whale National Marine Sanctuary Headquarters and Education Center.

The site is an inshore limestone reef platform that has been historically modified as a coastal fishpond. The subject property is a *loko kuapā* (solid wall-open ocean) styled fishpond that encloses about three-acres (1.2 hectares [ha]) of water, depths of which range from 3.3 to 4.5 feet (1.0 to 1.4 meters), the bottom consists of sand and coral rubble (SHPD 1996). The pond is delineated on its *ma kai* (seaward) side by a deteriorating 1,173 (358 m) foot long wall. The wall width is not easily determined due to dislodged and disbursed wall stones on both sides of the footprint. Donham notes that the wall width at the base (including dislocated stones) ranges from 141 feet (43 meters) along the north end of the west wall to 26.2 feet (8.0 meters) at the north end (Donham 2002).

The wall remnants consists of basalt foundation boulders that range in size from 1 feet to over 3.3 feet (0.03 to 1.00 meters) in diameter, average about 0.50 meters (Ibid.). The pond wall at high tide is completely submerged; on one of the highest tides of the year-- 4:30PM April 26, 2002 @ +2.4 feet—the depth of water on the fishpond footprint ranged from 2.3 feet to 3.8 feet (1.4 m to 1.6 m). Elevation profiles of the fishpond wall can be found in Appendix B: Archeological Survey, page 39, Figure 13,).

On the landward side, the fishpond has approximately 738 feet (225 meters) of shoreline frontage (Ibid.). Directly in front of the pond is Kalepolepo County Beach Park, a small (1.1 acre) park that consists of a grass park/picnic area, beach shower, restroom facilities and beach. To the south of the beach park runs a concrete revetment of the Menehune Shores Condominium complex. The beach fronting Menehune Shores is visible at medium and low tide only. North of the beach park is the rock revetment of the Hawaiian Islands Humpback Whale National Marine Sanctuary Headquarters (Sanctuary). The Sanctuary is about one acre in size and contains three buildings: education center, offices, storage facilities and about 30 parking stalls. About 10,000 people visit the center annually. North of the Sanctuary, is undeveloped beach and coastal sand dunes, owned by Maui County. About 400 feet north of the fishpond is the channel of Kūlanihāko'i stream, which flows seasonally within a relatively broad shallow gulch. Wetlands were once present in the lower reaches of the gulch, and near the mouth of the stream in the low flat behind the coastal sand dunes.

Potential Impacts and Mitigation Measures. The proposed revitalization of Kō'ie'ie Fishpond will change the land use at the project site from a deteriorated fishpond that is a popular site for ocean related activities such as swimming, fishing, *limu* gathering, diving, wading, small boat launching to that of a

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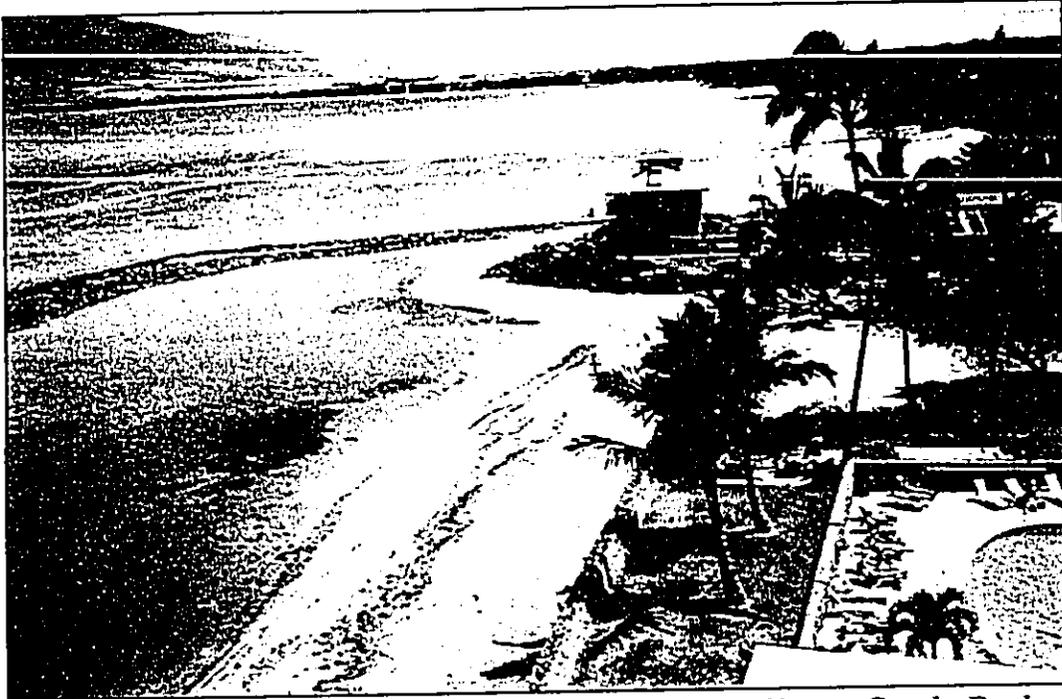


Figure 13. View South to Mā'alaea. Menehune Shores Condo Pool, Kalepolepo Beach Park, Sanctuary Headquarters.

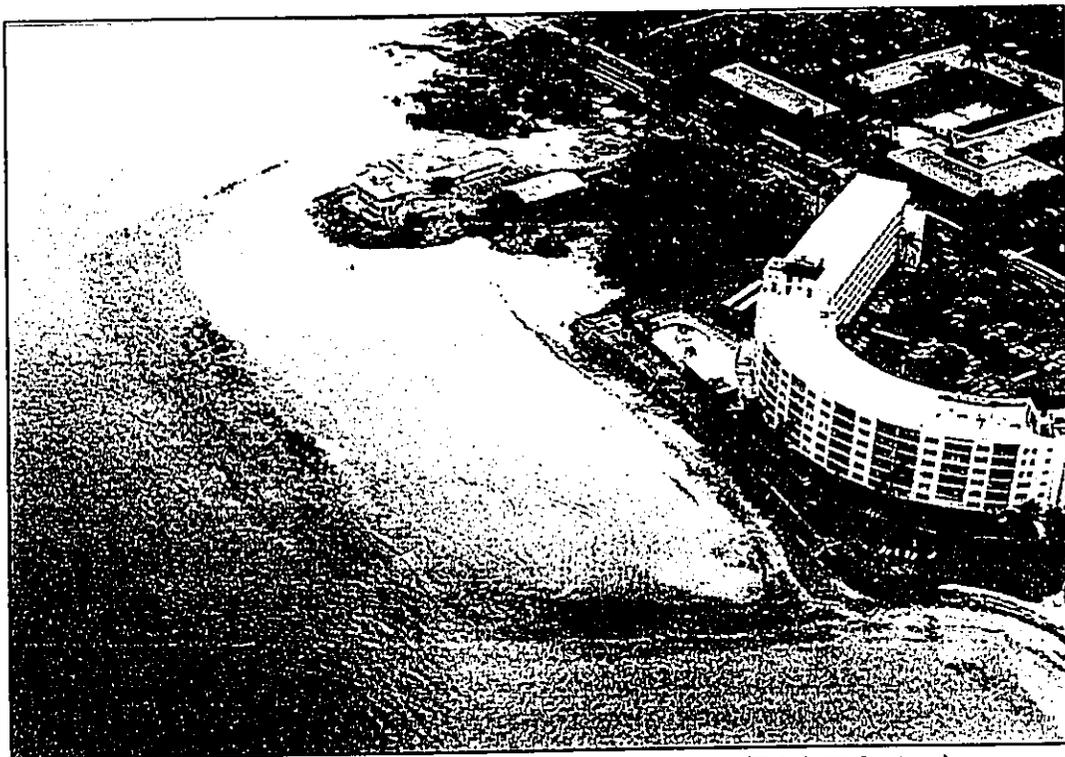


Figure 14. Fishpond and Surrounding Areas (Dick Kiligian).

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Figure 15. Kō'ie'ie Fishpond. Note width of rock wall "footprint."
(D. Kiligian)



Figure 16. View south from Fishpond Wall at Low tide.

restored fishpond wall which will be managed, maintained and be a site of learning and renewed cultural pride. The ongoing land uses and activities as mentioned above will not be affected. Adjacent land uses will not be affected by the proposed project.

4.1.2 Topography and Bathymetry

Existing Conditions. The topography of the site is that of a relatively gentle sloping coastal plain. The land areas *ma uka*, including the beach park, parking lot and entrance road are relatively low lying with minor slope. The soils in this area are classified as puhehu-ewa-jacus association (USDA SCA 1972). These soils are characterized as moderately fine textured to coarse textured subsoil, well drained underlain by water or wind laid coral sand which typically occurs on the coastal plain.

In the intertidal zone along most of the pond's shoreline is a strip of beach visible during low and medium tides. The far north end of the pond and the area fronting Kalepolepo Beach Park, the beach area is relatively deep as it is visible during medium-high tides. The shoreline areas fronting the Sanctuary and Menehune Shores Condominium have been hardened with rock wall and concrete wall revetments, respectively. The beach in these areas is visible only at low to medium low tides.

The bathymetry of the fishpond basin ranges from approximately 3 to 6 feet (0.9 to 1.8 meters) (Donham 2002). Outside the pond wall water depths average 7 to 9 feet (2.1 to 2.7 meters). The fishpond basin is a shallow coral reef bottom consisting of limestone, sand, coral rubble and some limestone outcrops (Ibid.). Sand channels occur on both sides of the fishpond wall, with a more pronounced channel on the south side. The coral reef in the vicinity of the fishpond extends 76 to 121 feet (250 to 400 meters) offshore; maximum ocean depth near the edge of the reef is 12 to 18 feet (39.6 to 59.5 meters).

Potential Impacts and Mitigation Measures. The topography of upland areas adjacent to the proposed project site will not be affected. Collection and repositioning of the fishpond's wall stones will result in approximately a 1 ft (0.3 m) increase in the fishpond basin depth in areas in the immediate vicinity of the pond wall footprint. Restoring the fishpond wall may reduce the flow of currents and sediment past this structure thus impacting the beach areas within and surrounding Kō'ie'ie Fishpond.

Beaches are in a constant state of flux. In 2002, John J.B Rooney published his doctoral thesis at University of Hawai'i at Mānoa in the Department of Geology and Geophysics about shoreline changes along the Kihei coastline over the past century. He notes that winds, waves, currents, storm activity and manmade structures all result in accretion, erosion, sand impoundment and beach loss along this coastline. In 1900 Rooney cites that Kō'ie'ie fishpond was completely full of sand, except around the *mākāhā*, by 1949 about half the sediment had washed out of the southern half of the fishpond, and by 1960 most of the remaining sediment had washed out leaving a strip of beach on the inside of the fishpond (Rooney 2002). Relative to 1997, the shoreline in 1900 was about 98 feet (30 m) further seaward on its north side and 197 feet (60 m) further landward on the southern side (Ibid.). Rooney attributes this significant accretion of the beach at the southern end and erosion at the northern end to three phenomenon: 1) Periodic intense Kona storm episodes, which induces south to north longshore sediment transport resulting in accretion of beach on the south side of the fishpond and erosion on the north. These are counter acted by, 2) the typical trade wind activity which results in the southern longshore sediment transport of sand resulting in accretion of beach on the north side of the fishpond and erosion on the south side, and finally 3) manmade structures which interfere with longshore transport of and contribute to localized erosion, accretion and beach loss. The

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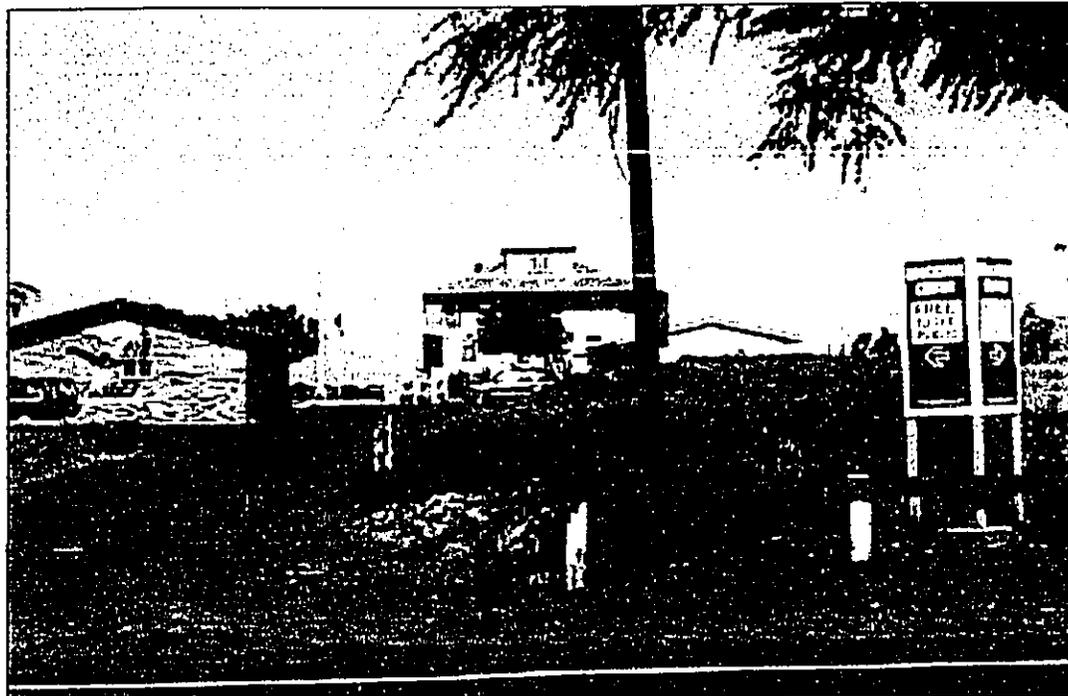


Figure 17. Public Beach Access & Entrance to the Hawaiian Islands Humpback Whale National Marine Sanctuary from South Kihei Road.

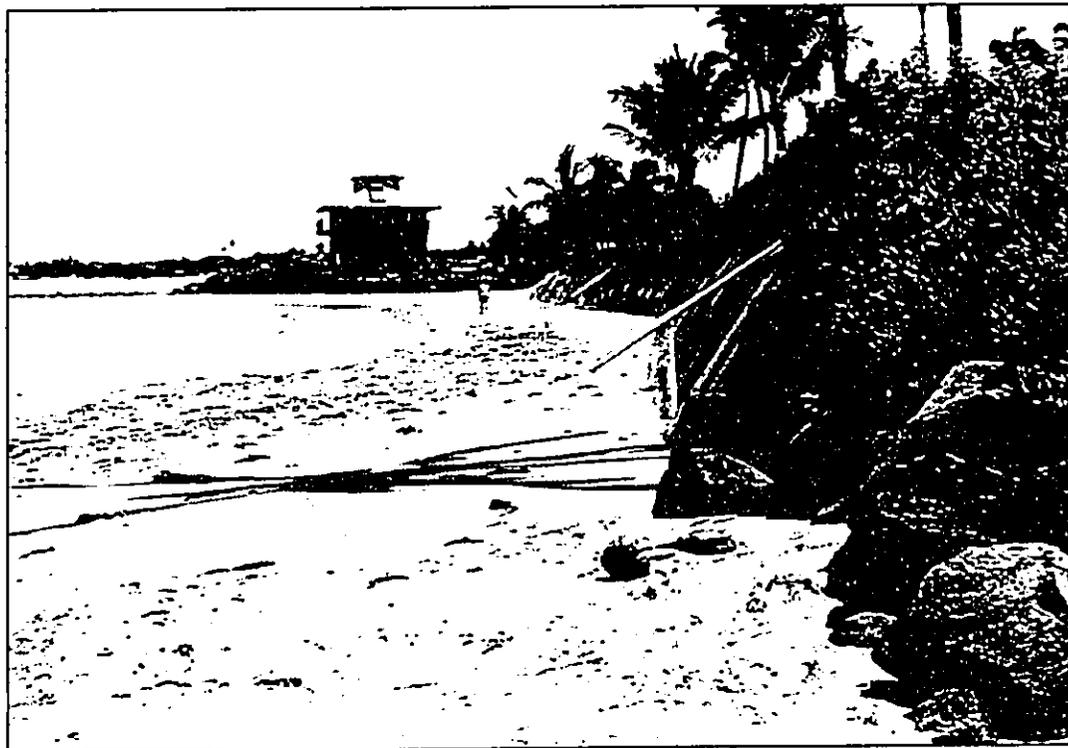


Figure 18 View North of Beach fronting Menehune Shores Condo. Low Tide. Note Sanctuary Headquarters in Background.

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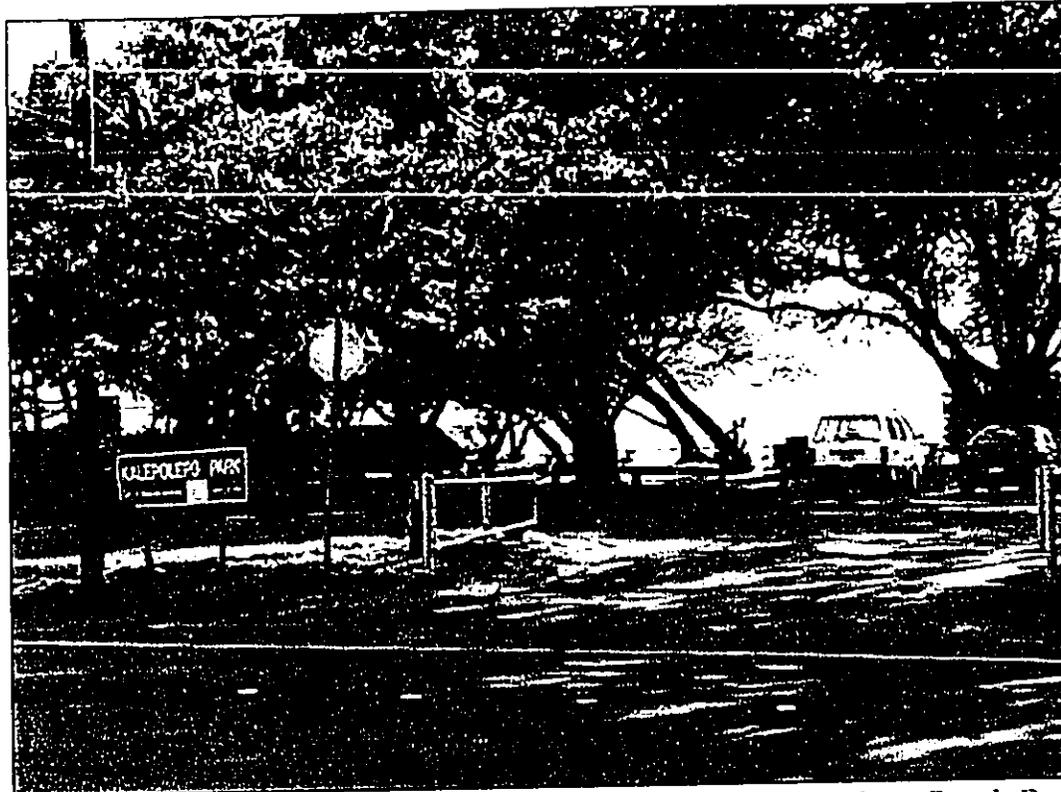


Figure 19. Public Beach Access and Entrance to Kalepolepo Beach Park from South Kihei Road.

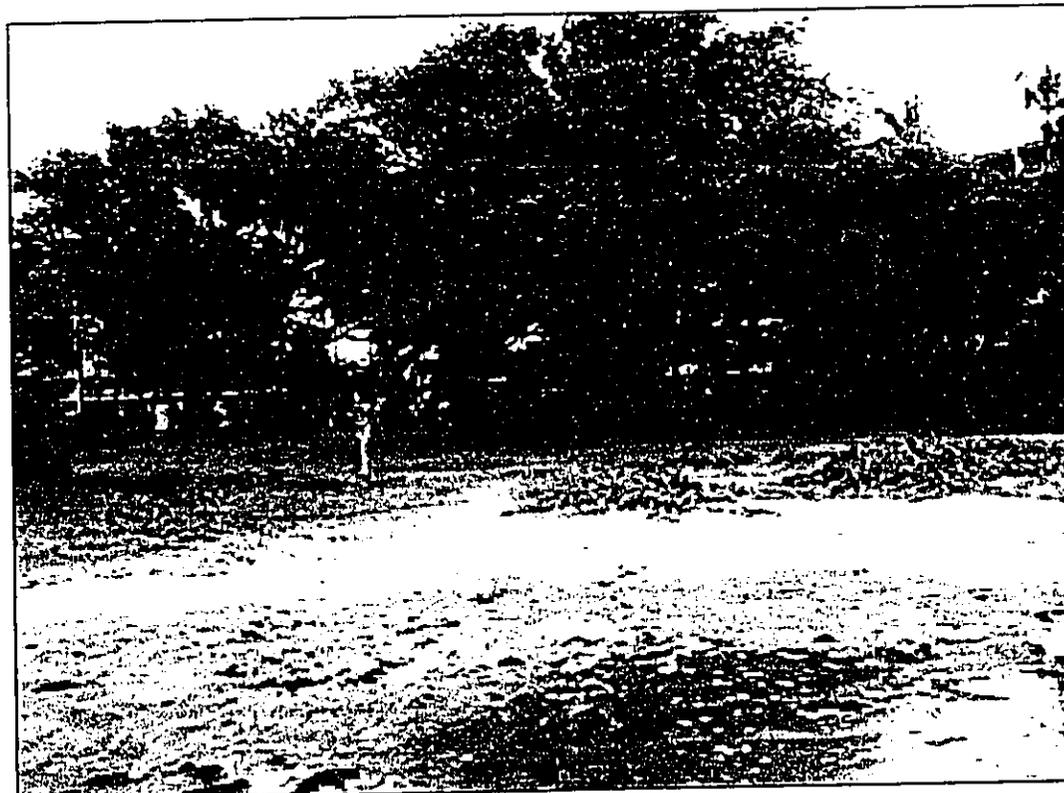


Figure 20. Kalepolepo Beach Park looking *ma uka*.

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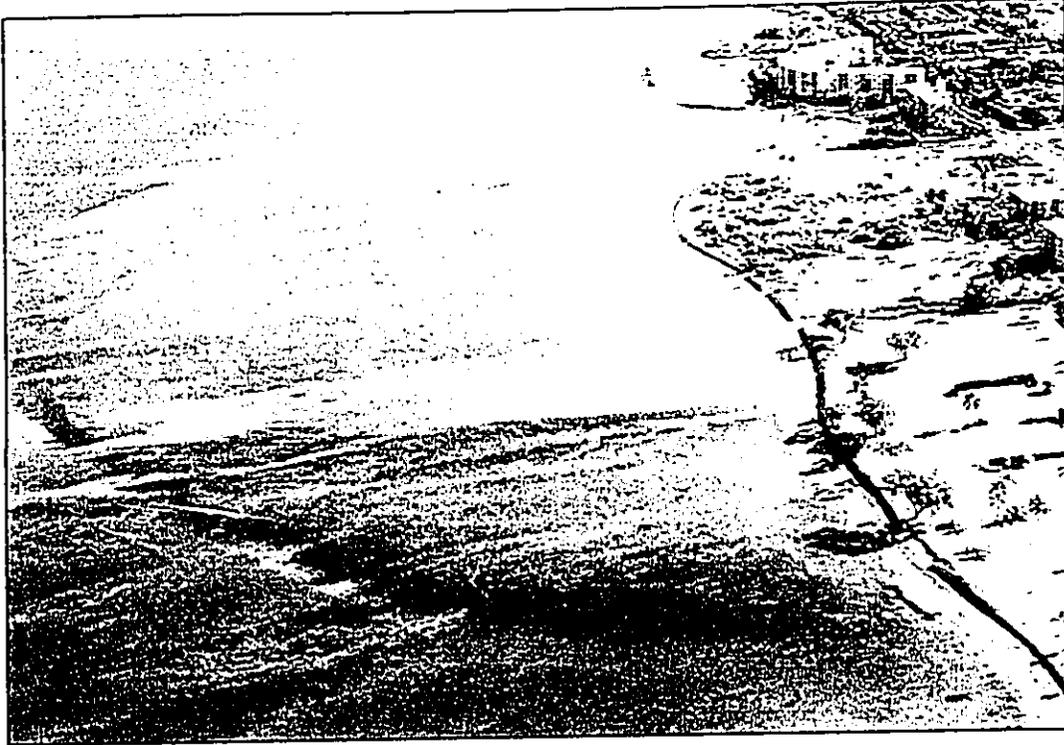


Figure 21. Regional View Looking North.
Note footprint of Waiohuli Fishpond in Foreground
(D. Kiligian).



Figure 22. Kō'ie'ie Fishpond and surrounding areas (D. Kiligian).

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Figure 23. View South of Beach from Kalepolepo Beach Park. Low Tide.

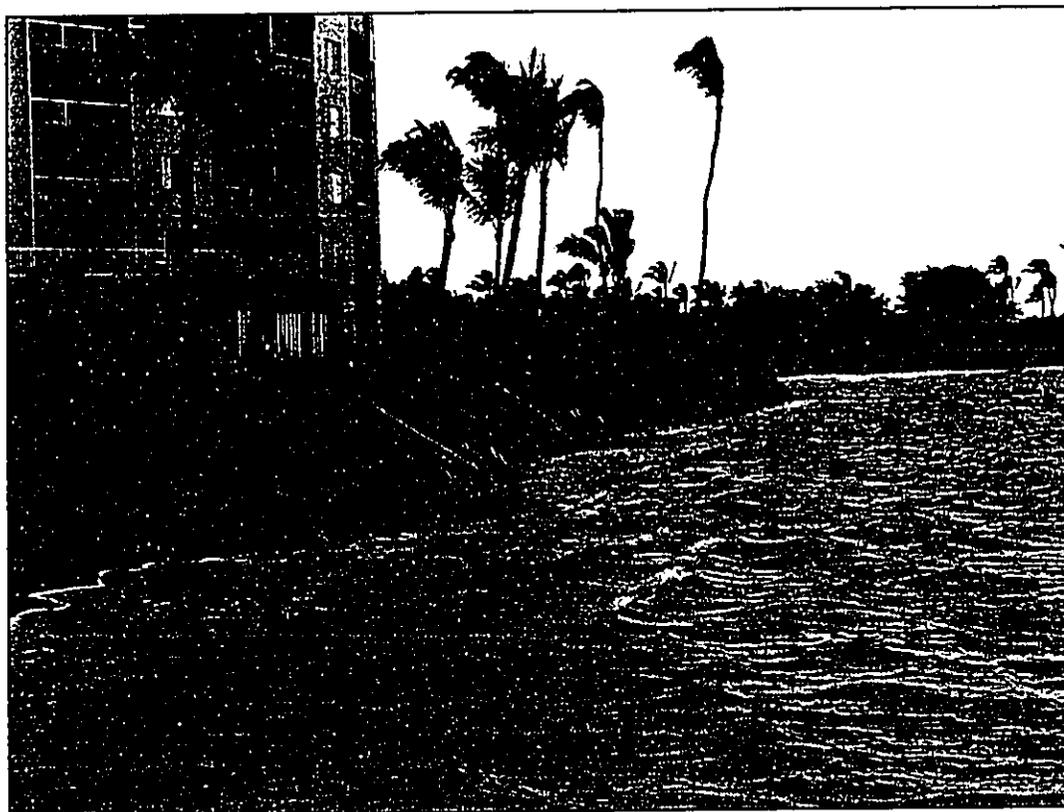


Figure 24. View South of Beach from Kalepolepo Beach Park. High Tide.

remaining fishpond wall continues to act as a barrier to waves and currents thus reduced rates of sand and sediment transport. The shoreline along the fishpond is heavily armored, the reveted properties were built much too close to the ocean, which contribute to slow erosion on the beach fronting the fishpond.

Over the past century, Kona storm activities have tended to dominate in their effect, resulting in predominant northward longshore sediment transport in the Kihei area; the net result is the accretion of beach on the south side of the fishpond and erosion on the north (ibid.). Thus even though the predominate weather pattern is that of trade wind conditions and southward longshore sediment transport, it appears that the infrequent, yet intense Kona storms have tended to have a larger impact upon this coastline (Ibid.).

Building up the fishpond wall may reduce the flow of wave, currents and thus lower the rates of water, sand and sediment transport. But given the many variables that contribute to sediment transport, beach accretion and erosion (winds, waves, currents, storm activity and manmade structures) such an action may be only one contributing factor to changes along this stretch of coastline over time.

To mitigate against the potential impacts revitalizing Kō'ie'ie Fishpond may have on the existing patterns of sand transport, the proposal calls for the following:

- Rebuild the wall to include two *mākāhā* to assure good water circulation and sediment transport into and out of the fishpond basin. Their locations will be based on archaeological survey work and computer modeling of currents and tides in the area to assure optimal circulation and water exchange (see Appendix: A: Circulation Studies of Hawaiian Fishponds).
- The restored pond wall will not extend onto the beach, terminating instead at minus two feet (-2.0 ft.) below medium (0 ft.) tide. This will allow continued

longshore water circulation and sediment transport at and along the beach.

- The adjacent sandy beaches and fishpond basin will be monitored before, during and after restoration. Monitoring will include taking beach profiles of the site before and after restoration and photo documentation of the beaches within and adjacent to the fishpond before, during and after restoration. Based on the beach monitoring program, should it be determined that the revitalized fishpond wall is causing a negative impact upon adjacent sandy beaches, or contributing to the accretion of sand within the fishpond, corrective actions will be taken.

A fishpond wall is constructed by a mortarless, dry-stack wall building technique. As such, it can and will be adjusted and reconfigured if impacts to the beach, sand transport and/or water quality and water circulation within the fishpond basin warrant such actions.

4.1.3 Hydrology

Existing Conditions. The nearest fresh water sources entering the ocean from this site are Kūlanihāko'i Gulch about 350 feet (106 meters) north and Waipu'ilani Gulch about 400 feet (121 meters) south. These gulches are intermittent and flow only after heavy rains. The subject area is susceptible to flooding caused by tsunamis and high surf, particularly by the occasional large Kona storms that bring winds and waves from the southwest. As the inland (*mauka*) areas are relatively low lying, they are susceptible to significant pooling and flooding during heavy storms. These areas tend to drain off and evaporate quickly.

Potential Impacts and Mitigation Measures. The proposed action will have no impact on hydrology, or upland coastal drainage patterns, nor will it contribute to or exacerbate coastal flooding.

4.1.4 Natural Hazards.

Existing Conditions. The proposed project site is located within the Federal

Emergency Management Agency (FEMA) hazard zone and within the Civil Defense Tsunami Inundation Zone. The project site is subject to storm waves and tsunami inundation. However, FEMA boundaries are of little relevance to the proposed action, because no temporary or permanent habitable facilities or structures are proposed.

Potential Impacts and Mitigation Measures. The proposed action will not exacerbate coastal flooding or tsunami inundation pattern.

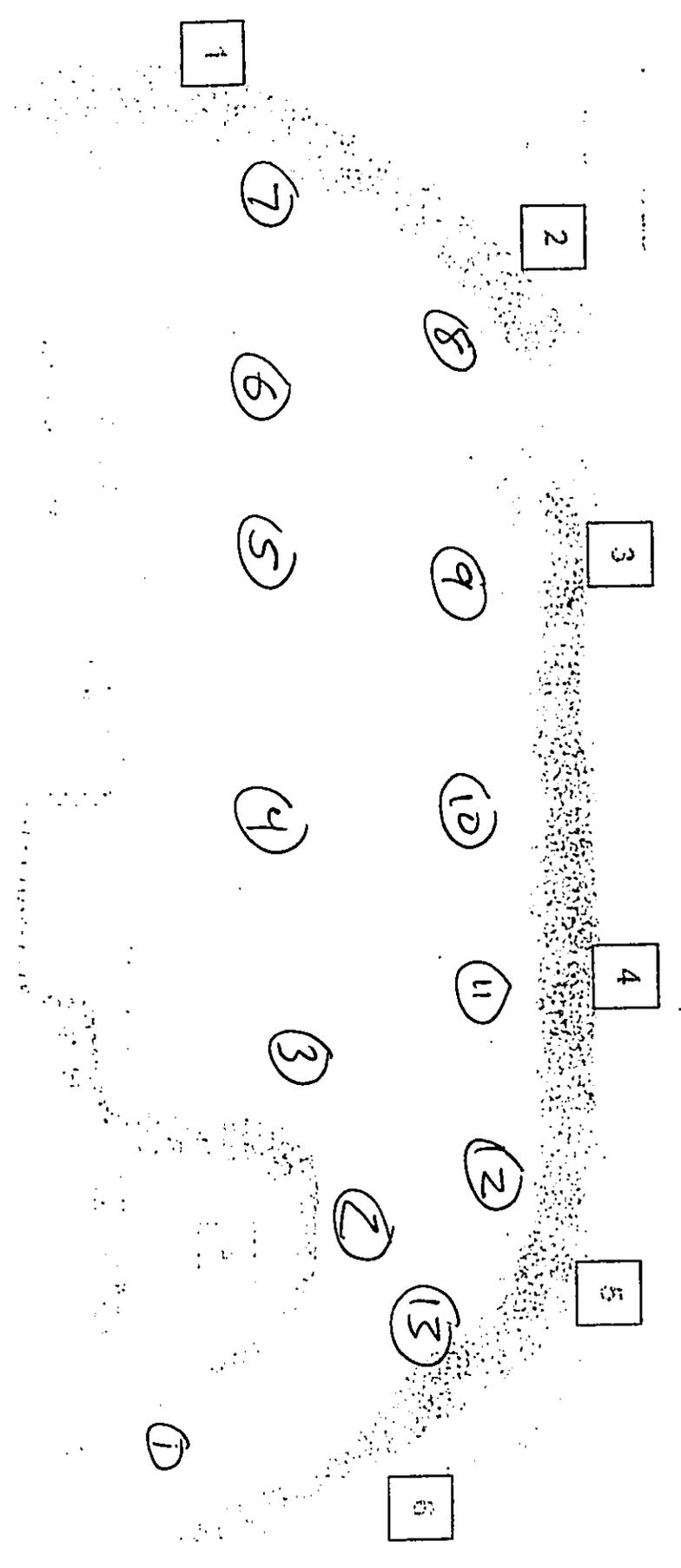
4.1.5 Water quality

Existing Conditions. Water quality with Kō'ie'ie Fishpond is generally high with near shore oceanic conditions prevailing. Water quality sampling conducted on October 25, 2000 and April 26, 2002 showed water temperature ranging from 79 to 83° F (25.9 to 28.1 ° C); salinity values of 24 to 35 parts per thousand (ppt); and dissolved oxygen values of 5.5 to 8.2 parts per million (ppm). Turbidity measurements on April 26, 2002 ranged from 3.25 to 7.65. This large range in turbidity is not unusual given the high degree of ocean surf, typical later afternoon high winds and one of the highest tides of the year (+2.4 feet).

Potential Impacts and Mitigation Measures. Near shore water quality impacts associated with the proposed action are expected to be short-term in nature and largely confined to the immediate vicinity of the project site. Wall reconstruction activities such as rock collection, repositioning and placement are expected to result in a short-term increase in the level of silt and suspended solids within the fishpond basin and adjacent waters. Increase in suspended solids will result

WALL ASSESSMENT

Friday, April 26, 2002
4:30pm - High Tide (12.4 Feet)



NOTE: Measurements reflect the high tide level off of the existing wall
1 = 38" 3 = 44" 5 = 46"
2 = 38" 4 = 28" 6 = 36"

KO'IE'IE FISHPOND: WATER QUALITY SURVEY

Monday, October 25, 2000 10:25am		
SITE #1	Sal.	33
	D.O.	5.5
	Temp	26.1
SITE #2	Sal.	33
	D.O.	5.51
	Temp	26.1
SITE #3	Sal.	32
	D.O.	6.4
	Temp	26.5
SITE #4	Sal.	33
	D.O.	7.3
	Temp	26.4
SITE #5	Sal.	35
	D.O.	7.2
	Temp	26.4
SITE #6	Sal.	33
	D.O.	6.4
	Temp	26.1
SITE #7	Sal.	32
	D.O.	6.4
	Temp	26.7
SITE #8	Sal.	32
	D.O.	6.3
	Temp	26.1
SITE #9	Sal.	34
	D.O.	5.7
	Temp	25.9
SITE #10	Sal.	35
	D.O.	6.6
	Temp	26.3
SITE #11	Sal.	34
	D.O.	6
	Temp	26.3
SITE #12	Sal.	32
	D.O.	6.4
	Temp	26.5
SITE #13	Sal.	35
	D.O.	5.9
	Temp	26.5
SITE #14	Sal.	35
	D.O.	6.2
	Temp	26.4

Friday, April 26, 2002 2:30pm		
SITE #1	Sal.	24
	D.O.	7.32
	Temp	28.1
SITE #2	Sal.	
	D.O.	
	Temp	
SITE #3	Sal.	24
	D.O.	7.56
	Temp	28.1
SITE #4	Sal.	35
	D.O.	7.22
	Temp	28.1
SITE #5	Sal.	
	D.O.	
	Temp	
SITE #6	Sal.	35
	D.O.	6.35
	Temp	28.3
SITE #7	Sal.	35
	D.O.	6.67
	Temp	28.2
SITE #8	Sal.	35
	D.O.	7.81
	Temp	28
SITE #9	Sal.	
	D.O.	
	Temp	
SITE #10	Sal.	35
	D.O.	8.26
	Temp	28.1
SITE #11	Sal.	33.5
	D.O.	8.21
	Temp	28
SITE #12	Sal.	34
	D.O.	7.28
	Temp	27.7
SITE #13	Sal.	
	D.O.	
	Temp	
SITE #14	Sal.	
	D.O.	
	Temp	

NOTE: 04/26/02 survey taken by S. Adams, J. Kalua, G. Naehu, K. Ritte, M. Weeks.
 Survey sites were lessened due to close proximity of each other.
 Current sites coincide with locations of first survey.

from dislodged algae, suspension of organic detritus, and agitation of the silt deposits. Increases in turbidity levels and suspended solids during wall reconstruction are not expected to approach levels that prevail during heavy periods of high winds and seas.

Dissolved inorganic nutrients may increase slightly with the disturbance of rocks and repositioning of wall stones. These impacts will be short-term, during actual moving and repositioning of wall stones and relatively minor, given the high degree of flushing the fishpond received during all but the lowest tides.

Wall reconstruction activities will be confined to periods of low or minus tides; a condition favorable for best access to rebuild the rock wall and to ensure water quality impacts will be largely confined to the fishpond wall and basin area.

The completion of the wall could result in a slight increase in ambient water temperature within the fishpond basin. However, any such increases would be small and likely to occur only during low or minus tides when the basin water would be shallow and water circulation reduced. As mentioned the proposal to rebuild the rock calls for a design that optimizes water exchange and movement within the fishpond basin (strategic placement of 2 *mākāhā* and wall termination at -2.0 tide level). These provisions will assure high water quality conditions within the fishpond at all times.

Fishpond water quality will be monitored and assessed before during and after restoration. Monitoring parameters include: tide, wind direction, weather conditions, salinity, dissolved oxygen, temperature and turbidity at a number of specific sampling locations within the fishpond basin and outside the fishpond.

Written reports will compare the post-construction water quality data with respect to baseline water quality data. Baseline was collected in October 2000 and April 2002 (see

previous page). An opinion as to whether or not the receiving water quality has been degraded shall be included in the report, and if necessary, corrective actions will be taken to improve water quality. A fishpond wall is constructed by a mortarless, dry-stack wall building technique. As such, it can be adjusted and reconfigured if impacts to the beach and/or water quality and water circulation within the fishpond basin warrant such actions.

4.1.6 Water Currents

Existing Conditions. The prevailing currents flow lateral to the shoreline (north-west to south) within the fishpond during normal trade wind conditions. It tends to be very windy along the Kihei coastline with the strongest winds occurring in the early/middle of the afternoon and blowing from the northwest. These winds create waves from that direction and the southerly long shore currents. Within Kō'ie'ie Fishpond, wave surges particularly at medium and high tides create localized zones of wave energy. Except for the highest of tide episodes and or heavy trade wind swell activity, these zones are confined primarily to the wall opening at the southwest corner and at the northern end of the pond where the wall height is lowest. Observations made during low tides and an absence of trade wind conditions, suggest that water currents are minimal during such times, but do continue to flow from the northwest to the south. However, trade winds are the norm, thus even during most low or minus tide conditions, wind is expected to have some influence on pond water currents and turnover.

Potential Impacts and Mitigation Measures. The proposed action will modify water currents within the fishpond. However the reconstruction of two *mākāhā* and the alignment of the restored wall will ensure that adequate currents will continue to exist in the fishpond basin following wall reconstruction. The slight deepening of the

fishpond basin resulting from the repositioning of the wall stones will also have a favorable impact on maintaining water currents within the fishpond. Trade winds will also continue to exert an influence on water circulation during and following reconstruction of the wall.

Proper placement of the *mākāhā* is key to assuring continued good water circulation. We propose to create two *mākāhā*. Their locations are based on archaeological survey work and taking into consideration the prevailing currents and trade wind patterns to assure optimal water turnover. Wall realignment also takes into consideration the need for optimal water circulation. As proposed, the reconstructed wall will taper off at the shoreline on both its northern and southern end at a point minus two feet (-2.0 ft.) below medium (0 ft.) tide. This serves two purposes: 1) It allows for water circulation and sediment transport along the shoreline at medium and higher tides; 2) It allows unimpeded public access along the beach as the area is a very popular corridor for beach goers, runners, walkers, etc. Should these provisions prove to be insufficient in providing adequate circulation of waters through the fishpond, the wall can and will be adjusted and reconfigured to correct the situation.

4.1.7 Air Quality

Existing Conditions. Air quality in the vicinity of the project site is very good because of the relative low population density in the region and exposure to wind, which quickly dispenses concentrations of emissions. The major sources of air pollutants include traffic on Pi'ilani Highway and South Kihei Road, salt spray (originating from wave action), occasional outboard motor use and sugar cane fires.

Potential Impacts and Mitigation Measures. The proposed project would create no air pollution impacts.

4.1.8 Noise

Existing Conditions. Noise levels in the vicinity of the project are relatively low. Existing noise at the project site is the result of light vehicular traffic on South Kihei Road, construction sites nearby, an occasional outboard motor, wind and wave action. High winds and surf hitting the shoreline and offshore reef are by far the most noticeable noise sources at the project site.

Potential Impacts and Mitigation Measures. Project-generated noise is not expected to be significant. Noise will be generated as a result of heaving and lifting rocks by hand and with the assistance of hand tools, boat and or small barge. These noises will be limited to daylight periods and normally for intervals not exceeding six hours in total duration (low tide periods).

4.2 BIOLOGICAL ENVIRONMENT

4.2.1 MARINE ENVIRONMENT

Fish

Existing Conditions. Kō'ie'ie Fishpond and immediate areas host a number of fish species. Species that have been observed at the fishpond:

Table 2. Fish Identified at Kō'ie'ie Fishpond

Hawaiian Name	Common name	Scientific name
Marine fish		
Āholehole	Hawaiian flagtail	<i>Kuhlia sandvicensis</i>
Kala	Bluespine unicornfish	<i>Naso unicornis</i>
Kumu	Whitesaddle goatfish	<i>Parupeneus porphyreus</i>
Manini	convict surgeon fish	<i>Acantharus sandvicensis</i>
Moana	Manybar goatfish	<i>Parupeneus multifasciatus</i>
Moi	Six-fingered threadfin	<i>Polydactylus sexfilis</i>
Nehu	Hawaiian anchovy	<i>Encrasicholina purpurea</i>
Palani	Eyestripe surgeonfish	<i>Acanthurus dussumieri</i>
Weke'ula	Yellowstripe goatfish	<i>Mulloidichthys vanicolensis</i>
'Ama'ama	Striped mullet	<i>Mugil cephalus</i>
Pāpio	jack, trevally	Family Carangidae
Wrasses:		
'Ōmaka	Belted wrasse	<i>Stethojulis balteata</i>
Hinalea lauwili	Saddle wrasse	<i>Thalassoma duperrey</i>
'Ōhua	Ornate wrasse	<i>Halichoeres ornatissimus</i>
Damsel fish:		
Mamo, Kūpīpī	Hawaiian sergeant	<i>Abudefduf abdominalis</i>
n/a	Pacific gregory	<i>Stgastes fasciolatus</i>
other:		
Puhi'ou	Banded Moray eel	<i>Gymnothorax rueppelliae</i>

(Kahahulehua and Oliveira 2003)

Corals

Existing Conditions. The fishpond basin is a shallow coral reef bottom consisting of limestone, sand, coral rubble and some limestone outcrops (Guinther and Bartram 1975). On the seaward side the fishpond wall, a fringing coral reef extends 250 to 400 meters; The maximum ocean depth near the edge of the reef is 12 to 18 feet (Dohman 2002). Please refer to map in Appendix B, page 5, figure 3. Coral species represented include various *Porites* spp., *Montipora* spp., and *Pocillopora* spp.

Algae

Marine algae or *limu* (seaweed) are one of the most prominent groups of living organisms within and adjacent to Kō'ie'ie Fishpond. There are numerous species that have been identified in the fishpond, as listed in Table 3.

On Maui, particularly on the south shore there is a large problem with two *limu* species which has been known to accumulate within the fishpond basin and along nearby beaches. *Hypnea musciformis* (no common name) a non-native invasive species introduced from Florida in 1974 and *Ulva* spp. (*pālahalaha*) a native species are transported by the prevailing trade wind patterns from outside Mā'alaea Bay to the northern beaches of Kihei. During heavy episodes of *limu* inundation, it piles up in a matted fashion up to 2-3 feet thick, makes the fishpond and affected beaches undesirable and unusable. If not immediately removed, it decays and produces a heavy rotting smell. Residents of Menehune Shores Condominium, fronting Kō'ie'ie Fishpond, and other surrounding condominiums have had major impacts to their quality of life due to the smell of rotting *limu* within the fishpond basin and beaches.

TABLE 3 – LIMU IDENTIFIED AT KŌ'IE'IE FISHPOND 1996-2002
(Davenport 2002)

Scientific Name	Hawaiian Name
<i>Sea grass:</i>	
<i>Anthophyta:</i>	
Halophila hawaiiiana	
<i>Chlorophyta:</i>	
Caulerpa racemosa	
Chaetomorpha antennia	
Codium edule	wawae'iole
Codium reediae	'a'ala'ula
Dichtyosphaeria cavernosa	
Dichtyosphaeria versluysii	
Microdictyon japonic	
Ulva fasciata	palahalaha
Ulva reticulata	
<i>Cyanophyta:</i>	
Lyngbya majuscula	
<i>Phaeophyta:</i>	
Colpomenia sinuosa	
Dictyopteris austral	puha
Dictyopteris plagiogramma	lipoa
Dictyota acutiloba	alani
Dictyota bartayresii	alani
Dictyota sandvicensis	alani
Padina australis	
Sargassum echino carpum	kala
Sargassum polyphyllum	kala
<i>Rhodophyta:</i>	
Acanthophera spicifera	
Ahnfeltia concinna	aki'aki, (on Maui: 'eleau)
Amansia glomerata	
Asparagopsis taxiformus	kohu
Centroceras clavulatum	
Coelothrix irregular	
Corallina	
Galaxauia fastigiata	
Gelidiopsis scoparia	
Gracilaria bursapastoris	ogo
Gracilaria coronopifolia	Manauea
Graeteloupia filicina	huluhuluwaei
Halymenia formosa	lepe'ahina
Haliptilum subulatum	
Hypnea musciformis	
Laurencia succisa	lipo'e pe'e
Martensia fragilis	
Peyssonellia rubra	
Portieria hornemannii	
Pterocladia capillacea	

The prevailing ocean currents that run northwest to south transport the *limu*. The *limu* breaches the walls of the fishpond on the northwest side and accumulates in the pond basin and along the shoreline. To alleviate this problem, about four years ago, individuals made a small breach in the wall at the southern end of the pond. It appears that this action has allowed *limu* to escape from the pond and continue down current. Since the breach heavy *limu* accumulation within the pond has generally subsided.

There are many theories why the *limu* has increased so much along the Mā'alaea and North Kihei shoreline and in West Maui. Many believe these species proliferate because ambient nitrogen levels have increased along this shoreline due to injection wells in Kihei, houses with old septic-leach field systems, agriculture (fertilizer) and condos with septic systems in Mā'alaea.

Numerous newspaper articles and front-page headlines in the local press dating back to November 1990 attest to the public acknowledgement of this problem and the need to do something. In 2001, Mayor Apana and residents of the Waipu'ilani area formed a Seaweed Task Force to develop a plan for removal and disposal of the nuisance seaweed. Currently, the seaweed is scraped off the beach daily with a small front-end loader, and is either pushed up against the berm or taken to a stockpile at the end of the beach. During peak episodes, over 300 cubic yards of seaweed are either moved or removed from the 1-mile stretch on a daily basis. (Seaweed Plan is found in Appendix F).

Potential Impacts and Mitigation Measures. Impacts to the fish fauna are expected to be small and of no ecological consequence. Construction activities would cause the fish to flee the site around the wall during wall reconstruction.

Fishes routinely move between the fishpond and adjacent waters through existing pond openings and this behavior would likely continue through the construction phase of the project.

Collection, temporary stockpiling, and repositioning of rock will result in the loss of portions of algal community that presently is in the fishpond basin. A loss of some benthic invertebrates is also expected to occur, but densities of these species are low and impacts will not be significant. Small quantities of silt and organic detritus are likely to be suspended from the fishpond bottom during rock repositioning but are unlikely to cause a significant impact as they would be largely contained to the existing fishpond basin and adjacent near shore waters and dissipate with the mixing of waters and currents. The fishpond basin is well flushed as a result of heavy wave action and currents due to consistent high trade winds most days. Therefore, there is little potential for silt or detritus to accumulate in concentrations that would be harmful to corals or sedentary invertebrates.

Adverse impacts to the existing coral community will be limited because of the nature of the reconstruction activities and the low densities of coral associated with the fishpond basin and pond wall.

The rebuilt fishpond wall has the potential to increase the accumulation of *limu* within the fishpond. The mitigation of periodic *limu* inundation within the fishpond was a major consideration in formulating the proposed revitalization plan. The proposed plan addresses this issue in three ways: 1) *Mākāhā*. Locate two *mākāhā* along the pond wall that will have optimal water exchange allowing *limu* to flow through the pond; 2) The reconstructed wall will taper off before the shoreline on both its northern and southern end at minus two feet (-2.0 ft.)

below medium (0 ft.) tide to allow *limu* to flow out of the pond on the southern side of the wall in a similar fashion as the current wall breach allows for; 3) The applicant is committed to being stewards of the fishpond. They will have regularly scheduled workdays to maintain the pond. This includes provisions for removing and properly disposing of excess *limu* should the need arise.

Upon rebuilding the wall, the increased vertical relief, together with the use of large foundation boulders and smaller stones will provide a number of new protected microhabitats and niches for many marine organisms. Such protected habitats are presently few in number because of the limited topographic relief available in the fishpond. Algae and invertebrates are expected to recolonize the repositioned pond boulders and stones. The collection of existing rocks now spread out along the wall footprint will result in deepening of the fishpond, helping to increase the biodiversity over baseline conditions.

4.2.2 Terrestrial Biota (Flora and Fauna)

Existing Conditions. Terrestrial Flora. The coastal area surrounding the subject property has been almost entirely modified as a result of development. The beach vegetation adjacent to the fishpond is comprised of kiawe, grass, kamani and coconut trees. At the adjacent Hawaiian Islands Humpback Whale National Marine Sanctuary, a native Hawaiian plant revitalization project is underway. Species include: *Naupaka kahakai*, *pōhuehue*, *'aki'aki*, *kou* and *milo*.

Table 4. Plant Species Identified on Adjacent Land Areas

Hawaiian Name	Common name	Scientific name
'aki'aki	Seashore Rush Grass	<i>Sporobolus virginicus</i>
Kamani	Alexandrian laurel	<i>Calophyllum inophyllum</i>
Kiawe	Kiawe	<i>Prosopis spp.</i>
Koki'o 'ula 'ula	Red Hibiscus	<i>Hibiscus kokio</i>
Kou	kou	<i>Cordia subcordata</i>
Milo	Portia tree	<i>Thespesia populnea</i>
Naupaka kahakai	Beach <i>Naupaka</i>	<i>Scaevola sericea</i>
Nui	Coconut	<i>Cocos nucifera</i>
Pōhuehue	Beach Morning Glory	<i>Ipomoea pescaprae</i>

(Oliveira 2002)

Existing Conditions. Terrestrial Fauna. Birds typically found in the area include the common (Indian) mynah, kōlea (Pacific Golden Plover), several species of dove, cardinal, finch, house sparrow and various species of wading birds. Animals common to the area include dogs, cats, rats, mice, mongoose. No known rare, endangered, or threatened species of flora or fauna were discovered surrounding the subject property.

Potential Impacts and Mitigation Measures. Impacts to plant communities will be minor if at all and will result from equipment ingress to and egress from the project site. Noise and activity associated with manual labor may temporarily dislocate wading birds that may frequent the inshore waters or adjacent areas. Such temporary displacements are not regarded as significant.

The reconstructed fishpond wall will likely create a permanent, and somewhat protected, resting or feeding habitat for indigenous wading birds. The deepening of the fishpond basin is also likely to increase biodiversity, resulting in

improvements of the pond as a feeding site for indigenous seabirds and wading birds. The diversity and density of certain wading birds and seabirds may increase with the operation of the fishpond due to the greater abundance of fish biomass and foraging fishes within the pond.

4.2.3 Endangered And Threatened Species

Existing Conditions. The waters and coastline of southern Maui play an important role in the survival of two endangered species. The 'ea (hawksbill sea turtle) and the *koholā* (humpback whale) find shelter in these waters during their respective seasons of spawning and reproduction.

The federally listed protected and endangered humpback whale is seasonally found in waters off the coast of Maui. This marine mammal performs breeding, calving, and nursing activities in Hawaiian waters between the months of October through May, particularly in the area bounded by Maui, Moloka'i, Lāna'i and Kaho'olawe. It is estimated that two-thirds (5,000-6,000) of the North Pacific Stock of humpback whales come to Hawai'i during the winter months from Alaska, making it one of the most important breeding, calving and nursing habitats for this species (Oliveira 2002).

The federally listed endangered hawksbill sea turtle are known to forage and rest in shallow waters along the south shore of Maui and in the immediate vicinity of the project site. During the summer months the hawksbill sea turtle nests along this stretch of the southern coastline of Maui producing up to seven clutches of eggs. After a two-month incubation period, these eggs finally hatch and over a hundred young turtles struggle to reach the ocean's edge. It is estimated that less than two-dozen nesting female hawksbill sea turtle are alive, which makes

them one of the most endangered sea turtles in the world (Ibid).

Potential Impacts and Mitigation Measures. Whales. Because of the small size of the proposed project, its location along shallow near shore waters with approximately 75 yards of shallow reef separating the site from the humpback whale's habitat, humpback whales are not expected to be impacted by the proposed project.

Turtles. No impacts on extant turtle populations are expected. The potential for hawksbill sea turtle to swim and forage within and around the fishpond and nest along its shoreline, particularly in the summer months, is high. Should hawksbill sea turtles be observed within the vicinity of the active construction site or should hawksbill sea turtles use the fishpond shoreline and adjacent shoreline areas for hatching, all construction activities would cease and the appropriate government agencies (Department of Land and Natural Resources, Division of Aquatic Resources at (808) 243-5294 or the U.S. Fish & Wildlife Service at (808) 875-1582) will be contact and consulted so to assure the protection of these nesting area. Likewise, should hatchlings use the protected pond waters, we will contact the appropriate authorities and make sure that those waters are protected and properly managed.

No other Federal or State-listed endangered or threatened plant or animal species or any designated "critical habitat" is foreseen to be affected by the proposed project

4.3 Archaeological/Historical Resources

Existing Conditions. Kō'ie'ie Fishpond. State Site #50-50-05-9-1288, is a Class IIB fishpond (wall in fair to poor condition), and Type I: *Ioko kuapā* style fishpond

(DHM Planners 1990). The fishpond was listed in the State Register of Historic Places in June 1996, and in the National Register of Historic Places in December 1996 (See Appendix G: Nomination Papers). It is owned by the State of Hawai'i.

Kō'ie'ie Fishpond is the only Maui fishpond, and one of only seven ponds statewide, that was found to be significant under all four National Register Criteria:

A. Property is associated with events that have made a significant contribution to the cultural heritage of the Hawaiian people:

Kō'ie'ie was an economic resource that was important for its subsistence value to the people of the Kula District of Maui between approximately AD 1500 and 1880.

A well-preserved example of the technological achievements associated with the development of Hawaiian aquaculture.

A resource and place of cultural significance for all strata of Hawaiian society including chief, priests and commoners.

B. Property is associated with the lives of persons significant in our past:

The pond has been remembered for its many repairs, conducted under the command of a high chief: 'Umi a Liloa, Kekaulike, Kamehameha I and Ho'apili. This pattern indicates that the pond was royal, in that its produce was the property of the high chief, to disperse or limit as they saw fit.

The site is directly associated with David Malo (c. 1793-1853). David Malo, who was among the first generation of Hawaiian Christian ministers, lived at Kalepolepo as overseer of the pond and as the religious guardian of the place and its people.

C. Property embodies the distinctive characteristics of a type, period or method of construction, represents a work of a master.

Kō'ie'ie contains considerable structural integrity, and it is one of the best-preserved fishponds for the island of Maui. It is an excellent and unique example of the architectural achievements attained by the Hawaiian fishpond builders.

D. Property has yielded, or is likely to yield, information important in prehistory or history.

Historically, Kalepolepo Fishpond is one of the best-documented fishponds for Maui, and has a high potential for providing new information regarding the maritime history and social history of the Hawaiian people- both prehistoric Hawaiian culture and historic period Hawaiian culture.

Potential Impacts and Mitigation Measures. The proposed action will not adversely impact the archaeological or cultural integrity of the fishpond, in as such that data retrieval efforts are deemed complete. Such data includes the an underwater archaeological reconnaissance of the pond conducted in August 2002 by Theresa K. Donham, *Underwater Archaeological Inventory Survey of Kō'ie'ie Fishpond* (Appendix B Archaeological Survey), A Cultural Impact Assessment prepared by Joylynn Nakoa Oliveira (Appendix C: Cultural Impact Assessment) and a paleoenvironmental coring of the fishpond and future analysis of such cores. In addition, the fishpond wall will be reconstructed and maintained in a manner consistent with State Historic Preservation guidelines (see Appendix D: Agency and Pre-consultation Letters). The proposed project will result in the community-based revitalization of an ancient Hawaiian fishpond. This fishpond has under gone numerous alterations to it through its history. Many of these details have been lost from historical record. While the original fishpond design, configuration and its aquacultural function cannot precisely be replicated, the proposal intends to be as historically accurate as possible given our knowledge and outside (social, environmental) constraints. The project will, provide a model for community-based fishpond restoration on Maui, be a source of pride for the community and a site of learning--thus providing immense social and cultural benefits for Maui's people. Such positive impacts on the affected community are judged to greatly outweigh any negative impact associated with the proposed reconstruction of the wall in a manner that may differ somewhat

from its historic condition.

The proposed project is self-mitigating since it would result in the restoration of a fishpond that is in an advanced stage of disrepair.

Mitigation measures recommended by Theresa Donham in her Underwater Archeological Survey and concurred by the State Historic Preservation Division (SHPD) (See Appendix B: page 51 and letter dated March 3, 2003 from SHPD to Ms. Donham) will be adhered to, and are as follows:

1. Restoration of the walls should, when possible, make use of stones from the existing wall and rubble, and that all imported materials should resemble these original stones.
2. No stones shall be collected from adjacent Waiohuli fishpond or from the boulder alignment to the north identified during this survey.
3. Portable artifacts may be removed with adequate documentation prior to removal.
4. All nineteenth and twentieth century artifacts may be left in place, awaiting "coordinated conservation" efforts.
5. On-call and periodic monitoring should be conducted during all phases of reconstruction, to facilitate the work, document newly discovered finds, provide additional interpretation, and assure that the previous four conditions are met.

4.3 SOCIAL AND ECONOMIC ENVIRONMENT

4.41. Recreation

Existing Conditions. Recreational activities associated with the project site and adjacent areas consist primarily of sightseeing and beach and water-related

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Figure 28. *Limu* gathering.



Figure 29. View south from the Hawaiian Islands Humpback Whale National Marine Sanctuary.

RECEIVED AS FOLLOWS

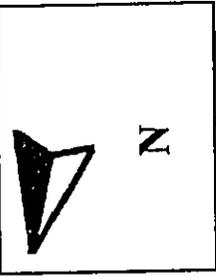
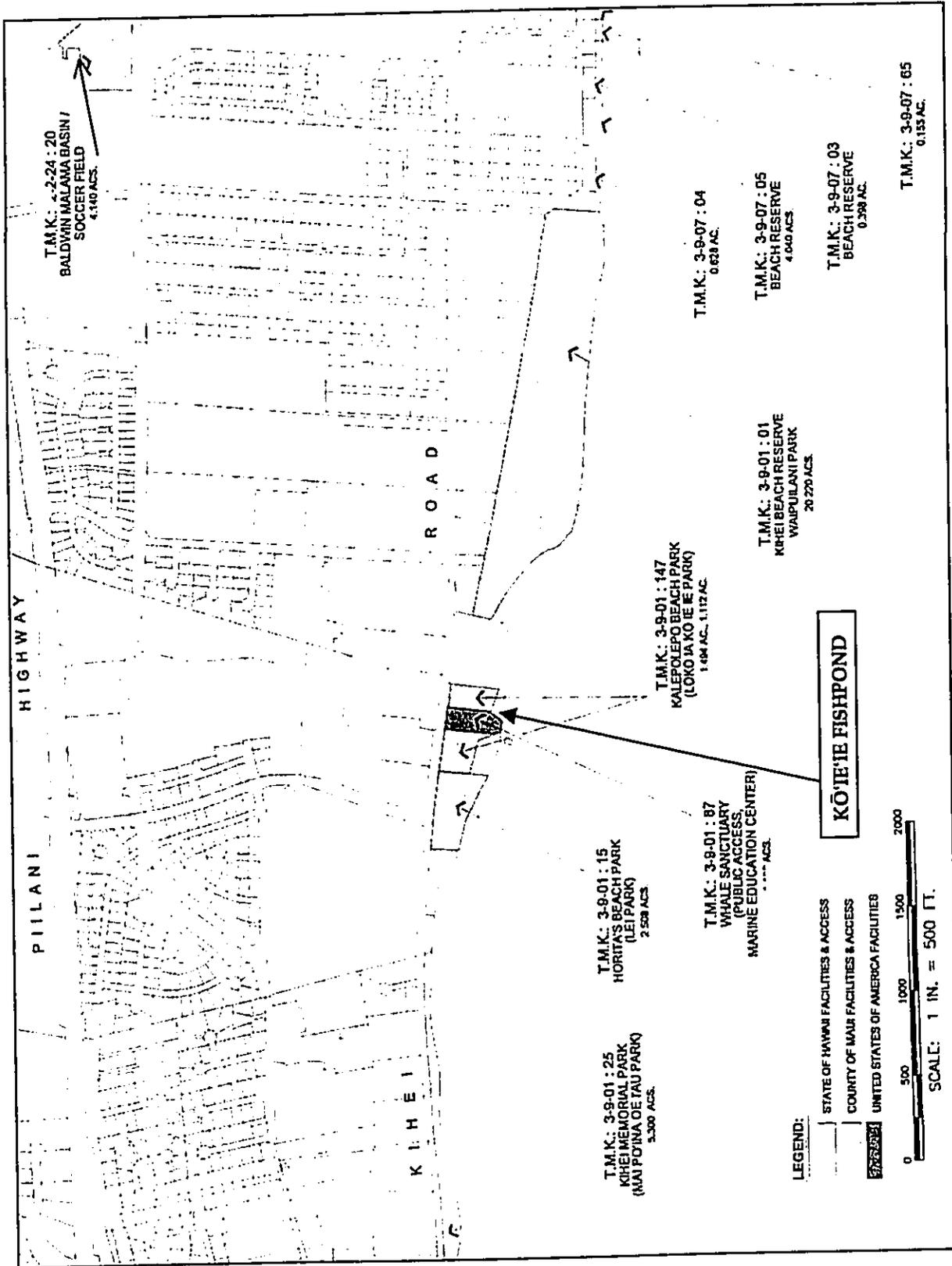


FIGURE 30
PARK INVENTORY
SOUTH MAUI REGIONAL PARKS & OPEN SPACE
 (Warren S. Unemori Engineers, Inc./Chris Heart & Partners, Inc. 2003)

KŌ'IE FISHPOND FINAL ENVIRONMENTAL ASSESSMENT, FARBER & ASSOCIATES 2004

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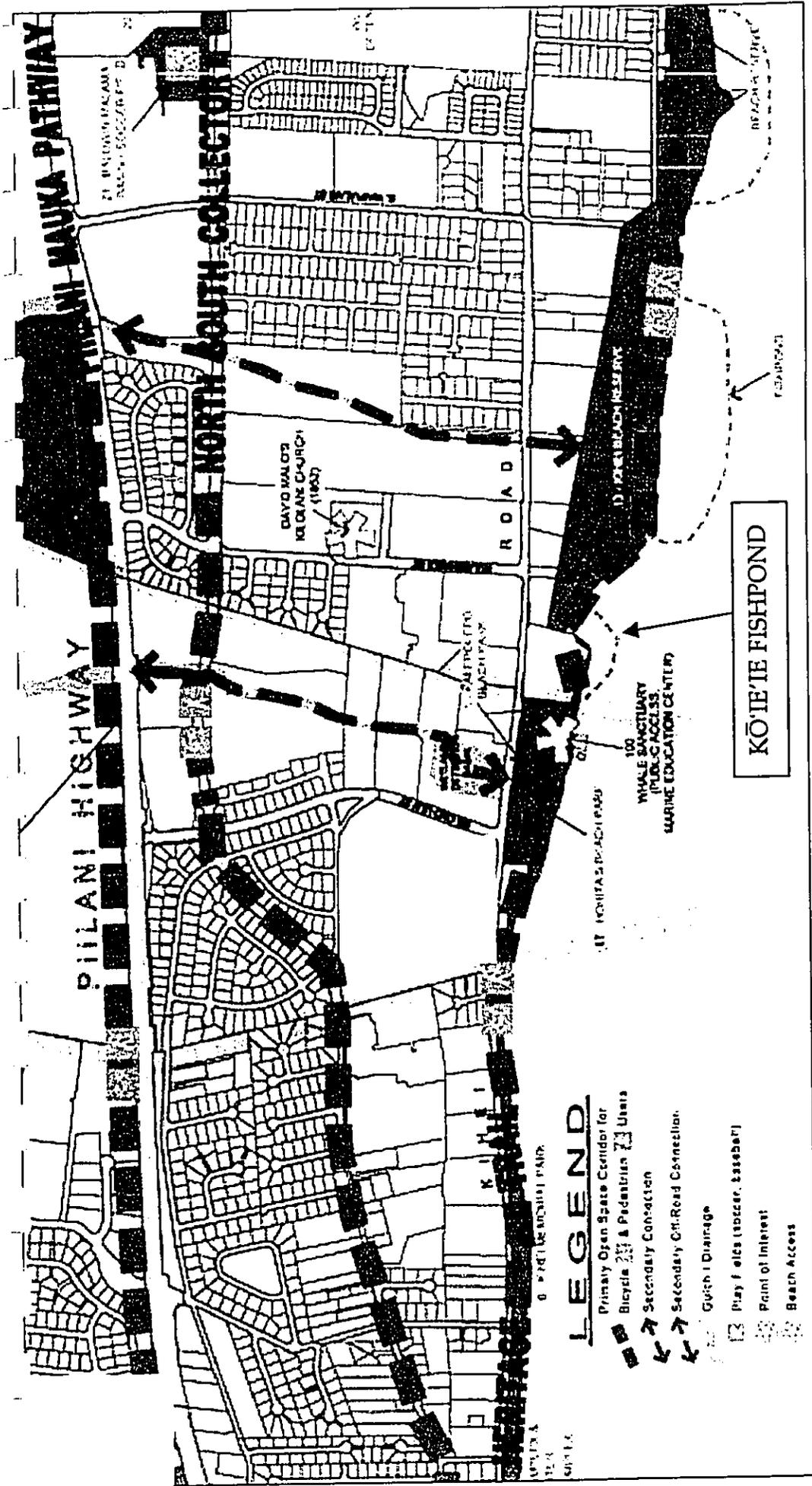


FIGURE 31

SOUTH MAUI REGION PARK AND OPEN SPACE MASTER PLAN - FUTURE VISION PLAN
 (Prepared by Warren S. Unemori Engineering, Inc./Chris Heart and Partners, Inc. for Maui County Planning Department 2003).

KŌ'IE'IE FISHPOND REVITALIZATION PROJECT, FINAL ENVIRONMENTAL ASSESSMENT,
 FARBER & ASSOCIATES 2004

activities including subsistence fishing (nets, spears, and rod and reel), *limu* gathering, swimming, wading, snorkeling, diving and small boat (kayak, canoe) launching, beach going, leisure walking and jogging.

Potential Impacts and Mitigation Measures. The proposed project will enhance and increase existing shoreline and water-related recreational opportunities within the fishpond and surrounding areas.

The reconstructed wall will confer a more protected near shore coastal setting, which may increase swimming and snorkeling opportunities within the fishpond basin. The reconstructed wall will result in deepening of the fishpond and an increased vertical relief that should provide a number of new protected microhabitats and niches for many marine organisms, helping to increase the biodiversity over baseline conditions, thus improving the potential for richer fishing grounds.

It is anticipated that there will be an increase in residents, school-aged children and tourists visiting the site. Visitors will learn about the fishpond through self-guided interpretative signage, guided tours, fishpond "work days", special events and school sponsored visits.

The revitalized fishpond compliments the existing programs and activities that take place at the adjacent Hawaiian Islands Humpback Whale National Marine Sanctuary Headquarters and Education Center. The Sanctuary receives about 10,000 visitors annually, conducts special events, has an ongoing lecture series and exhibits emphasizing marine-related topics. The fishpond is included within this National Marine Sanctuary Boundary and the organization is mandated to facilitate native Hawaiian uses of the Sanctuary.

The Fishpond is identified as part of the Future Vision Plan for South Maui Regional Parks and Open Space. The pond is seen as an integral component and focal point of a Heritage Trail and Open Space Corridor along the South Maui coastline (See Figure 31: South Maui Regional Open Space Master Plan – Future Vision Plan).

4.4.2 Aesthetics

Existing Conditions. The project site is located immediately adjacent to Kalepolepo County Beach Park, Menehune Shores Condominium Complex and the Hawaiian Islands Humpback Whale National Marine Sanctuary Headquarters and Education Center. During low and intermediate tides the remnants of the existing fishpond wall, which now currently resembles a flattened mound of rocks and boulders is visible from these sites. During high tide the existing pond wall is not visible.

Potential Impacts and Mitigation Measures. The restored fishpond will enhance scenic vistas as it now lies in a state of abandonment and disrepair. It will provide a permanent and prominent enhancement of the viewscape.

The restored fishpond wall will be visible at any tide, the wall being configured to rise about two feet above most high tide episodes. The rebuilt wall will be clearly identified as a man-made structure of integrity, uniformity and strength. It will be visible from not only from adjacent properties as those mentioned above but also from boaters at sea, from the air and along the beaches which stretch both to the north and to the south of the site.

4.4.3 Economics

Existing Conditions. In its present deteriorated condition, Kō'ie'ie Fishpond makes no measurable contribution to the economic base of Maui, other than occasional recreational and subsistence marine resource harvesting, and as a scenic amenity to residents and visitors of Maui.

Potential Impacts and Mitigation Measures. Because of the fishpond's relative small size, its popularity and proposed continued use as a non-commercial recreational site, the reconstructed pond is not expected to yield revenues that will have a significant impact on Maui's economic base. However, benefits of the proposed revitalization will be manifested in the increased historic, cultural and educational resource for the Kihei community as well as for the visitors and residents of Maui.

Under the proposed plan it is anticipated that restoration activities will employ a part-time work force for about 18 months. The number of paid workers will be about four, they will be trained to be experts in fishpond restoration and maintenance techniques including dry-stack wall building, water quality analysis, first aid, aquaculture and working with the regulatory agencies to assure the work performed meets all prescribed rules and regulations. It is foreseen that these staff will be recruiting and maintaining a volunteer work force to help with pond wall restoration. During the restoration phase of the project, "work days" will bring community volunteers to the site and it is anticipated that local businesses will be used to provide food, equipment and supplies. After the pond is revitalized, the fishpond will require part-time staff,

maintenance workdays and community events. Such activities will generate employment opportunities and the purchasing of equipment and supplies.

4.4.4 Access, Transportation and Parking

Primary access to the fishpond is via Kalepolepo County Beach Park that lies immediately adjacent to the fishpond and fronts South Kihei Road. Secondary access is from the Hawaiian Islands Humpback Whale National Marine Sanctuary via South Kihei Road. Beach access is from both north and south of the project site.

South Kihei Road is a two-lane urban collector road that provides service along the shoreline in this area and accessibility to the fishpond via Kalepolepo Beach Park and the Hawaiian Islands Humpback Whale National Marine Sanctuary Headquarters and Education Center. South Kihei Road traffic is often congested with stop and go conditions during peak traffic hours of 7:45-9:00 in the morning and 4:00-6:00 in the evening Monday through Friday.

The Sanctuary has 22 parking stalls that accommodate visitors and staff parking needs (SRGII 2003). The number of parking stalls at the adjacent Kalepolepo Beach Park is about 18. There is an ongoing informal agreement between the Maui County Department of Parks and Recreation and the Sanctuary to pool their parking facilities and allow visitors to use either lot. The Sanctuary usually requires overflow parking during the evening hours when the park is not busy, while the park usually requires additional parking on weekends when the Sanctuary is closed (Ibid.).

Potential Impacts and Mitigation Measures. The proposed project will not interfere with the existing public access to the fishpond site. Given the heavy volume of traffic that currently exists along South Kihei Road and the fact that the Sanctuary hosts over 10,000 visitors a year, the proposed project, during restoration and thereafter will only contribute a relatively minor increase in vehicles on the road, parking needs at Kalepolepo Beach Park and/or The Sanctuary.

5. RELATIONSHIP TO STATE AND COUNTY PLANS POLICIES, AND CONTROLS

5.1 The Hawai'i State Plan

The Hawai'i State Plan (Chapter 226, Hawai'i Revised Statutes) serves as a guide for the future of Hawai'i by identifying the goals, objectives, policies, and priorities for the State.

The proposed plan of restoring, revitalizing Kō'ie'ie Fishpond is consistent with the State Plan. The following are relevant objectives of the plan that relate to the proposed project:

[§226-3] Overall theme. The following principles or values are established as the overall theme of the Hawai'i state plan:

(3) Community or social well-being is a value that encompasses many things. In essence, it refers to healthy social, economic, and physical environments that benefit the community as a whole. A sense of social responsibility, of caring for others and for the well-being of our community and of participating in social and political life, are important aspects of this concept. It further implies the aloha spirit—attitudes of tolerance, respect, cooperation and unselfish giving, within which Hawai'i's society can progress.

§226-4 State goals. In order to guarantee, for present and future generations, those elements of choice and mobility that insure that individuals and groups

may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:

(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

(3) Physical, social, and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life. [L. 1978, c 100, pt of §2; am L 1986, c 276, §3]

§226-103 Economic priority guidelines. (a) (4) Encourage visitor industry practices and activities that respect, preserve, and enhance Hawai'i's significant natural, scenic, historic, and cultural resources.

§226-104 Population growth and land resources priority guidelines. (a) (12) Utilize Hawai'i's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.

§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources. (b)(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage; (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources. (1) Promote the preservation and restoration of significant natural and historic resources; (4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.

§226-13 Objectives and policies for the physical environment--land, air, and water quality. (a) (2) Greater public awareness and appreciation of Hawai'i's environmental resources; (8) Foster recognition of the importance and value of the land, air, and water resources to Hawai'i's people, their cultures and visitors.

§226-21 Objective and policies for socio-cultural advancement--education. (b)(4) Promote educational programs which enhance understanding of Hawai'i's cultural heritage.

§226-23 Objective and policies for socio-cultural advancement--leisure. (b) (1) Foster and preserve Hawai'i's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities; (4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.

§226-25 Objective and policies for socio-cultural advancement--culture. (b) (1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.

§226-8 Objective and policies for the economy--visitor industry. (b) (3) Improve the quality of existing visitor destination areas; (8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's

cultures and values.

5.2 State Land Use Law

The State Land Use Law, Chapter 205, Hawai'i Revised Statutes, divides the State into four land use classifications: Urban, Agricultural, Conservation and Rural.

The proposed project lies within the Conservation District, sub zone: Resource. The purpose of the conservation district is to regulate land use for conserving protecting and preserving the important natural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare (§13-5-1).

The proposed project is consistent with the objectives, policies and intent of the Conservation District, sub zone: Resource:

13-5-13 (a) The objective of this sub zone is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas.

The following are applicable permitted uses within the Resource (R) sub zone:

(1) All Permitted uses in the Protective and Limited sub zone;

P-2 Fishponds:

(A-1) Repair, strengthening, reinforcement or maintenance of a fishpond under an approved conservation district use permit and approved management plan.

(D-1) Restoration or repair of a fishpond under an approved management

plan; where restoration is the act or process of restoring the property to a state of utility through repair or alteration which makes possible an efficient contemporary use, such as aquaculture.

R-1 Aquaculture.

5.3 Maui County Zoning

As the subject property is situated in State Conservation Lands, it falls outside of County Zoning jurisdiction. County Zoning of adjacent properties is varied and includes: Park, Open Space, Hotel and Multi-family.

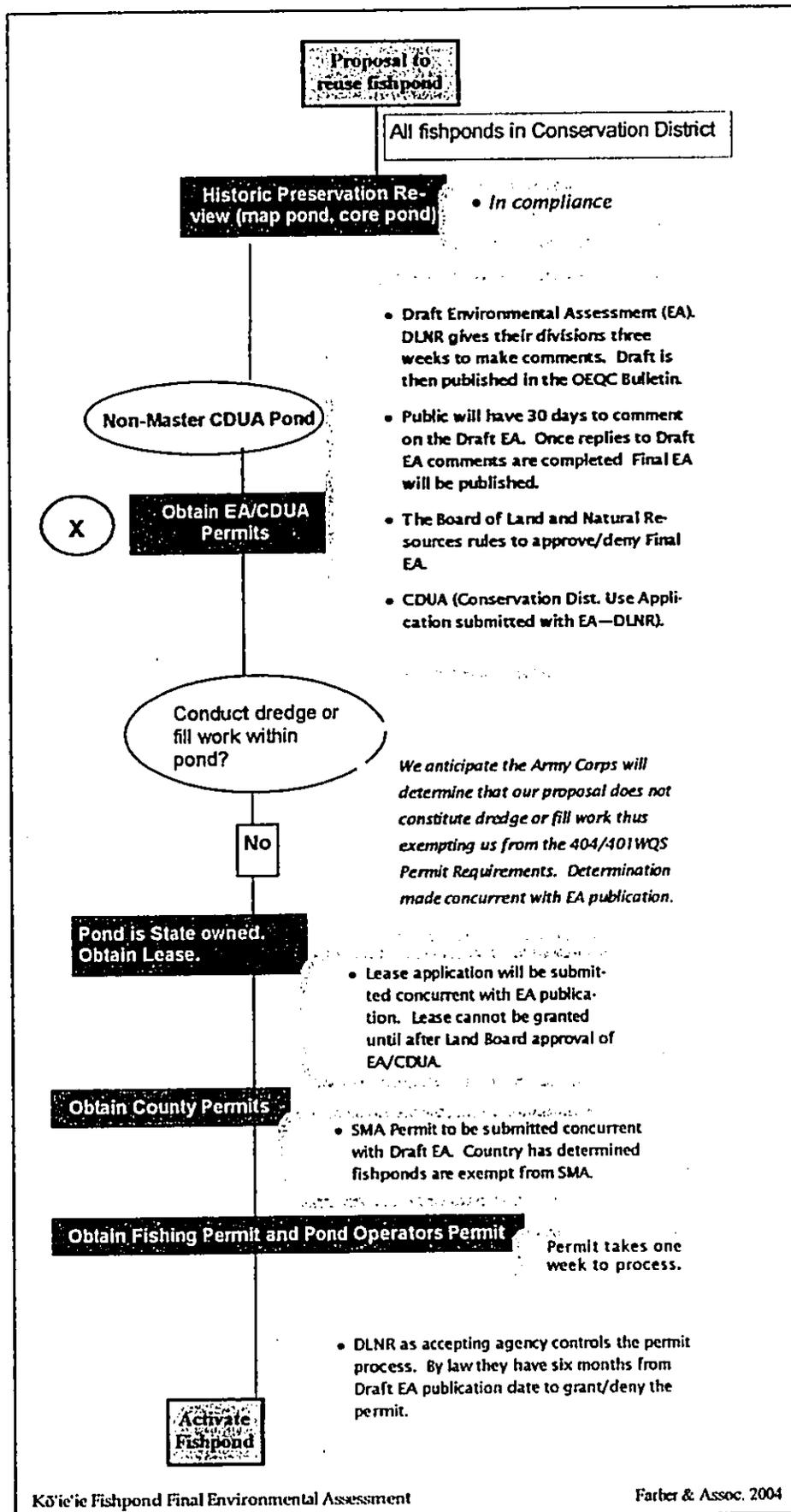
Shoreline Management Area (SMA)

The County-administered Shoreline Management Area (SMA) is defined as all marine waters extending from the upper reaches of the wash of the waves on the shore seaward to the limit of the State's police power and management authority. The fishpond falls within State jurisdiction boundaries thus fall outside of SMA rules and regulations (See Figure 9: Shoreline Management Area (SMA) Boundaries Map).

5.4 Permits and Approvals

PERMIT PROCESS FOR RESTORATION AND REUSE OF KŌ'IE'IE FISHPOND	
<i>Permit</i>	<i>Why Needed</i>
Federal	
404 Army Corp of Engineers Permit	Triggered if determined that action constitute dredge and fill work.
401 Water Quality Certification (State Dept. of Health)	If 404 required
Coastal Zone Management Area Consistency Statement	If 404 required
Fish and Wildlife Service Review	Endangered species/wetlands. Review at ACOE process
State	
Environmental Assessment (EA) – DLNR lead agency	Environmental Impact Statements, HRS Ch 343
Conservation District Use Application Permit (CDUA)	Fishpond in Conservation District
State Land Lease (DLNR – Land Division)	Fishpond is state-owned
Historic Preservation Review (DLNR – Historic Preservation Division)	Archaeological mapping/coring
Fishing Permit/Pond Operators Permit - (DLNR – Division of Aquatic Resources)	
Local	
Shoreline Management Area Permit (SMA)	Notification – Fishpond outside SMA boundaries.
Maui Co Public works	Notification
Grading/grubbing/stockpiling permit	As needed

Permit Process for Restoration and Reuse of Ko'ie'ie Fishpond



6. FINDINGS AND ANTICIPATED DETERMINATION

6.1 SIGNIFICANCE CRITERIA

Environmental Impact Statement Rules, Chapter 200 Title 11 Department of Health Hawai'i Administrative Rules specifies criteria for determining whether an action may have a significant effect on the environment. The proposed project in relationship to these criteria is as follows:

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;

Kō'ie'ie Fishpond has been extensively modified and nearly destroyed by storm waves, tsunami, adjacent development, boating activities and general neglect. The proposed project will involve the restoration, repair and maintenance of an important cultural and archaeological resource.

(2) Curtails the range of beneficial uses of the environment;

The proposed project will expand the range of beneficial uses of the environment (education, recreation, aquatic species habitat) and will result in the revitalization of an important cultural site.

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

The proposed project is consistent with the state's long-term environmental policies or goals and guidelines. The definition of "Environment" in Chapter

344, HRS is, "The complex of physical and biological conditions that influence human well-being, including land, air, water, minerals, flora, fauna, energy, noise, and places of historic or aesthetic significance".

The proposed project will foster culture and the arts and promote their linkage to the enhancement of the environment; establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses; and reestablish and maintain a unique ecological marine preserve.

(4) Substantially affects the economic or social welfare of the community or state;

The proposed project, the revitalizing of a cultural resource, will benefit the community and its social welfare. Fishponds are a unique cultural resource and embody the unique history of the Kihei area and a spiritual connection to the past. The proposed project will incorporate interpretive material and teach the community about the cultural and historical aspects of the fishpond. The rebuilding of the pond wall will involve the active participation of community members, both paid staff and volunteers. As such, rebuilding the pond will bring people together in a positive manner for a common good—appropriate goals as stated in the state goals (§226-4 State goals) that seek to "nourish a sense of community responsibility, of caring, and of participation in community life".

The proposed project positively affects the economic welfare of the community and state by providing a much-needed historical and cultural site and focal point for the greater Kihei area of South Maui for both visitors and residents alike. §226-8 Objective and policies for the economy--visitor industry. (b) (3) improve the quality of existing visitor destination areas.

(5) Substantially affects public health;

Public health is not threatened by existing facilities and functions at the site and there is no reason to expect that public health will be affected in the future by the revitalized fishpond.

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

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

(7) Involves a substantial degradation of environmental quality;

Short-term environmental impacts will be limited to immediate near shore waters. Such short-term impacts include increased level of turbidity and suspended solids due to the manual movement and placement of larger rocks and small pebbles- found within the vicinity of the footprint – back onto the fishpond wall.

(8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;

The proposed project does not involve the commitment for a larger nor will result in significant adverse effects to the environment.

(9) Substantially affects a rare, threatened, or endangered species, or its habitat;

The potential for the federally listed endangered hawksbill sea turtle to swim and forage within and around the fishpond and nest along its shoreline, particularly in the summer months, is high. It is anticipated that the proposed

project will not effect the ability for the hawksbill sea turtle to forage within the fishpond and nest along the shoreline. During restoration activities, should hawksbill sea turtles be observed within the vicinity of the active construction site, all construction related activities will cease.

No other Federal or State-listed endangered or threatened plant or animal species or any designated "critical habitat" is foreseen to be affected by the proposed project

(10) Detrimentially affects air or water quality or ambient noise levels;

No impacts to air quality are anticipated. Water-quality impacts will be short-term, minor and limited to the immediate project area. We anticipate that rebuilding the fishpond wall and incorporating *mākāhā*, gates will allow for proper circulation of water through the fishpond basin, thus no long-term impacts to water quality are anticipated. Noise impacts will be minimal and shore-term (during wall rebuilding phase) and buffered by noises emanating from surf action and winds.

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

The project site is located in coastal waters and within a defined tsunami inundation zone. As no habitable structures are planned, the proposed project will not impact public safety. As a fishpond is located in such a dynamic environment of coastal water, the project is prone to damage due to unforeseeable heavy surf or storm activity. Fishpond requires continual maintenance and care to assure their long-term survival.

(12) Substantially affects scenic vistas and view planes identified in county or state plans or studies;

The revitalized fishpond will enhance scenic vistas as it now lies in a state of abandonment and disrepair.

(13) Requires substantial energy consumption.

The project requires no substantial energy consumption. The proposed project of rebuilding of an ancient fishpond, comprises a 1,173 foot (358 meters) long rock wall. This effort will be undertaken by hand and with manual tools.

6.2 FINDINGS AND ANTICIPATED DETERMINATION

This Environmental Assessment has been prepared in support of an application for a Conservation District Use Permit (CDUP) in order to allow for revitalization of the historic Kō'ie'ie Fishpond by the applicant with the greater Maui community.

The proposed project is not anticipated to result in significant environmental impacts to this archaeological and historic resource, the near shore waters, surrounding properties, natural resources on the site or in the immediate area. The proposed project is not anticipated to negatively impact recreational activities at the site and is not anticipated to create adverse impact upon the visual character of the site and surrounding view planes.

The subject property is located with the State's Conservation Lands, sub zone: Resource. The proposed project is consistent with the objectives, policies and intent of the Conservation District, sub zone Resource.

Based of the foregoing information, it is anticipated that the proposed project would not have significant impacts on the environment. Therefore, a Finding of No Significant Impact (FONSI) is warranted.

7. LIST OF PEOPLE CONSULTED

PRE-CONSULTED AGENCIES & PRIVATE INTERESTS (See Appendix D: Agency and Pre-consultation Letters)

1. FEDERAL AGENCIES

U.S. Department of Commerce National Oceanic
Atmospheric Administration Hawaiian Islands Humpback
Whale National Marine Sanctuary.
Army Corps of Engineers
Environmental Protection Agency

2. STATE OF HAWAII

A. Department of Land and Natural Resources:

-Historic Preservation Division
-Maui Land Division Office
-Land Division, Conservation Branch
-Division of Aquatic Resources, Ānuenuue Fisheries
Research Center

B. University of Hawai'i:

-College of Tropical Agriculture and Human
Resources
-Sea Grant Extension Services
-Department of Geology and Geophysics
-Department of Civil Engineering

3. COUNTY OF MAUI

-Mayor's Office
-Maui Office of Economic Development
-Department of Planning
-Department of Parks and Recreation
-Department of Public Works

4. PRIVATE INTERESTS

Akahele Archeology
International Archeology Research Institute, Inc.
Kihei Community Association
Kihei/Wailea Rotary Club
Kihei Sunrise Rotary Club
Neighboring property owners and neighboring
condominium associations (Koa Lagoon, Menehune
Shores)
Seaweed Task Force
The Oceanic Institute
Nā Kūpuna o Maui
Project Loko I'a – Moloka'i
FORMaui – Fishpond 'Ohana Restoration-Maui
Pacific American Foundation – Project Kāhea Loko

8. COMMENTS FROM AND RESPONSES TO DRAFT ENVIRONMENTAL ASSESSMENT

The following are letters commenting on the Draft Environmental Assessment and the responses made to those comments. Comments from the agencies that are applicable have been incorporated into this Final EA.

47177

LINDA LINGLE
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON
DIRECTOR

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STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

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235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

December 5, 2003

Mr. Peter Young, Chair
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Mr. Young:

Subject: Draft Environmental Assessment for the Kō'ie'ie Fishpond Restoration Project

Thank you for the opportunity to review the subject document. We have the following comments.

1. Please explain the status of kayak and canoe launching activities after the restoration project is complete.
2. Will the fishpond water quality and adjacent sandy beaches be monitored after the restoration to allow for corrective actions should conditions worsen?

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Genevieve Salmonson
Genevieve Salmonson
Director

c: Farber & Associates

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2003 DEC 11 A 9:38
Farber & Associates
1100 Kalia Road
Honolulu, HI 96813

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAI'I 96822
PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Genevieve Salmonson
Director, State of Hawaii
Office of Environmental Quality Control
235 South Beretainia Street, Suite 702
Honolulu, HI 96813

Dear Ms. Salmonson:

Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

Thank you for your letter of December 5, 2003, regarding the Draft Environmental Assessment for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

Kayak and canoe launching activities will continue to have unimpeded access to ocean waters after the restoration of Kō'ie'ie Fishpond. Currently, kayaks and canoes that launch and/or land at Kalepolepo Beach park use the existing opening in the fishpond wall located along the southwest corner of the wall. It is believed, but the evidence is inconclusive that this opening was an original sluice gate (mākāhā). Restoration of the wall will improve the existing mākāhā by clearing and widening the opening to about 5 feet in width. In addition a second mākāhā will be created along the northwest corner of the fishpond wall. These two mākāhā will in fact increase access to and from the beach while providing improved water circulation within the fishpond basin.

Fishpond water quality will be monitored and assessed before during and after restoration. Monitoring parameters include: tide, wind direction, weather conditions, salinity, dissolved oxygen, temperature and turbidity at a number of specific sampling locations within the fishpond basin and outside the fishpond.

Written reports will compare the post-construction water quality data with respect to baseline water quality data. Baseline was collected in October 2000 and April 2002. An opinion as to whether or not the receiving water quality has been degraded shall be

Ms. Salmonson
January 7, 2004
Page 2

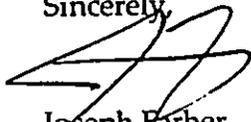
included in the report, and if necessary, corrective actions will be taken to improve water quality.

The adjacent sandy beaches will be monitored before, during and after restoration. Beach monitoring will include taking beach profiles of the site before and after restoration and photo documentation of the beaches within and adjacent to the fishpond before, during and after restoration. Based on the beach monitoring program, should it be determined that the revitalized fishpond wall is causing a negative impact upon adjacent sandy beaches, corrective actions will be taken.

A fishpond wall is constructed by a mortarless, dry-stack wall building technique. As such, it can be adjusted and reconfigured if impacts to the beach and/or water quality and water circulation within the fishpond basin warrant such actions.

We appreciate your comments on the proposed project.

Sincerely,



Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED
LAND DIVISION



CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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DEPARTMENT OF HEALTH
ENVIRONMENTAL MANAGEMENT DIVISION

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

In reply, please refer to
EAMD / CWB

11025CEC.03

November 10, 2003

To: Dierdre S. Mamiya
Acting Administrator
Office of Conservation and Coastal Lands

From: Thomas E. Arizumi, P.E., Chief 
Environmental Management Division

Subject: Request for Comments
Conservation District Use Application (CDUA)
Board Permit
Revitalize Ko'le'le (Ka'ono'ulu) Fishpond
File No. MA-3153

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers the following comments:

1. The Army Corps of Engineers should be contacted at (808) 438-9258 to identify whether a Federal license or permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...."
2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:
 - a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi).
 - b. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the commencement of the construction activities.
 - c. Discharges of treated effluent from leaking underground storage tank remedial activities.

Dierdre S. Mamiya
October 10, 2003
Page 2

- d. Discharges of once through cooling water less than one (1) million gallons per day.
- e. Discharges of hydrotesting water.
- f. Discharges of construction dewatering effluent.
- g. Discharges of treated effluent from petroleum bulk stations and terminals.
- h. Discharges of treated effluent from well drilling activities.
- i. Discharges of treated effluent from recycled water distribution systems.
- j. Discharges of storm water from a small municipal separate storm sewer system.
- k. Discharges of circulation water from decorative ponds or tanks.

The CWB requires that a Notice of Intent (NOI) to be covered by a NPDES general permit for any of the above activities be submitted at least 30 days before the commencement of the respective activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.state.hi.us/doh/eh/cwb/forms/genl-index.html>.

- 3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which the discharge (such as meeting 40 CFR 122.24(c) and/or 40 CFR 122.25 requirements) from the project into State waters and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible. An application for the NPDES permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at <http://www.state.hi.us/doh/eh/cwb/forms/indiv-index.html>.
- 4. Hawaii Administrative Rules, Section 11-55-38, also requires the owner to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. Please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

If you have any questions, please contact the CWB at 586-4309.

c: Regulatory Branch, HED/COE

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAII 96822
PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Thomas E. Arizumi, P.E., Chief
Environmental Management Division
State of Hawai'i Department of Health
P.O. Box 3378
Honolulu, HI 96801-3378

Dear Mr. Arizumi:

Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

Thank you for your Memorandum of November 10, 2003, regarding the Draft Environmental Assessment/Conservation District Use Application for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

We acknowledge that the Army Corps of Engineers will be consulted with to determine which Federal licenses or permits may be required for this project.

We further acknowledge to the terms and conditions as you so present that trigger the need for a National Pollution Discharge Elimination System (NPDES) permit and will apply for such a permit should it be determined necessary.

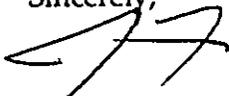
Again let me reiterate that this proposal does not include the provision for aquaculture activities and that the fishpond is being restored for educational, interpretive, cultural and historic preservation purposes. It is anticipated no rocks will be brought from off-site, as it has been determined that the existing fishpond wall footprint and adjacent areas contain a sufficient amount of rocks to rebuild the wall. All wall restoration activities will be conducted by hand.

As requested, please find a copy of the State Department of Land and Natural Resources, State Historic Preservations Division's review letter for the project.

Mr. Arizumi
January 7, 2004
Page 2

We appreciate your comments on the proposed project.

Sincerely,



Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

encl.

PHONE (808) 594-1888

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LAND DIVISION

FAX (808) 594-1865



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STATE OF HAWAII, DEPT. OF LAND &
OFFICE OF HAWAIIAN AFFAIRS, NATURAL RESOURCES
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD03/1156

November 7, 2003

Dierdre S. Mamiya, Administrator
State of Hawaii
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
P.O. Box 621
Honolulu, HI 96809

RE: Request for CDUA Permit to Revitalize Kō'ie`ie Fishpond for Educational Purposes, North Kīhei, Maui, CDUA File No. MA-3153; Adjacent to TMKs (2) 3-9-009:001; Parcel Nos. 85, 87 and 147 in Offshore Waters

Dear Ms. Mamiya,

The Office of Hawaiian Affairs (OHA) is in receipt of your October 27, 2003, request for comments on the above CDUA. OHA congratulates `Ao`ao O Nā Loko ʻa O Maui for the thorough research and work they have completed for the application process, and notes its continued support of this project to restore, revitalize and manage an historic Hawaiian fishpond. We do not have any comment on the project at the present time, but do note the following concerns.

First, OHA notes that the list of mitigation measures should include monitoring for any Native Hawaiian archaeological and burial finds, such that if *iwi* or Native Hawaiian cultural or traditional deposits are found, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Second, the application states that the fishpond wall restoration will alter existing patterns of water currents and sediment movement through and around the wall. While the plan includes two *mākāhā*, which should help maintain the natural water flow and flush the fishpond itself, any structure built in the nearshore will impact beach geology and ecology. "Given the many variables that contribute to sediment transport, beach accretion and erosion this proposal [sic] is only one of many contributing factors to impacts on this stretch of south Maui coastline over time and is foreseen to not cause a

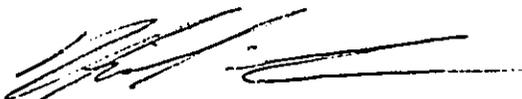
substantial adverse impact to the area beaches.” (CDUA, 13-14) The applicant has a duty to study and describe the cumulative impact of both the proposed project and the other “many contributing factors.” The other factors cannot simply be written off as already existing, but must be adequately described such that a fully informed decision about a new, or altered, impact can be made.

Third, the Cultural Impact Statement (CIS) includes at least one recommendation that should be incorporated in the CDUA and Draft Environmental Assessment (EA). The CIS describes the vegetation in the area as including predominantly introduced plants and trees, except on the property of the Hawaiian Islands Humpback Whale National Marine Sanctuary. As recommended in the CIS, other properties surrounding the fishpond should also be encouraged to promote the planting and maintenance of native plants. Native plants are part of the *ahupua`a*, provide additional cultural and natural resources for public education, and help restore the coastal ecosystem and its beach-dependent organisms, such as turtles, some marine larvae, and various reef fish that have lifestages involving the beach.

Finally, although the applicant states that no Federal or State listed endangered or threatened plant or animal species or any designated “critical habitat” is foreseen to be affected by the proposed project, the Draft EA notes the potential of interfering with the lifecycle of the federally listed endangered Hawksbill sea turtle. Hawksbills nest on the south Maui shoreline during the summer. The applicant states that impact would be negligible, and we must rely on the applicant’s assurances that all construction would stop and appropriate measures would be taken to protect any nest sites and subsequent hatchings. Also, as noted in the Draft EA, after two months of nesting in the sand, more than 100 hatchlings will hopefully head for the sea, where they feed on algae and grow very slowly. Many will likely stay in the shelter of the fishpond; therefore, OHA would like further assurances that the hatchlings will be monitored and protected.

Thank you for the opportunity to comment. If you have further questions, please contact me at 594-1962 or by e-mail at heidig@oha.org.

Sincerely,



Heidi Kai Guth
Policy Analyst – Native Rights
Nationhood and Native Rights Division

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAII 96822
PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Heidi Kai Guth, Policy Analysis – Native Rights
Office of Hawaiian Affairs
Nationhood and Native Rights Division
711 Kapi'olani Boulevard, Suite 500
Honolulu, HI 96813

Dear Ms. Guth:

Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

Thank you for your letter of November 7, 2003, regarding the Draft Environmental Assessment/Conservation District Use Application for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui, put forth by 'Āo'ao O Nā Loko I'a O Maui.

We are in the process of drafting an archeological monitoring plan for review and acceptance by the State Historic Preservation Division prior to any ground-altering activities taking place. In the Monitoring Plan provisions include:

- A qualified archaeological monitor shall be present during specific activities in order to document any historic properties which may be encountered during the proposed undertaking and to provide mitigation measures as necessary;
- The archaeologist conducting the monitoring has the authority to halt the construction in the immediate area of the find in order to carry out the plan;
- A coordination meeting between the archaeologist and construction crew is scheduled, so that the construction team is aware of the plan;
- An acceptable report documenting the findings of the monitoring activities shall be submitted to the State Historic Preservation Division upon 180 days following the completion of the proposed undertaking.

Ms. Guth
January 7, 2004
Page 2

Beaches are in a constant state of flux. In 2002, John J.B Rooney published his doctoral thesis at University of Hawai'i at Mānoa in the Department of Geology and Geophysics about shoreline changes along the Kihei coastline over the past century¹. He notes that winds, waves, currents, storm activity and manmade structures all result in accretion, erosion, sand impoundment and beach loss along this coastline.

In 1900 Rooney cites that Kō'ie'ie fishpond was completely full of sand, except around the *mākāhā*, by 1949 about half the sediment had washed out of the southern half of the fishpond, and by 1960 most of the remaining sediment had washed out leaving a strip of beach on the inside of the fishpond (Ibid.). Relative to 1997, the shoreline in 1900 was about 98 feet (30 m) further seaward on its north side and 197 feet (60 m) further landward on the southern side (Ibid.). Rooney attributes this significant accretion of the beach at the southern end and erosion at the northern end to three phenomenon: 1) Periodic intense Kona storm episodes, which induces south to north longshore sediment transport resulting in accretion of beach on the south side of the fishpond and erosion on the north. These are counter acted by, 2) the typical trade wind activity which results in the southern longshore sediment transport of sand resulting in accretion of beach on the north side of the fishpond and erosion on the south side, and finally 3) manmade structures which interfere with longshore transport of sand and contribute to localized erosion, accretion and beach loss. The remaining fishpond wall continues to act as a barrier to waves and currents thus reduced rates of sand and sediment transport. The shoreline along the fishpond is heavily armored, the reveted properties were built much too close to the ocean, which contribute to slow erosion on the beach fronting the fishpond.

Over the past century, Kona storm activities have tended to dominate in their effect, resulting in predominant northward longshore sediment transport in the Kihei area; the net result is the accretion of beach on the south side of the fishpond and erosion on the north (ibid.). Thus even though the predominate weather pattern is that of trade wind conditions and southward longshore sediment transport, it appears that the infrequent, yet intense Kona storms have tended to have a larger impact upon this coastline (Ibid.).

Building up the fishpond wall could further reduce the flow of waves and currents and thus lower the rates of sand and sediment transport. However, the proposed wall design has taken these issues into consideration.

¹ Rooney, John B. 2002. *A Century of Shoreline Changes to the Kihei Coastline of Maui, Hawai'i*. Dissertation for PhD. in the Department of Geology and Geophysics, University of Hawai'i at Mānoa, Honolulu, Hawai'i.

Ms. Guth
January 7, 2004
Page 3

In addition, as the previous discussion makes clear, there are many variables that contribute to sediment transport, beach accretion and erosion (winds, waves, currents, storm activity and manmade structures) and thus the restored fishpond wall would be only one of many contributing factors to changes along this stretch of coastline over time.

To mitigate against the potential impacts revitalizing Kō'ie'ie Fishpond may have on the existing patterns of sand transport, the proposal calls for the following:

- Rebuild the wall to include two *mākāhā* to assure good water circulation and sediment transport into and out of the fishpond basin. Their locations will be based on archaeological survey work and computer modeling of currents and tides in the area to assure optimal circulation and water exchange.
- The restored pond wall will not extend onto the beach, terminating instead at minus two feet tide (-2.0 feet) waterline. This will allow for continued longshore water circulation and sediment transport at and along the beach.

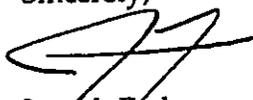
We concur with your observation that properties surrounding the fishpond (Menehune Shores Condominium and the Kalepolepo Country Beach) should be encouraged to plant and maintain native plants such as the current practice taking place on the grounds of the Hawaiian Islands Humpback Whale National Marine Sanctuary. Native plants do provide additional cultural and natural resources for public education and help restore the coastal ecosystem and its beach-dependent organisms. These recommendations will be incorporated into the education programs as they are being developed.

The federally listed endangered hawksbill sea turtle are known to forage and rest in shallow waters along the south shore of Maui and in the immediate vicinity of the project site. The potential for hawksbill sea turtle to swim and forage within and around the fishpond and nest along its shoreline, particularly in the summer months, is high. Should hawksbill sea turtles be observed within the vicinity of the active construction site or should hawksbill sea turtles use the fishpond shoreline and adjacent shoreline areas for hatching, all construction activities would cease and the appropriate government agencies (Department of Land and Natural Resources, Division of Aquatic Resources at (808) 243-5294 or the U.S. Fish & Wildlife Service at (808) 875-1582) will be contacted and consulted so to assure the protection of these nesting areas. Likewise, should hatchlings use the protected pond waters, we will contact the appropriate authorities and make sure that those waters are protected and properly managed.

Ms. Guth
January 7, 2004
Page 4

We appreciate your comments on the proposed project.

Sincerely,



Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

54 High Street, Room 101
Wailuku, Hawaii 96793
PHONE: (808) 984-8103
FAX: (808) 984-8111

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

September 22, 2003

Ref: OCCL:DH, CDUA MA-3153

MEMORANDUM

TO: Dierdre S. Mamiya, Administrator
Land Division

FROM: Jason K. Koga, District Land Agent 
Maui District Land Office

SUBJECT: Revitalization of Ko 'ie 'ie Fishpond, Seaward and Adjacent to
TMK: (2) 3-9-001:085, 087 and 147, Kihei, Maui

We have the following comments to offer:

Although the applicant, 'Ao 'Ao Na Loko I'a O Maui, intends to lease the state-owned fishpond, they do not intend to use it for aquaculture, which would require exclusive and restricted use of the fishpond. Instead, once restored, they intend to use the fishpond for educational purposes, and allow the current uses by the public (fishing, swimming, netting, limu gathering, etc.) to continue unimpeded. This seems appropriate given the fishpond's location along the heavily used Kihei shoreline and near shore waters and the County of Maui's Kalepolepo Beach Park.

Section 171-28, Hawaii Revised Statutes, provides the Board of Land and Natural Resources with the discretion to lease government-owned Hawaiian fishponds subject to certain conditions. The terms and conditions of any lease, will also be subject to a Conservation District Use Permit granted for the use of this fishpond.

We have no further comments at this time. Thank you for the opportunity to review and comment on the matter.

c: Dawn Hegger
District Files

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAI'I 96822

PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Jason Koga, Maui District Land Agent
Department of Land and Natural Resources, Land Division
54 High Street, Room 101
Wailuku, Maui HI 96793

Dear Mr. Koga:

Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

Thank you for your Memorandum of September 22, 2003, regarding the Draft Environmental Assessment/Conservation District Use Application for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

We acknowledge your assessment that the applicant intends to lease the state-owned fishpond for educational, cultural and historic preservation purposes. We do not intend to use the resorted for aquaculture. Current uses by the public at the site (fishing, swimming, netting, limu gathering, etc.) will continue unimpeded.

We appreciate your comments on the proposed project and look forward to working with you in obtaining a long-term lease to the fishpond.

Sincerely,


Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LA/NAV

Ref.: *000L: DH*

COMMENTS

- () We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ____.
- (✓) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zones *V10 and A4*.
- () Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ____.
- (✓) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- () Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
 - () Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
 - (✓) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
 - () Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.
-
- () The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
 - () The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.
 - () Additional Comments: _____
 - () Other: _____

Should you have any questions, please call Mr. Eric Yuasa of the Planning Branch at 587-0254.

Signed: *Eric T. Hirano*
ERIC T. HIRANO, CHIEF ENGINEER

Date: *4/1/03*

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAI'I 96822
PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Eric T. Hirano, Chief Engineer
Department of Land and Natural Resources
Engineering Division
PO Box 621
Honolulu, HI 96809

Dear Mr. Hirano:

Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

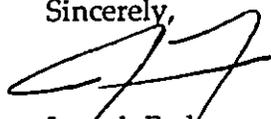
Thank you for your comments of November 1, 2003, regarding the Draft Environmental Assessment/Conservation District Use Application for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

We acknowledge your comments that the project site, according to the Floor Insurance Rate Map (FIRM), is located in Zones V10 and A4.

We also note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) whenever development within a Special Flood Hazard Area is undertaken. This compliance is presented in Title 44 of the Code of Federal Regulations (44CFR) OR the local flood ordinance should they be more restrictive in nature and therefore take precedent over the Federal standards.

We appreciate your comments on the proposed project.

Sincerely,



Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

**COPY FOR YOUR
INFORMATION**

SUSPENSE DATE: September 22, 2003

STATE OF HAWAII
Department of Land and Natural Resources
Division of Aquatic Resources

MEMORANDUM

To: William Devick, Administrator
From: Richard Sixberry, Aquatic Biologist
Subject: Comments on Maui Fish Pond

Comments Requested By: Diedre Mamiya - Land Division

Date of Request: 9/8/03

Date Received: 9/8/03

Summary of Project

Title: Revitalize Ko'ie'ie Fishpond
Proj. By: Ao Ao O Na Loko I'a Maui
Location: Kihei, Maui

Brief Description:

The applicants proposes the restoration, repair, maintenance, and reconstruction, of Ko'ie'ie' Fishpond at Kihei, Maui. We earlier reported to Dawn Hegger that our comments may be delayed until October due to Maui staff vacations.

COMMENTS:

The following comments are reports from our Maui Staff.

I received and reviewed the Cдуа (MA-3153) application and the Draft EA for the revitalization of the Koëieëie fishpond in Kihei, Maui. As far as I am concerned this is a very good project and the division should be in support of it. Historically we (Skippy and Myself) have been concerned that the revitalization of this fishpond would displace the majority of the public use of this area. The EA addresses this concern directly by pointing out the current non-commercial activities include "swimming, wading, snorkeling, subsistence fishing, limu gathering, netting, small boat launching, beach going, walking, jogging, etc." (sec. 3.1). They go on to explain that "they cannot revitalize to the traditional use, because that would require exclusive restricted use of the fishpond." In other words you can not turn the pond into a aquaculture facility and still allow open public access and use.

Page 2. MA-3153

It is clear that the applicants understand this situation and plan to restore the fishpond for display and education and not as a functional fish pond. With that in mind, public access will be undisturbed and the area will be greatly improved for all to enjoy, appreciate and learn from. These are good things that the division should be supportive of.

Russell Sparks, Education Specialist
Division of Aquatic Resources, Maui Office
Department of Land and Natural Resources
130 Mahalani Street
Wailuku, HI 96793
ph (808)243-5294 fax (808)243-5833
Russell.T.Sparks@hawaii.gov

Richard Sixberry
Aquatic Biologist

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAI'I 96822
PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

William Devick, Administrator
Department of Land and Natural Resources
Division of Aquatic Resources
PO Box 621
Honolulu, HI 96809

Dear Mr. Devick:

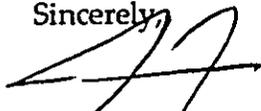
Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

Thank you for your Division's comments of September 22, 2003, regarding the Draft Environmental Assessment/Conservation District Use Application for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

We acknowledge your assessment that the purpose of the proposal is to restore the fishpond for cultural, educational, interpretive and historic preservation purposes. No aquaculture activities are slated for the fishpond. Public access and existing activities (such as swimming, wading, net throwing, fishing, snorkeling, beach going, walking, jogging, etc.) at the site will continue interrupted.

We appreciate your comments and support on the proposed project.

Sincerely,



Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED
LAND DIVISION



2003 OCT 23 P 3:42

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

October 17, 2003

LOG NO: 2003.2110
DOC NO: 0310CD39

MEMORANDUM

TO: Dierdre S. Mamiya, Acting Administrator
Office of Conservation and Coastal Lands

FROM: P. Holly McEldowney, Acting Administrator *P. Holly*
State Historic Preservation Division

SUBJECT: Chapter 6E-42 Historic Preservation Review – Request for Authorization from the
Department to Process a Conservation District Use Application Located on
State Lands for the Proposed Revitalization of Ko'ie'ie Fishpond
Ka'ono'ulu Ahupua'a, Wailuku District, Island of Maui
TMK: (2) 3-9-001

Thank you for the opportunity to review and comment on the Request for Authorization from the Department to Process a Conservation District Use Application (CDUA) located on State Lands for the proposed Revitalization of Ko'ie'ie Fishpond, which was received by our staff September 9, 2003. The submitted CDUA includes as supporting documents the Draft Environmental Assessment (Draft EA) (*Draft Environmental Assessment for Ko'ie'ie Fishpond Revitalization Project Ka'ono'ulu, Kihei, Maui, Hawaii*. Farber et al. 2003), the reconstruction plans (*Management Plan – Ko'ie'ie Fishpond, Kihei, Maui*. Farber 2003), a copy of the archaeological inventory survey (*Underwater Archaeological Inventory Survey of Ko'ie'ie Fishpond (State and National Register Site No.. 50-50-09-1288) Ka'ono'ulu Ahupua'a, Kula District, Maui (TMK: [2] 3-9-01) Ka'ono'ulu Ahupua'a, Kula District, Maui*. Donham 2002), and a cultural assessment (*Final Cultural Impact Assessment Ko'ie'ie Loko l'a Kalepolepo, Ka'ono'ulu, Kula, Maui*. Cloveira 2002) which will be reviewed separately by our Culture and History Branch.

Based on the submitted reconstruction plans, we understand the proposed undertaking will produce a continuous fishpond wall (approximately 1170 feet long x 14-16 wide [at the base tapering to 4-6 at the crown] x 5-6 feet high). The wall will be re-constructed using the available rocks with which the wall was originally constructed. Manually operated tools utilized for the restoration project will include the 'o'o, cargo nets, and floating flatbed pontoon. 'Ili'ili will be collected manually from within the fishpond basin to use in the construction of the core-filled walls. As the original locations of the makaha are not known, their locations will be based on the findings of the inventory survey and ocean engineering studies. The makaha openings will be approximately 5 feet wide, corresponding with the existing fishpond opening. Post-construction maintenance activities will include: the manual replacement of weather damaged portions of the wall; the manual removal of naturally occurring debris, including limu. Staff members of the Hawaiian Humpback Whale National Marine Sanctuary Headquarters will monitor the fishpond Monday through Friday to address any of the above-mentioned concerns. The applicant will also involve the larger Maui community in fishpond maintenance by conducting community workdays on a quarterly basis.

Between 2001 and 2001 Akahela Archaeology (AA) conducted an archaeological inventory survey of Ko'ie'ie Fishpond. We have reviewed and accepted the report documenting the findings (*Underwater Archaeological Inventory Survey of Ko'ie'ie Fishpond (State and National Register Site No. 50-50-09-1288) Ka'ono'ulu Ahupua'a, Kula District, Maui (TMK: [2] 3-9-01)*, Donham 2002) and concurred with the mitigation recommendations as stated on page 51 of the report (SHPD DOC NO.: 0302MK15/LOG NO.: 31794). We understand from the inventory survey report that International Archaeological Research Institute has conducted core sampling of the deposits in the project area. The findings of this study will be submitted under separate cover.

Given the historic and cultural significance of Ko'ie'ie Fishpond, we believe the proposed undertaking will have an effect on this significant historic property. In order to mitigate the effect, we recommend that the following conditions are attached to the subject CDUA, should it be approved.

- 1) A qualified archaeological monitor shall be present during specific activities in order to document any historic properties which may be encountered during the proposed undertaking and to provide mitigation measures as necessary. The scope of the monitoring program will be determined in consultation with the State Historic Preservation Division. An acceptable archaeological monitoring plan will need to be submitted to the State Historic Preservation Division for review, prior to the commencement of any ground-altering activities. An archaeological monitoring plan must contain the following nine specifications: (1) The kinds of remains that are anticipated and where in the construction area the remains are likely to be found; (2) How the remains and deposits will be documented; (3) How the expected types of remains will be treated; (4) The archaeologist conducting the monitoring has the authority to halt the construction in the immediate area of the find in order to carry out the plan; (5) A coordination meeting between the archaeologist and construction crew is scheduled, so that the construction team is aware of the plan; (6) What laboratory work will be done on remains that are collected; (7) A schedule of report preparation; (8) Details concerning the archiving of any collections that are made; and (9) An acceptable report documenting the findings of the monitoring activities shall be submitted to the State Historic Preservation Division upon 180 days following the completion of the proposed undertaking.
- 2) The State Historic Preservation Division shall be notified via facsimile (243-5838 on Maui and 692-8023 on O'ahu) upon on-set and completion of the undertaking.
- 3) The submittal of a schematic drawing showing details of the reconstruction project to include with the Management Plan on file.
- 4) The State Historic Preservation Division shall be notified if additional materials (rocks) are to be imported, and be given the opportunity to review the source location(s) for such materials.
- 5) Additional construction materials may not be obtained from other historic properties.
- 6) An archaeological inventory shall be conducted if the proposed undertaking extends into the area to the north of Ko'ie'ie Fishpond; the additional archaeological inventory survey work should include identification of siltation events and examination of the possible platform on County property. The inland portions of this area warrant subsurface testing.

In addition, please note the State Historic Preservation Division will conduct periodic field inspections of the project area before, during, and after the completion of the proposed undertaking.

Should you have any questions, please contact Cathleen Dagher at 692-8023.

CD:jen

c: Michael Foley, Director, Dept of Planning, County of Maui, 250 South High Street, Wailuku, HI 96793
Cultural Resources Commission, Planning Dept, County of Maui, 250 S. High Street, Wailuku, HI 96793
Joseph Farber, Farber & Associates, 2722 Ferdinand Avenue, Honolulu, HI 96822

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAI'I 96822

PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

P. Holly McEldowney, Acting Administrator
Department of Land and Natural Resources
Historic Preservation Division
601 Kamokila Blvd, Room 555
Kapolei, HI 96707

Dear Ms. McEldowney:

Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kīhei, Maui, Hawaii

Thank you for your Memorandum of October 17, 2003, regarding the Draft Environmental Assessment/Conservation District Use Application for the proposed Kō'ie'ie Fishpond Revitalization Project in Kīhei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

Kō'ie'ie Fishpond has been extensively modified and nearly destroyed by storm waves, tsunami, adjacent development, boating activities and general neglect. The proposed project will involve the restoration, repair and maintenance of an important cultural and archeological resource for educational, interpretive and preservation purposes. 'Ao'ao O Nā Loko I'a O Maui is committed to working with your Division to make sure this is done in the best manner possible.

We are in the process of drafting a Monitoring and Management Plan for your review and approval prior to any work to commence. Contents of the Plan include the process and methodology of restoring the wall (a schematic drawing of wall rebuilding details, water quality monitoring procedures and a guide to Best Management Practices), and a archeological monitoring program the contents of which are spelled out in the above referenced Memo of October 17, 2003.

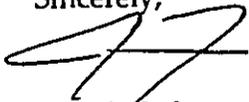
We anticipate that the fishpond wall can be restored using the existing rocks on-site. However, should we require additional rocks, they will not be obtained from other historic properties and your Division will be notified and given an opportunity to review the source location for the additional material.

P. Holly McEldowney
January 7, 2004
Page 2

The proposed project will not extend into the area north of Kō'ie'ie Fishpond. In the Best Management Practices will include the provision to avoid the area to assure that our work will not disturb those waters.

We appreciate your comments on the proposed project and look forward to working with your Division.

Sincerely,



Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui
Cultural Resources Commission, Planning Dept., County of Maui

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

File No. MA-3153

Ref: OCCL: DE

December 23, 2003

Farber and Associates
2722 Ferdinand Avenue
Honolulu, Hawaii 96822

Dear Mr. Farber,

Subject: Comments on Draft Environmental Assessment Koie'ie Fishpond Revitalization Project. Ka'ono'ulu, Kihei, Maui.

The State of Hawaii Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) has reviewed the April 2003 Draft Environmental Assessment (EA) for Koie'ie Fishpond Revitalization Project. The Department offers the following comments and suggestions.

1. The EA is in support of a Conservation District Use Permit (CDUP) for a proposed restoration of a historic fishpond. The project involves the restoration and repair of the fishpond walls and Makaha (gates) as well as periodic post-construction maintenance of the wall and basin. The proposed project will produce a continuous rock wall approximately 1,170 feet in length with an average height of 5 to 6 ft. The restoration will follow the original wall alignment where possible. The proposed design calls for a 14 to 16 ft base, 4 to 6 ft top and 5 to 6 feet height with 1 to 2 ft exposed above the high water.
2. The Department recognizes the social, cultural and recreational value of restoring fishponds. The Department agrees that this project will likely serve as a great educational opportunity for the community and visitors alike. As with all dynamic shorelines, the inherent variability of sediment transport and wave dynamics needs to be addressed and accommodated for. The Department feels this issue needs to be addressed and that the potential effects of increasing the wall height should be identified and rationalized. It is likely an increase in the wall height will significantly reduce wave energy into the basin. How will this effect sediment transport through this area? It is possible that a reduction in wave energy may result in accretion of sediment within the basin that may eventually fill up the fishpond. How will this be dealt with?

3. The EA states that the design of the fishpond walls will terminate at the 0 elevation medium tide waterline on the beach. The Department recommends keeping the landward terminating ends of the walls as far Makai from the beach as possible to avoid any potential interference with the littoral transport. The fishpond is not proposed to be used for active aquaculture therefore there is no concern of fish stock loss by keeping the mauka terminating arms in deeper water (-2 ft depth). The intertidal beach area should be kept clear of rocks to ensure the natural transport of sand through the system. Any hard structure that protrudes from the natural contour of the coastline will likely affect the nearshore transport processes in some way. Shore perpendicular structures such as groins and jetties are generally very efficient at trapping sediment on the updrift side and restricting sand from migrating around the structure thus accelerating erosion on the downdrift side. This effect should be discussed and mitigation plans developed.

4. Given the complex nature of coastal engineering models and the inherent difficulties in using them around shallow fringing reefs it is unlikely they will accurately describe potential impacts of the proposed design changes. It is advisable however that potential impacts to the coastal processes be addressed and that mitigation plans be discussed. The Department would like to see discussion of design changes and/or viable post-construction alterations that may be carried out if it becomes apparent impacts to the shoreline processes are occurring.

5. The sediment dynamics of this region are quite interesting. Although the short-term tradewind-driven sediment transport is to the south, the long-term dominant net transport is to the north. This is a result of the high wave energy delivered by Kona storms and south swells in this region. The variable direction sediment transport should be discussed and recognized in terms of the wall design. Erosion maps for the pond area indicate the average erosion since 1949 to be 1.5 to 3 feet per year. The potential influence of the structure in relation to historical shoreline trends and dominant sediment transport should be discussed in the EA.

6. With the increase in fishpond wall height and resulting reduced wave energy the likelihood of algae growth (limu) is increased. The EA states that the positioning of the Makaha will optimize water circulation, while the tapered mauka ends and regular scheduled maintenance will reduce the likelihood of limu inundation. The Department suggests mitigation plan if these measure do not help the limu problem.

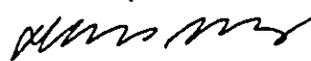
7. It is understood that coral densities in this area are low and that potential impacts to these corals will be limited because of the small scale nature of the construction activities.

8. It is understood that the restoration process will involve manually operated equipment only (spades, cargo nets, and floating pontoons). In this regard, will the project involve any dredging of sediment or relocation of pond infill? If so what are the estimated quantities?

Should you have any questions, please contact Dawn Hegger of the Office of Conservation and Coastal Lands at 587-0380 or Dolan Eversole of the University of Hawaii Sea Grant Program 587-0439.

587-0439

Aloha,



Dierdre S. Mamiya, Acting Administrator
Office of Conservation and Coastal Lands

CC: Maui District Land Office
County of Maui, Planning Department
DOH
ACOE

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAII 96822
PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Dierdre S. Mamiya, Acting Administrator
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
P.O. Box 621
Honolulu, HI 96809

Dear Ms. Mamiya:

Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kīhei, Maui, Hawaii

Thank you for your letter of December 23, 2003, regarding the Draft Environmental Assessment/Conservation District Use Application for the proposed Kō'ie'ie Fishpond Revitalization Project in Kīhei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

The State-owned Kō'ie'ie Fishpond has been extensively modified and nearly destroyed by storm waves, tsunami, adjacent development, boating activities and general neglect. Yet, relative to many of the coastal fishponds, Kō'ie'ie is intact and restorable. While the walls have deteriorated, the outline (footprint) of the pond is clearly visible and the rocks needed to rebuild are within the general vicinity of the original wall and within the fishpond basin. Restoring this pond now is a comparatively reasonable undertaking in terms of costs, time, organizational capacity, labor, materials and environmental impacts.

The proposed project will involve the restoration, repair and maintenance of an important cultural and archeological resource for educational, interpretive and preservation purposes. The applicant, 'Ao'ao O Nā Loko I'a O Maui (The Association of Fishponds of Maui) and its supporters believe that this proposal provides a realistic balance between restoring this cultural resource and the potential impacts such actions may cause; the benefits to the community at large outweigh potential negative impacts that may, if at all, develop from this proposal. Furthermore, the applicant is willing to address and alleviate any negative impacts from this project, should they arise.

Dierdre S. Mamiya
January 7, 2004
Page 2

The proposed project will produce a continuous rock wall approximately 1,170 feet in length with an average height of 5 to 6 feet. The proposal will create a uniform wall about three feet higher than what exists now. This wall will be exposed at all tides unlike the current situation where only portions of the wall are exposed at medium tide and most of the wall is exposed at low tide.

Building up the fishpond wall may reduce the flow of waves and currents and thus lower the rates of water, sand and sediment transport. However, the proposed wall design has taken these issues into consideration through the creation of two *mākāhā* and terminating the ends of the wall enough *makai* from the beach as possible to avoid any potential interference with the littoral transport. Furthermore, it should be pointed out that a fishpond wall by nature is semi-permeable, meaning that the rock wall is solid but porous, and does allow for the percolation and flow of seawater through it.

We agree and adopt your recommendation to terminating the wall further *makai* in deeper water (-2 feet depth) rather the original proposed zero elevation medium tide waterline, to further assure proper coastal sand and water transport.

In 1900 Kō'ie'ie fishpond was completely full of sand, except around the *mākāhā*, by 1949 about half the sediment had washed out of the southern half of the fishpond, and by 1960 most of the remaining sediment had washed out leaving a strip of beach on the inside of the fishpond (Ibid.). Relative to 1997, the shoreline in 1900 was about 98 feet (30 m) further seaward on its north side and 197 feet (60 m) further landward on the southern side (Ibid.). This significant accretion of the beach at the southern end and erosion at the northern end is attributed to three phenomenon: 1) Periodic intense Kona storm episodes, which induces south to north longshore sediment transport resulting in accretion of beach on the south side of the fishpond and erosion on the north. These are counter acted by, 2) the typical trade wind activity which results in the southern longshore sediment transport of sand resulting in accretion of beach on the north side of the fishpond and erosion on the south side, and finally 3) manmade structures which interfere with longshore transport of sand and contribute to localized erosion, accretion and beach loss. The remaining fishpond wall continues to act as a barrier to waves and currents thus reduced rates of sand and sediment transport. The shoreline along the fishpond is heavily armored, the reveted properties were built much too close to the ocean, which contribute to slow erosion on the beach fronting the fishpond.

As the above discussion illustrates, there are many variables that contribute to sediment transport, beach accretion and erosion (winds, waves, currents, storm activity and manmade structures) and thus the restored fishpond wall would be only one of many contributing factor to changes along this stretch of coastline over time and thus it is difficult to model and

Dierdre S. Mamiya
January 7, 2004
Page 3

predict the potential impact of this proposal. However, the adjacent sandy beaches and fishpond basin will be monitored before, during and after restoration. Monitoring will include taking beach profiles of the site before and after restoration and photo documentation of the beaches within and adjacent to the fishpond before, during and after restoration. Based on the beach monitoring program, should it be determined that the revitalized fishpond wall is causing a negative impact upon adjacent sandy beaches, or contributing to the accretion of sand within the fishpond, corrective actions will be taken.

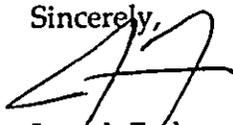
A fishpond wall is constructed by a mortarless, dry-stack wall building technique. As such, it can and will be adjusted and reconfigured if impacts to the beach, sand transport and/or water quality and water circulation within the fishpond basin warrant such actions.

The design of the proposed restored wall will allow for more than adequate water circulation, sand transport and *limu* flow through. Should the restored fishpond cause the increase of *limu* to be trapped within the basin, we will manually remove and properly dispose of the *limu* on a regular basin to assure the *limu* will not accumulate within the fishpond basin and adjacent beach and left to rot.

The fishpond basin is a shallow coral reef bottom consisting of limestone, sand, coral rubble and limestone outcrops. The project does not involve any dredging of sediment or relocation of pond infill.

We appreciate you comments on the proposed project.

Sincerely,



Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

LINDA LINGLE
GOVERNOR OF HAWAII



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

Ref: OCCL: DH

File No. MA-3153

Acceptance Date: October 23, 2003
180 Exp. Date: April 20, 2004

OCT 27 2003

Farber and Associates
2722 Ferdinand Avenue
Honolulu, Hawaii 96822

Dear Mr. Farber,

**NOTICE OF ACCEPTANCE AND ENVIRONMENTAL DETERMINATION
Conservation District Use Application (CDUA) File No. MA-3153
(BOARD Permit)**

This letter acknowledges the receipt and acceptance for the processing of your client's, 'Ao' Ao O Na Loko I'a O Maui Conservation District Use Application (CDUA) for Ko'ie'ie Fishpond located on State-owned Lands, Kaonoulu Ahupuaa, Kula District, North Kihei, Island of Maui.

According to your application, 'Ao' Ao O Na Loko I'a O Maui is proposing to restore, rebuild, revitalize and maintain Ko'ie'ie Fishpond's three (3) acres for educational, cultural, historical, and recreational purposes. The fishpond is bounded on the north, west, and south by the ocean, and to the east by Parcels 85, 87 and 147 of TMK: (2) 3-9-001.

The fishpond is presently deteriorating; the walls are damaged due to erosion, and human use(s). Current activities at the fishpond include: swimming, wading, snorkeling, diving, spear fishing, net throwing, subsistence fishing, limu (seaweed) gathering, and kayak and canoe launchings.

Proposed improvements include: 1) restoration, repair, and reconstruction of the fishpond wall (remove surface rocks, movement of smaller rocks, corral, pebbles) and the two sluice gates; 2) periodic post-construction maintenance of the walls and basin; and 3) management of the fishpond for cultural, historic preservation and interpretive purposes, and for the non-commercial activities that currently take place at the site (swimming, wading, snorkeling, subsistence fishing, limu gathering, small boat launching, walking).

The proposed project will produce a continuous fishpond wall, approximately 1,170 feet (357 meters) in total length; an average wall height ranging between five (5) to six (6) feet, a base width between 14 and 16 feet, tapering to a wall width of between four (4) to six (6) feet at the crown.

Lastly, the applicant notes that there are no Federal or State listed endangered or threatened plant or animal species or any designated "critical habitat" is foreseen to be affected by the proposed project.

After reviewing the application, we find that:

1. The proposed use is an identified use within the Protective subzone of the Conservation District according the Hawaii Administrative Rules (HAR), 13-5-22, P-2, FISHPONDS, (D-1), restoration or repair of a fishpond under an approved management plan; where restoration is the act or process of returning the property to a state of utility through repair or alteration which makes possible an efficient contemporary use, such as aquaculture," please be advised, however, that this finding does not constitute approval of the proposal;
2. A public hearing pursuant to HAR 13-5-40 will be required, since the scope of the proposed project requires a Public Hearing;
3. In conformance with Chapter 343, Hawaii Revised Statutes (HRS), as amended, and Chapter 11-200, HAR, a finding of no significant impact (FONSI) to the environment is anticipated for the proposed project. The draft environmental assessment for the project has been submitted to the Office of Environmental Quality Control (OEQC), and will be published in the November 8, 2003 edition of OEQC's Environmental Notice.

Please be informed that, as the applicant, your responsibility includes complying with the provisions of Hawaii's Coastal Zone Management law (Chapter 205A, HRS) that pertain to the Special Management Area (SMA) requirements administered by the various counties.

Negative action by the Board of Land and Natural Resources (BLNR) on this application can be expected should you fail to obtain and provide us, at least thirty (30) days prior to the 180-day expiration date as noted on the first page of this notice, one of the following from the appropriate county:

1. An official determination that the proposal is exempt from the provisions of the county rules relating to the SMA;
2. An official determination that the proposed development is outside the SMA; or
3. An SMA Use Permit for the proposed development.

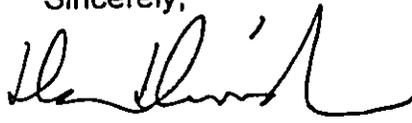
Lastly, Native Hawaiian practitioners need to be consulted as a part of the State's obligations to protect the customarily and traditionally exercised rights of native Hawaiians, while balancing private interests, when a CDUA is being processed. The Board may evaluate the following topics when reviewing native Hawaiian traditional and customary rights for a CDUA:

1. The identity and scope of "valued cultural, historical and natural resources" in the area, including the extent to which traditional and customary native Hawaiian rights are exercised in the area;
2. The extent to which those resources, including traditional and customary native Hawaiian rights, will be affected or impaired by the proposed action; and
3. The feasible action, if any, to be taken by the Board of Land and Natural Resources to reasonably protect native Hawaiian rights if they are found to exist.

Your CDUA will be placed on the agenda of the Board of Land and Natural Resources for their consideration after all reviews and evaluations of the proposal have been made.

Should you have any questions, please contact Dawn Hegger of our Office of Conservation and Coastal Lands staff at 587-0380.

Sincerely,


for PETER T. YOUNG
Chairperson

Cc: Maui District Land Office
County of Maui
Planning Department
Department of Public Works
Department of Parks and Recreation
DOH/OHA/DOT/OEQC
ED/DAR/DOFAW/HPD/SP/MDLO
ACOE
Menehune Shores Condo
Hawaiian Humpback Whale National Marine Sanctuary

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAII 96822
PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Peter T. Young, Chairperson
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Young:

Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

Thank you for your letter of October 27, 2003, regarding the Notice of Acceptance and Environmental Determination of the Conservation District Use Application (File No. MA-3153) for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui put forth by 'Ao'ao O Nā Loko I'a O Maui.

A Public Hearing pursuant to HAR 13-5-40 was held on January 6, 2004. The Hearing was well advertised far in advance to all neighboring property owners, residents and users of the fishpond site and adjoining recreational areas. More than 50 people attended the Hearing.

We concur the need to be responsible for complying with Hawaii's Coastal Zone Management law (Chapter 205AS, HRS) that pertain to the Special Management Area (SMA) requirements administer by Maui County.

We further acknowledge our need to obtain 30 days before April 20, 2004 either a SMA Permit or an official determination that the proposal is exempt or outside the boundaries of the SMA.

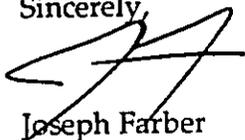
We have provided a Cultural Impact Assessment in an appendix to the Environmental Assessment that is apart of the CDUA. The methodology used was the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, 1997). The information in the Cultural Impact Assessment includes an examination of the project site's cultural resources, practices and beliefs obtained through documentary research and oral history interviews.

Peter T. Young
January 7, 2004
Page 2

The State-owned Kō'ie'ie Fishpond has been extensively modified and nearly destroyed by storm waves, tsunami, adjacent development, boating activities and general neglect. The proposed project will involve the restoration, repair and maintenance of an important cultural and archeological resource for educational, interpretive and preservation purposes.

We appreciate you comments on the proposed project.

Sincerely,



Joseph Farber
Project Consultant

C:

'Ao'ao O Nā Loko I'a O Maui

ALAN M. ARAKAWA
Mayor

GILBERT S. COLOMA-AGARAN
Director

MILTON M. ARAKAWA, A.I.C.P.
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955



COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration

TRACY TAKAMINE, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

JOHN D. HARDER
Solid Waste Division

December 2, 2003

RECEIVED
LAND DIVISION
2003 DEC -9 A 10:09
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

Ms. Dierdre S. Mamiya, Acting Administrator
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
P. O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Mamiya:

**SUBJECT: CONSERVATION DISTRICT USE APPLICATION FOR USE
OF STATE-OWNED LANDS IN OFFSHORE WATERS
AO'AO O NA LOKO I'A O MAUI, KO'IE'IE FISHPOND
TMK: (2) 3-9-001:085, 087 AND 147
CDUA MA-3153**

We reviewed the subject application and have the following comment:

1. The document indicates that debris and limu will be periodically removed from the fishpond. Applicant shall be responsible for disposal.

If you have any questions regarding this letter, please call Milton Arakawa at (808) 270-7845.

Very truly yours,


GILBERT S. COLOMA-AGARAN
Director

GSCA:MA:jih
S:\LUCAICZM\Ko'ie'ieFishpond_cdua_39001085_jih.wpd

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAI'I 96822
PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Gilbert S. Coloma-Agaran, Director
County of Maui Department of Public Work and Environmental Management
200 South High Street
Wailuku, Maui HI 96793

Dar Mr. Coloma-Agaran:

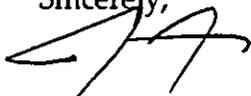
Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment/Conservation District Use Application
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

Thank you for your letter of December 2, 2003, regarding the Draft Environmental Assessment/Conservation District Use Application for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

The applicant, 'Ao'ao O Nā Loko I'a O Maui, will be responsible for the proper disposal of any and all debris and *limu* that will be periodically removed from the fishpond during routine maintenance activities.

We appreciate your comments on the proposed project.

Sincerely,

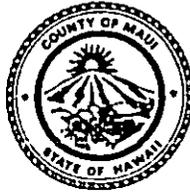


Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

ALAN M. ARAKAWA
Mayor

RECEIVED
LAND DIVISION



GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

2003 NOV 21 A 9:16 DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nako'a Street, Unit 2, Wailuku, Hawaii 96793

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

November 18, 2003

Dierdre S. Mamiya, Acting Administrator
Office of Conservation and Coastal Lands
State of Hawaii - DLNR
PO Box 621
Honolulu, Hawaii 96809

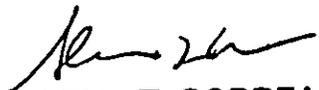
Dear Ms. Mamiya:

Subject: Conservation District Use Application (CDUA) MA-3153 for use of
State-Owned Lands in Offshore Waters Adjacent to TMK's (2) 3-9-
001: Parcels 85, 87 and 147, Kihei, Maui

We have reviewed the subject application and have no objections to the proposed
action. However, our department would like to be consulted prior to construction.

Thank you for the opportunity to review and comment. Should you have any
questions, please call Mr. Patrick Matsui, Chief of Parks Planning and Development, at
(808) 270-7387.

Sincerely,


GLENN T. CORREA
Director

c: Patrick Matsui, Chief of Planning and Development

FARBER & ASSOCIATES

2722 FERDINAND AVENUE, HONOLULU HAWAI'I 96822

PH/FAX (808) 988-3486 E-MAIL: JOEFARBER@HOTMAIL.COM

January 7, 2004

Glenn T. Correa, Director
County of Maui, Department of Park and Recreation
700 Hali'a Nako Street, Unit 2
Wailuku, Maui HI 96793

Dear Mr. Correa:

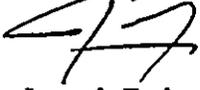
Subject: Kō'ie'ie Fishpond Revitalization Project
Environmental Assessment
Seaward and adjacent to TMK: (2) 3-9-001:085, 087 and 147,
Kihei, Maui, Hawaii

Thank you for your letter of November 18, 2003, regarding the Draft Environmental Assessment for the proposed Kō'ie'ie Fishpond Revitalization Project in Kihei, Maui, put forth by 'Ao'ao O Nā Loko I'a O Maui.

We acknowledge your request that your Department will be consulted prior to construction activities taking place.

We appreciate your comments on the proposed project and look forward to working with your Department.

Sincerely,



Joseph Farber
Project Consultant

C: Mr., Peter Young, Chair, Department of Land and Natural Resources
'Ao'ao O Nā Loko I'a O Maui

9. LIST OF REFERENCES

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Appendix A

Circulation Studies of Hawaiian Fishponds

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The below excerpts are from the report:

Ertekin et al., 1996, "Molokai Fishpond Tidal Circulation Study."

<http://oceaneng.eng.hawaii.edu/~fishpond/circulation.html>

For more information on the circulation studies of Hawaiian Fishponds:

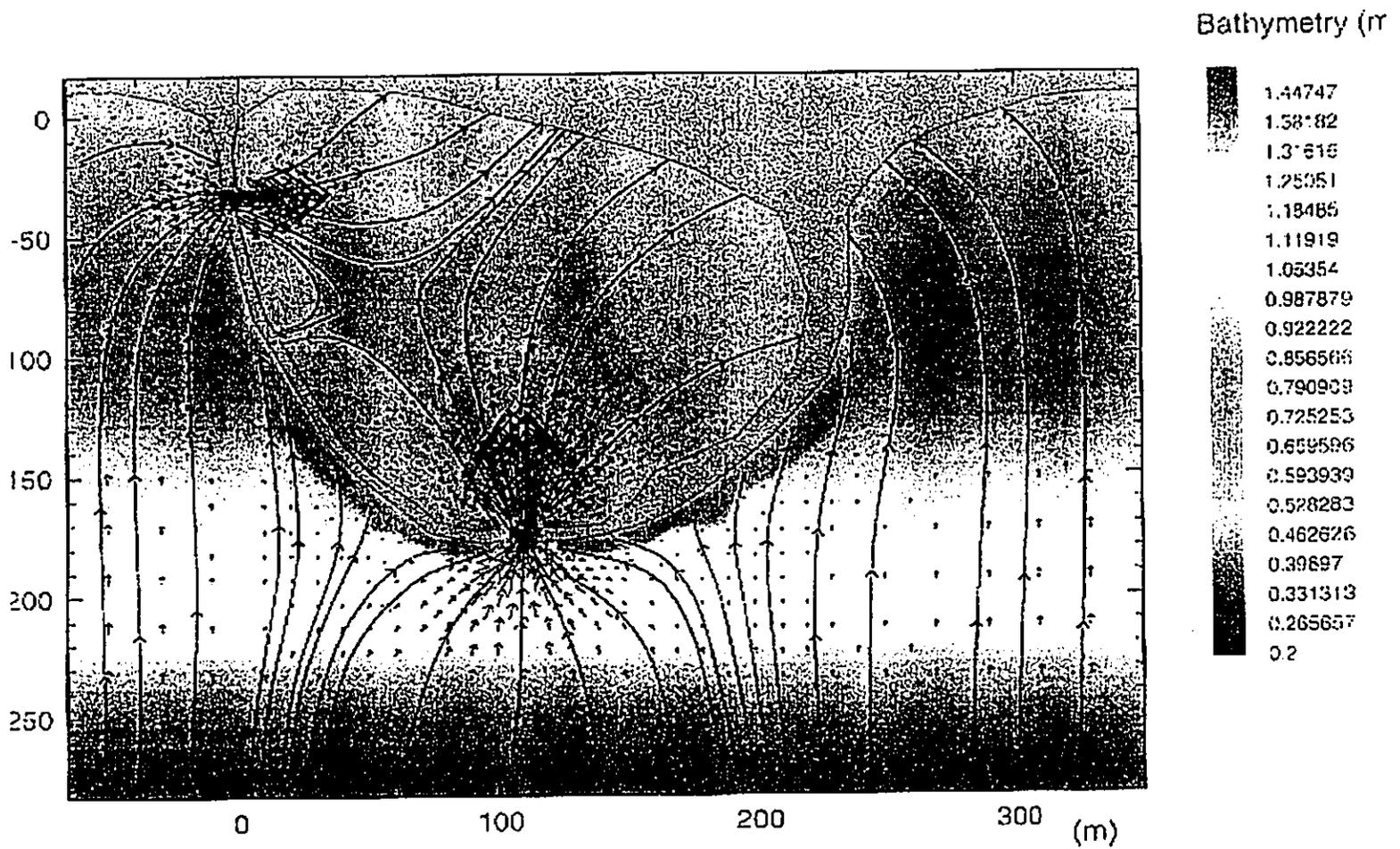
<<http://oceaneng.eng.hawaii.edu/~fishpond/download.htmth>>

The revitalization of saltwater fishponds, unique to the Hawaiian Islands, is the focus of a Sea Grant funded project. Professor R. C. Ertekin and his students have conducted a detailed study of a fishpond on the southern coast of the island of Molokai that includes a survey of the geometry and water depth in and around the pond and tidal elevations, and the use of these data in a numerical tidal circulation model. The following figure shows the numerical simulation of the tidal circulation in a model One Ahi fishpond with two makahas (sluice gates). The current velocities and streamlines are superimposed on the bathymetry of the fishpond. The methodology developed in this project can be used to study the circulation characteristics of other enclosed or semi-enclosed basins and to determine sediment transport rates.

To simulate the circulation in the fishpond, a computer program developed by Sundararaghavan (1992) was used. The computer program was developed originally to simulate the wastewater transport from the Sand island outfall on the south shore of the island of Oahu. The model includes the simulation of a two-dimensional depth averaged shallow water flow and the transport phenomena. The numerical method uses an Eulerian-Lagrangian approach, in which the convection equation is solved by using the method of characteristics. The model uses semi-implicit finite differences to represent the time derivatives and is stable and computationally efficient. Numerical calculations of circulation patterns are often performed to analyze different situations and, to a certain extent, to obtain a better

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problems are solved numerically using the finite element method. The problem is solved using the finite element method (FEM). Since, in shallow waters, the flow varies over the depth is often less significant, the vertically averaged equations and variables should describe the physical situation adequately. However, in deeper waters, which intercept the top of the thermocline, it is no longer possible to use a depth averaged approach and a two- or multi-layer model is required. In such a situation, the three-dimensional Navier-Stokes equations are solved by using a coordinate transformation along the vertical direction.



Appendix B

Archaeological Survey

UNDERWATER ARCHAEOLOGICAL
INVENTORY SURVEY OF
KŌ'IE'IE FISHPOND

Ka'ono'ulu Ahupua'a
Kula District, Maui



Prepared For

'Ao' Ao O Na Loko I'a O Maui

By

Theresa K. Donham
Akahihe Archaeology

December 2002

UNDERWATER ARCHAEOLOGICAL
INVENTORY SURVEY OF
KŌ'IE'IE FISHPOND
(State and National Register Site No. 50-50-09-1288)

Ka'ono'ulu Ahupua'a, Kula District
Kihei, Maui (TMK [2]-3-9-01)

Prepared For
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Abstract

An underwater inventory and reconnaissance survey was conducted at the Kō'ie'ie Fishpond (SIHP Site 50-50-09-1288), located offshore in Kalepolepo, Ka'ono'ulu, Kula District, Maui (TMK 3-9-01: submerged). The work was conducted at the request of Mr. Joe Farber, Project Planner for 'Ao'Ao O Na Loko 'Ia O Maui and Fishpond 'Ohana Restoration - Maui, in connection with a restoration program at the fishpond. The fieldwork was conducted between November 2001 and April 2002, and consisted of a systematic underwater survey of a 7.5-acre area that included the fishpond and an area 50 meters outside the pond walls. An underwater reconnaissance survey was conducted of a 7.5 acre area surrounding the inventory survey project area, for a total project area of 15 acres. Limited subsurface testing was also conducted along the shoreline, between the fishpond and South Kihei Road.

Findings of the survey indicate that the existing fishpond walls are defined by distinctive and easily identifiable basalt boulder and cobble concentrations that have been spread by wave action beyond the original wall footprint. An alignment of large boulders was observed extending to the north from the northwestern corner of the fishpond wall. This alignment is presently discontinuous, however, it curves toward the shoreline and comes ashore 170 meters north of the existing fishpond wall. This alignment may represent an earlier fishpond wall footprint that was mostly relocated during a former fishpond wall repair project. Portable remains identified underwater include several items associated with United States military activities at Kalepolepo, and a large kedge anchor that probably dates to the whaling era. Disturbed and washed out structural remains were also observed.

Kō'ie'ie Fishpond was listed in the National Register of Historic Places in 1996, and the site was determined significant under all four criteria for eligibility. The existing configuration of the disturbed walls at Kō'ie'ie Fishpond as well as associated submerged portable remains were documented to a sufficient degree during this survey to allow for the wall restoration to have no adverse effect on the site. The restoration work as planned will have a beneficial effect on the site, by enhancing its ability to withstand wave disturbance and by restoring it to a better representation of a traditional Hawaiian fishpond. It is recommended that periodic monitoring occur in conjunction with the restoration effort in order to ensure that information or portable remains discovered during the movement of stones is documented. It is also recommended that the boulder alignment to the north of the fishpond be preserved intact. The larger submerged portable items found outside of the fishpond are a sufficient distance from the fishpond wall to remain in place, undisturbed.

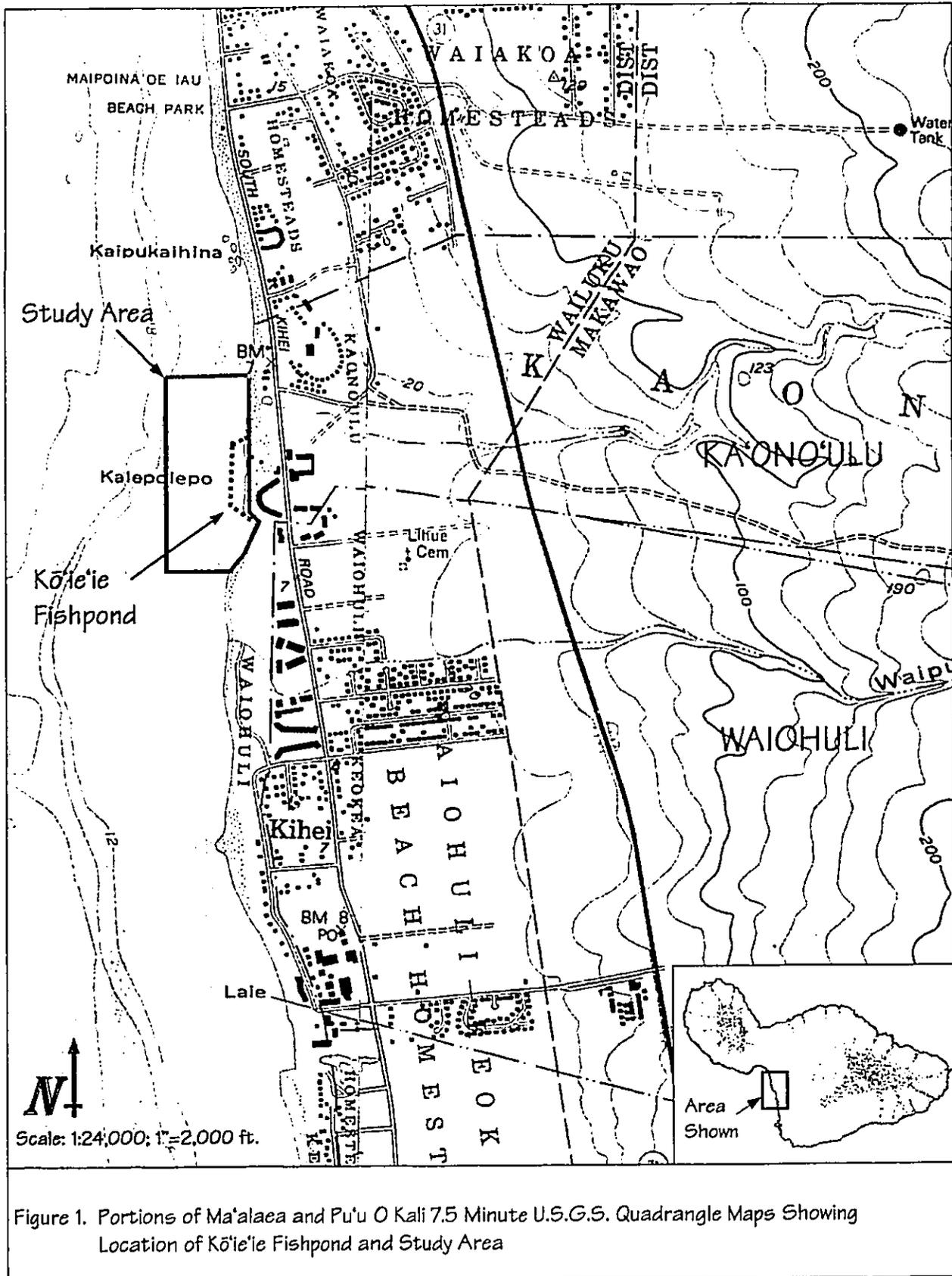
A draft of this report was submitted to the State Historic Preservation Division for review in January 2003, and the report was accepted in March 2003. A copy of the review an acceptance letter is attached at the end of the report.

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Kō'ie'ie Fishpond Survey



Scope of Work

The scope of the inventory survey as agreed upon by the author and Mr. Joe Farber, Project Planner representing Ao'ao O Na Loko I'a O Maui includes the following tasks:

1. Field check and verify the accuracy of the fishpond map that was produced by the author for the NRHP in 1995.
2. Locate and plot submerged features associated with the fishpond, such as the base of the wall, edge of the reef, concentrations of wall fall, openings in the wall, patterned alignments of stones and any structural or portable remains observed underwater.
3. Conduct systematic sweeps of the interior of the fishpond and the exterior area to a minimum distance of 20 meters beyond the wall (revised to 50 meters beyond the wall).
4. Characterize the deposits inside the pond and determine depth of deposits as well as potential to contain *in situ* soil layers or dateable organic lenses (note, this work was conducted by Dr. Stephan Athens of International Archaeological Research Institute).
5. Conduct systematic probing and if necessary, testing of the beach adjacent to the north wall of the pond to determine the inland extent of any intact portions that might be buried.
6. Present descriptions and maps of all findings in a report. The report shall also include all elements as required by the SHPD for inventory surveys.

The area of systematic survey was expanded to a minimum of 50 meters beyond the exterior side of the wall when it was determined that the reef continued a considerable distance west beyond the fishpond wall. The general reconnaissance area was also expanded, based on initial findings during the survey. A metal detector sampling survey was also included due to the presence of World War II era modifications and structures that were documented and observed in the fishpond area. It was felt that it would be advisable to know in advance if a large amount of metal debris might be expected to occur among the displaced stones that are going to be moved. Item 4 as listed in the original scope of work was completed by Dr. Stephan Athens of International Archaeological Research Institute, Inc. and his findings will be presented in a separate report.

Consultation with Native Hawaiians and other knowledgeable individuals regarding the cultural and historic significance of the Ko'ie'ie Fishpond is part of HAR Chapter 6E and NHPA Section 106 compliance studies. The consultation aspect of the study is being conducted by Joylynn Oliveira, cultural resource specialist for 'Ao'ao O Na Loko 'Ia O Maui and will be presented in a separate document. Consultation was therefore not included in the scope of work for this particular study.

A more detailed discussion of the scope of work and descriptions of the specific field procedures used during the survey are presented in Chapter 4.

Project Area

Ko'ie'ie Fishpond is located along the shoreline of Ka'ono'ulu Ahupua'a in north Kihei, Maui, on TMK Plat (2) 3-9-01 (Figures 1 and 2). The land on which the pond is situated is submerged and does not possess a unique TMK parcel number. The study area for this survey includes three sampling areas or strata: a) the interior area and wall of the fishpond (c. 2.6 acres); b) a systematic survey area as measured 50 meters to the north, west and south from exterior side of the fishpond wall (c. 7.5 acres); and c) a larger area of general reconnaissance that extends north to the Maui Lu Resort area and south to the Waiohuli Fishpond. This combined overall area of the underwater survey encompasses approximately 15 acres. A more detailed map of the survey area strata is provided in Chapter 4.

The fishpond study area encompassing all three sampling strata includes approximately 548 meters (1800 feet) of shoreline fronting County of Maui Beach Preserve land (TMK 3-9-01:147), the National Oceanic and Atmospheric Administration (NOAA; TMK 3-9-01:87), Kalepolepo County Beach Park, Menehune Shores condominium (TMK 3-9-01:85), and State Beach Preserve Lands (TMK 3-9-01:1). Ko'ie'ie Fishpond fronts three of these parcels - the NOAA parcel, the County beach park, and Menehune Shores condominium (Figure 2).

Ko'ie'ie Fishpond is accessible from the County of Maui beach parcels and from the NOAA property. This latter property includes Department of Navy structures dating to 1942 that have been refurbished and are now used by the Hawaiian Islands Humpback Whale National Marine Sanctuary and Ao'ao O Na Loko I'a O Maui. The two Maui County Beach Park parcels were once part of a 3.9-acre Federally-owned parcel that was subdivided into three lots circa 1976. The Federal Government retained ownership of a 1.13 acre parcel (the NOAA facility), and the parcels located to the south and north of the facility were transferred to the County of Maui. In 1981, the County developed Kalepolepo Park on the southern 1.1 acre parcel. The northern parcel remains undeveloped, with the exception of the Kūlanihāko'i Steam channel. This parcel consists of high sand dunes with a small remnant wetland area along the eastern edge. Vegetation consists of *kiawe*, pickle weed, and 'aki'aki grass. Sand dunes also occur on unpaved portions of the NOAA parcel, which has been recently irrigated and planted with native beach vegetation. There are currently five buildings on this parcel, all of which date to 1942. The Maui County Kalepolepo Park parcel is landscaped with grass, palm trees and other large shade trees. A small electric substation is located at the southeast corner of this parcel, along South Kihei Road.

The area included in the underwater survey is a shallow coral reef with areas of consolidated limestone, and areas of complex reef bottom consisting of limestone and coral rubble, sand, and some limestone outcrops (Guinther and Bartram 1979:55). Sand channels occur on both sides of the Ko'ie'ie Pond wall, with a more pronounced channel on the south side (Figure 3). The coral reef in the vicinity of Ko'ie'ie Fishpond extends 250 to 400 meters offshore; maximum ocean depth near the edge of the reef is 12 to 18 feet. Average water depth in the area inside the fishpond is 3 to 6 feet. Beyond the pond wall, water depths average around 7 to 9 feet.

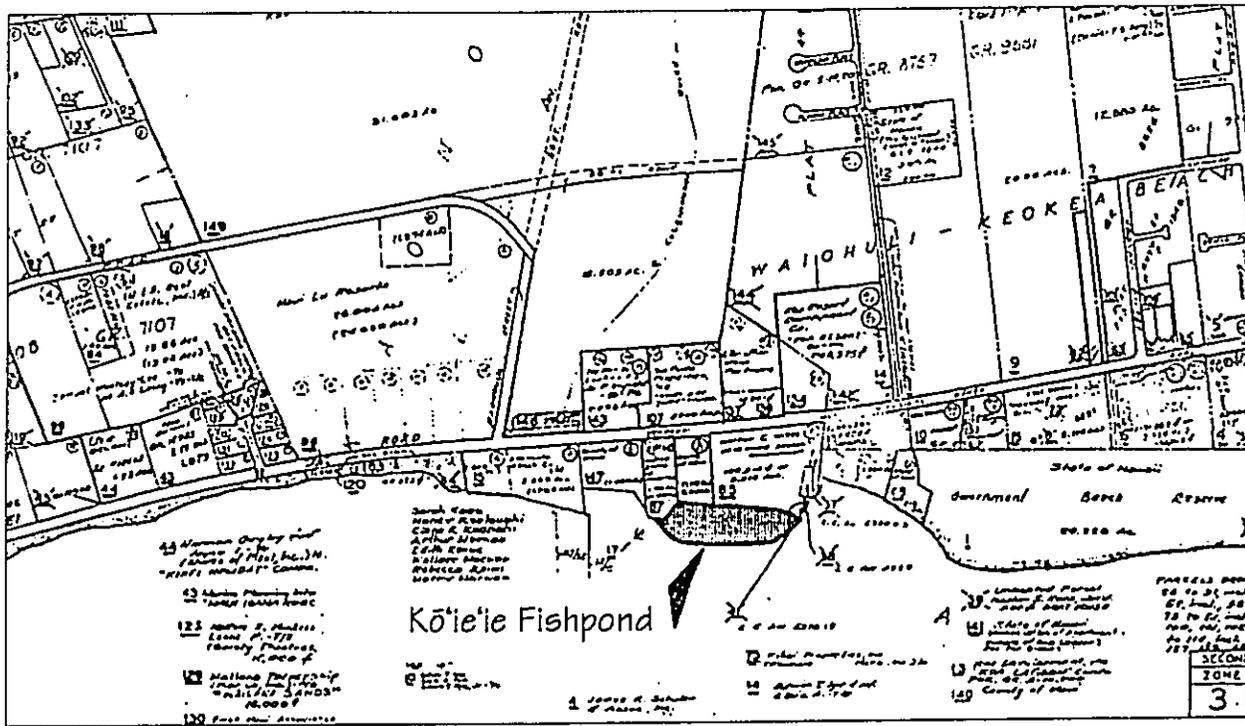


Figure 2. A Portion of Tax Map Plat 3-9-01 Showing Location of Kō'ie'ie Fishpond

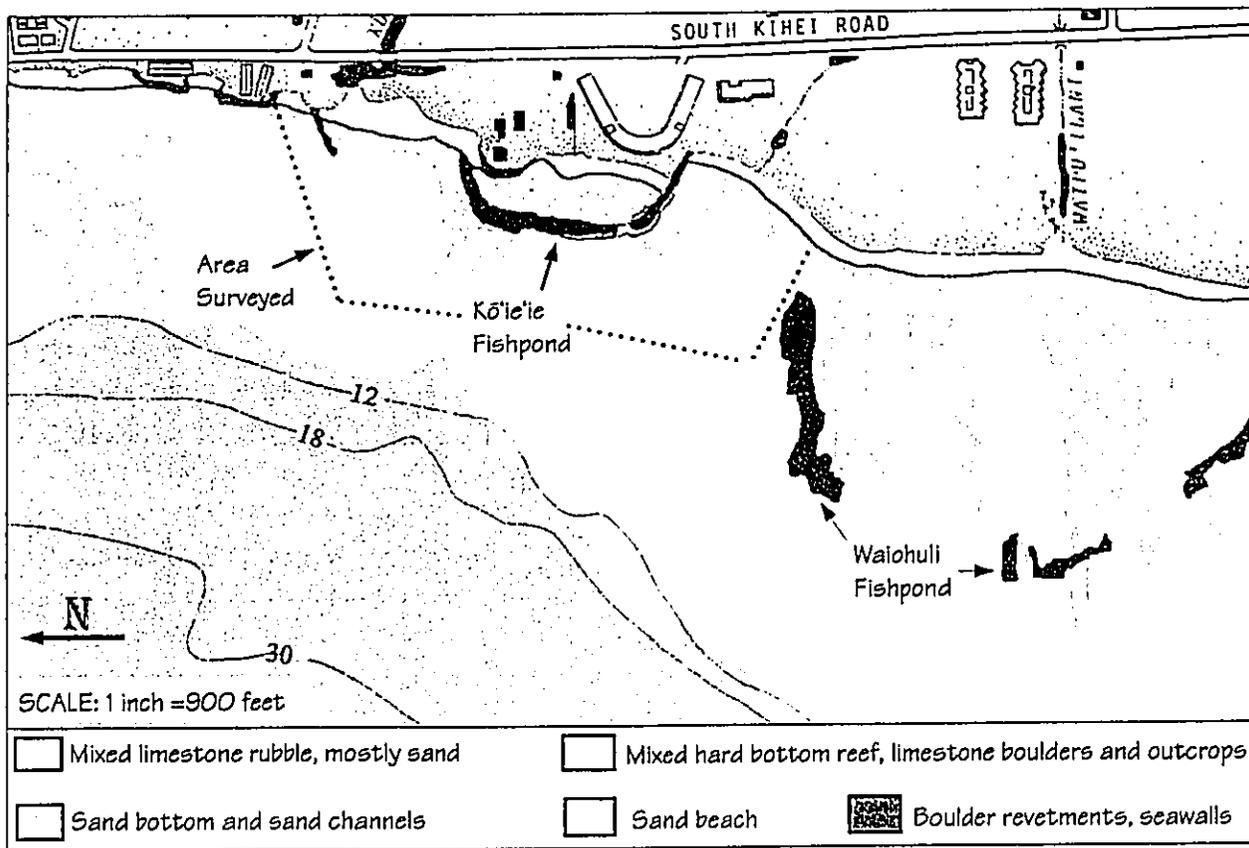


Figure 3. Map of Seafloor and Offshore Conditions in the Study Area (Adapted from Guinther and Bartram 1979: Maps 53 and 54) Note: Conditions reflect late 1970's

2. TRADITIONAL AND HISTORIC SETTING



Ahupua'a Context

Kaono'ulu is one of 15 known *ahupua'a* within the traditional district of Kula, and is situated between Waiakoa and Alae 1-2 to the north, and Koheo 1-2 and Waiohuli to the south. Kaono'ulu extends inland from the shoreline to an elevation of 9,000 ft. at Kalepeamoā, located along the rim of Haleakalā Crater. The *ahupua'a* is .4 mile wide at the shoreline, and has a maximum width of 1 mile. Kō'ie'ie Pond is situated at the southern boundary of Ka'ono'ulu, as it is depicted on the modern USGS maps. Historically, there are indications that the southern portion of Kō'ie'ie may have been located in Waiohuli. This inference is based on descriptions of land awards that are described as being in Waiohuli, yet are shown on modern tax maps as being in Ka'ono'ulu (further discussed below). In addition, the 1875 Government Survey Map of Maui shows the southern *ahupua'a* boundary of Ka'ono'ulu ending just before the shoreline, near the center of Kō'ie'ie Fishpond (Figure 4).

Kō'ie'ie Fishpond is the northernmost of three or possibly four Hawaiian fishponds that have been identified within a 1.5 mile section of the Ma'alaea Bay shoreline at Kihei. Ashdown (1941) refers to these ponds as Ka'ono'ulu, Waiohuli, and Kēōkea, reflecting their respective *ahupua'a* locations. Kō'ie'ie Fishpond was listed in the State Inventory (SIHP) in 1974, during the initial state-wide survey. Two additional ponds (SIHP Sites 50-50-09-1704 and 1738), situated within Waiohuli and Kēōkea respectively, were identified by Cordy (1977) from aerial photographs, and listed in 1977. Kolb (1995) identified four ponds from aerial photographs; however a new site number was not assigned to the fourth pond. On-site mapping or recording of the two or three ponds south of Kō'ie'ie has not occurred to date.

Historically, the area known as Kalepolepo included lands in Ka'ono'ulu, Waiohuli, and Kēōkea; this place name occurs frequently in Land Commission testimonies as an *'ili* name, and it is also referred to as an *ahupua'a* in some claims. *Kuleana* described as being in Kalepolepo were located along the coast, adjacent to or just inland of the fishponds; and in the vicinity of David Malo's Kilolani Church. Historically, this area was south of Kihei; today it is within the area referred to as north Kihei. Association of the name Kalepolepo with the pond located in Ka'ono'ulu is found in the *Mahele* testimony of Salai (Sara) Hiwauli, wife of John I'i (Kamakau 1992::255). In her description of lands entitled to her as chief, she includes the following: "The land of Kaonoulu which was the pond of Kalepolepo, on Maui, was to Kamaunu from Kamehameha II to the present time" (No. 0851, Native Register 475-476v2, November 2, 1847). The 1875 Government Survey Map (Figure 4) shows only one fishpond at Kalepolepo, suggesting that by the late nineteenth century, this pond (Kō'ie'ie) was the only one that was still functional, or still visible along the shoreline.

Kalepolepo Pond is now referred to as Kō'ie'ie, a name Fornander believes was the ancient place name of the area known historically as Kalepolepo (Fornander 1974[5] 235-236). *Kō'ie'ie* (also *kō'ie*) is defined as "rapid current, or what it carries; to rush, as water"; or as a plaything or toy that is used in water (Pukui and Elbert 1986:160).

The principal chief associated with the initial construction of the ponds at Kalepolepo is not conclusively documented in the early written texts based on traditional *Mo'olelo*; however early twentieth century oral sources indicate that Umi a Liloa may have been involved. Two accounts linking the ponds at Kula Kai with Umi a Liloa were published in the early twentieth century, and Kikuchi (1973:257) associates the ponds with Umi, based on Wilcox (1921). In 1921, Charles Wilcox, a descendant of John Halstead published an article in *Paradise of the Pacific* about Kalepolepo, in which he recounted the story of work at the three fishponds by a *konohiki* appointed by Umi (Wilcox 1921:65-67). A primary source (oral or written) for this information is not indicated by Wilcox, although it is possible that the information was passed down in his family from Halstead, who could have easily obtained it from the local Hawaiian residents of Kalepolepo. In 1941, Ashdown wrote an article for the *Maui News*, in which she stated, after Wilcox, that Umi ordered the three ponds to be built (Ashdown 1941:1). Both Wilcox and Ashdown recounted that the ponds were at Kēōkea, Waiohuli, and Ka'ono'ulu, and that they were destroyed twice by storms soon after they were completed, necessitating the rebuilding of all three ponds. The natural disasters are linked to the malevolent *konohiki* who refused to follow the advice of a local *kilokilo* (divining priest) named Kikau who was skilled in communicating with the *Menehune* regarding proper construction of the walls. After the ponds were destroyed a second time by storms, the *konohiki* relented and allowed Kikau to summon the *Menehune* to rebuild the ponds (Wilcox 1921:67; Ashdown 1941:1).

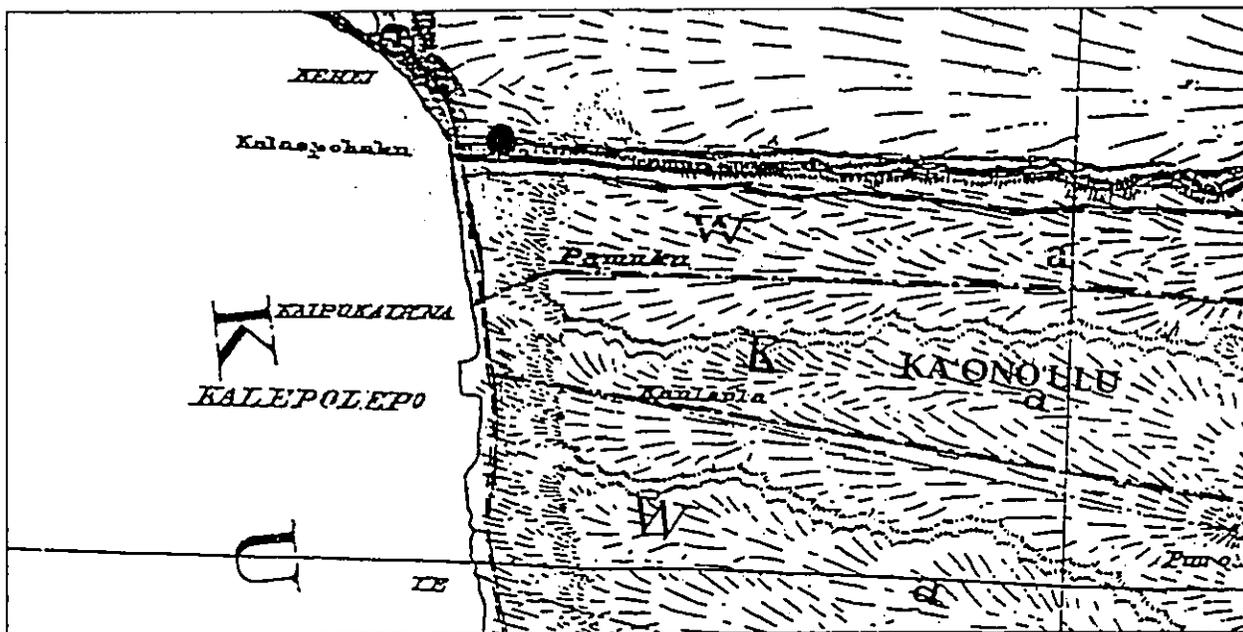


Figure 4. A Portion of the Government Survey Map of Maui Showing Ka'ono'ulu Ahupua'a Boundary in Relation to the Fishpond (Alexander and Bishop 1875)

Ko'ie'ie Fishpond Survey

The place name Kalepolepo is said to have originated during the time that the three ponds were being rebuilt repeatedly by the people of Kula for Umi. The transporting of stones from the uplands caused clouds of dust to rise up and hang in the air, lending the name to the area. According to Maui historian Inez Ashdown, as interviewed by Johnson (1965), repair work was conducted at the Kula Kai ponds by Kekaulike, *Ali'i Nui* of Maui during the early to middle eighteenth century. Kahekili II, also an *Ali'i Nui* of Maui utilized the ponds as a source of mullet during the late eighteenth century. During the early nineteenth century, Kamehameha I worked on the ponds, utilizing "...all the men and women of West Maui" (Kamakau 1976: 47). In further discussion of Kamehameha's project, Kamakau states that the south side of Kalepolepo Pond had broken down, and its repair took "several months of work" (Kamakau 1976: 47). This work may have coincided with the visit of Kamehameha's son, Kapauaiwa, who arrived at Kalepolepo in 1812 and died there in 1815 (Li 1959:106). At the time of his death, the *Akua Mo'o* Mokuhinia showed herself at Kalepolepo (Kamakau 1964: 83). Mokuhinia also resided in Moku'ula Fishpond in Lahaina, and was considered the guardian of other Maui fishponds as well.

The third documented historic repair project at Kalepolepo was conducted in the 1840's under the direction of Governor Ho'apili. Labor for this undertaking was obtained from the Maui penal colony, which had recently been moved from Kaho'olawe (Wilcox 1921: 67). During this period, Kalepolepo was an established settlement with two churches, numerous homes, and a trading center for whalers and upcountry farmers. This settlement is further discussed below.

Settlement Pattern and Historical Ecology

Information pertaining to the traditional coastal settlement pattern in Ka'ono'ulu and Waiohuli is obtainable primarily from historic sources rather than from modern archaeological findings. For example, 19th century land records indicate that at least 20 homes were present in the area of Kalepolepo; none of these sites have been identified by archaeologists. In addition, Walker noted that there were two *heiau* in the immediate vicinity of Kō'ie'ie Pond, Kalaihi (Site 198) and Kealalipoa (Walker 1931:269). It is not certain whether Walker actually visited these sites; he provided no descriptions or dimensions, which are normally provided. His notes on the two *heiau* consist of only three sentences:

Kalaihi is at Koieie, site now occupied by Rice poultry yard. Kealalipoa is in back of the Mormon Church. Site totally destroyed. Kalepolepo was the name of the large fish-pond still to be seen.
(Walker 1931:269)

Walker's island-wide map places Kalaihi Heiau just inland of the north wall of Kō'ie'ie Fishpond, and Kealalipoa Heiau just inland of the south wall. These two *heiau* sites, and the site of the Mormon Church have not been relocated or identified by modern archaeologists.

The lack of archaeological finds in the area of Kō'ie'ie is due in part to the fact that development in this area of Kihei predated the enactment of historic preservation regulations; and that initial inventory surveys in the area were based on surface reconnaissance only with

little or no subsurface testing. Construction of the massive Menehune Shores and Koa Lagoon condominium resorts, and the Department of Navy buildings fronting Kō'ie'ie fishpond were completed without historic preservation review. A field inspection of the seawall construction fronting Menehune Shores was conducted by Earl Neller of the State Historic Preservation Division in 1982, subsequent to the construction of the condominium. No evidence of subsurface deposits were noted by Neller in his report of the investigation, which was restricted to the seawall footing trench along the beach (Neller 1982). Inspection of the two lots partitioned from the Federally owned parcel and transferred to Maui County was conducted by Neller at that time, following a surface reconnaissance survey by Keau in 1981.

In his reconnaissance report for the two County park parcels, Keau noted that both lots were below sea level and prone to flooding during the storm seasons (Keau 1981:1). This observation correlates with aerial photographs of the area during the 1970s that show remnant wetlands in both of the County parcels (See Figure 4). Keau observed two rectangular areas marked by picket fences within the south lot (now Kalepolepo County Park), and a platform constructed from large rounded boulders in the north lot. This feature was located near South Kihei Road, approximately 40 feet from the Kūlanihāko'i Bridge. Keau recommended further work at these three features, and recommended subsurface testing within the lots. No records of subsequent work could be located in the SHPD record files, and there is no record that SIHP site numbers were assigned to these sites. The southern parcel has since been filled and planted for use as a park. The northern parcel was examined during this survey to determine if the platform identified by Keau could be relocated; fortunately, the location of the platform was plotted by Keau in 1981. Remains of what is probably the platform were easily found just off of South Kihei Road, in a relatively open area of the County parcel. The site is located on a low rise, along the northern edge of the wetland, a remnant of which still exists in this parcel. Most of the feature is buried under wind-blown sand, and some road construction debris. Aligned boulders that may represent intact portions of the platform are visible. This site is further discussed in Chapter 5.

The property to the north of the Maui County beach parcel was subjected to a surface reconnaissance by Kennedy in 1988, in connection with proposed expansion of the Maui Lu resort. Kennedy found no surface features on the parcel (TMK 3-9-01:15); he recommended subsurface testing of the sand dunes; however, records of the testing could not be located. Kennedy also examined parcels 148 and 149 on the east side of South Kihei Road, and found no evidence of historic sites (Kennedy 1988); no subsurface testing was recommended or conducted in these lots.

Neller's 1982 report implies that much of the archaeological resources in coastal Kula have not been detected because they are buried under alluvium that eroded from the upland slopes. McDermott (2001) examined this hypothesis in his in-depth study of soil deposition along lower Kūlanihāko'i Stream in coastal Ka'ono'ulu. McDermott documents a dated sequence of rather massive and rapid alluvial deposition in the first half of the nineteenth century, in the immediate area of Malo's Church, .3 mile inland of Kō'ie'ie Fishpond.

Kō'ie'ie Fishpond Survey

McDermott's analysis of alluvial deposits along Kūlanihāko'i indicates that rapid runoff from the slopes of Haleakalā did not occur until after western contact. McDermott found "...little or no variation of sedimentation during the period of prehistoric native Hawaiian land use" (McDermott 2001:180). However, sediment in coastal Ka'ono'ulu accumulated "12 to 15 times faster between 1800 and 1850 than during the preceding prehistoric period" (McDermott 2001:183). Following historic sources, McDermott attributes the increased erosion to upland forest clearing by potato farmers and ranchers. Increased Kona storm activity and increased rainfall between 1830 and 1860 contributed to the runoff problem in the Kula District. A single episode of extensive alluvial deposition in coastal Kihei occurred in 1871 when a major tropical storm hit South Maui and "swept all the Native houses into the sea - all within six hours" (Thrum 1926:36).

According to Wilcox, the fishpond at Kalepolepo was mostly filled with silt during the latter decades of the nineteenth century (1921:67). McDermott's data indicates that the pond and surrounding lands would have been impacted by silt runoff prior to this time, with continuing and perhaps increasing deposition in the 1870's.

Silt runoff from upcountry is still occurring in Ka'ono'ulu and Waiohuli. Recent cloudbursts in Kula during March 2002 resulted in large silt plumes that were delivered into the ocean via the channeled Kūlanihāko'i Stream (Loomis 2002:A3). Over 2,000 tons of silt were reportedly deposited on the Kūlanihāko'i floodplain *mauka* of Kō'ie'ie Pond during a single Kula rainstorm (Loomis 2002:A3).

Recent discoveries of buried sites in coastal Waiohuli provide further support for McDermott's hypothesis regarding alluvial deposition. Two rock shelters discovered .4 km inland of the coast in Waiohuli were identified on the basis of surface midden that had been brought to the surface by burrowing rodents (SIHP Sites 50-50-10-3139 and 3529). These shelters, which consisted of rock overhangs, were completely buried in alluvium and not visible from the present surface (Fredericksen and Fredericksen 1995). Charcoal obtained from the sites indicate usage between AD 1400 and 1700 (Fredericksen and Fredericksen 1995). A coastal habitation and ceremonial complex was also discovered under several feet of alluvium and recent landfill in Waimahaihai, Kama'ole, near the south boundary of Kēōkea (Donham 1996). This complex, which consisted of five sites and twenty component features, includes several habitation and activity areas, a *heiau*, and burials. The Waimahaihai complex represents a small community that was permanently based at the coast and along the shoreline of a natural wetland. The features investigated at Waimahaihai dated to the thirteenth through nineteenth centuries (Burgett 1995; Burgett et al. 1996). It is reasonable to assume that initial settlement at Kō'ie'ie would have been no later than settlement at Waimahaihai. Of interest is the similarity noted between the *heiau* at Waimahaihai prior to its excavation from beneath a bulldozer pushpile, and the possible platform feature found by Keau in the County beach parcel at Kō'ie'ie.

Modern land use and development in coastal Kula includes stream channelization, wetland draining and filling, and modifications of the coastal dunes for roadways, buildings and stream channels. These activities have resulted in major reconfigurations of the coastal geomorphology in Kihei. Modern era channelization of Kūlanihāko'i Stream and the construction of a drainage channel immediately south of Menehune Shores condominium drained the wetlands immediately inland of the present-day Kō'ie'ie Pond and created openings in the dunes at the shoreline. As a result, large sand dunes are now present in the former wetland. A considerably reduced version of this wetland was still present on the *makai* side of Kihei Road in the 1970's (Figure 3). Today, there are small, isolated remnant wetlands in the northern Maui County parcel (147), on both sides of the Kūlanihāko'i Stream channel. These small remnant wetlands are approximately four feet below the current grade of South Kihei Road, and a good 12-15 feet below the tops of the encroaching sand dunes. Once these wetland remnants are buried under sand, there will be no vestiges of the original land surface or topography in this area. The inland movement of the sand dunes, as well as historic era filling, have resulted in the burial of structural remains and walls associated with former *kuleana* or other sites in the area. A notable exception may be the possible platform feature located along the north edge of the wetland.

A consideration of this historical information, and further reconstruction of the former environment at Kō'ie'ie (in following discussions) suggests that Kō'ie'ie Pond extended inland and included the wetland area that would have comprised the estuary of Kūlanihāko'i Stream. Consideration of observations made by Lucy Wilcox, descendant of John Halstead, suggests that Kō'ie'ie Pond included this estuary:

When the penal colony was abandoned at Kaho'olawe, prisoners were sent to Kalepolepo pond and brought stones from mauka and repaired the ancient pond. But the stones of Waihuli (sic) were used too, and today that pond is gone, and only the Kalepolepo Kai remains. And very little of that, for most of Kalepolepo is now only a salt flat and what wall is left can be seen on the beach before the ancient landmark (Halstead house). (Inez Ashdown interview of Lucy Wilcox, *Maui News* 8 October 1941)

Wilcox indicates that the greater portion of the pond was in the area that in 1941, consisted of salt flats; and that the smaller portion of the pond extended out into the ocean. If this was the case, then Kō'ie'ie Pond as it appears today is quite different than Kō'ie'ie Pond as it appeared circa 1700. It is also worth noting that in 1929 Walker described Kō'ie'ie Fishpond as being "large". Walker had seen numerous Hawaiian fishponds, and by these standards, Kō'ie'ie Pond as it appears today is certainly not large; in fact it is quite small for a *loko kuapā* type pond (the formal characteristics of Hawaiian fishponds are further discussed in the following chapter). Walker visited Maui shortly after the area surrounding Wilcox's home had been photographed. In that photo, there is evidence of a fairly extensive wetland area extending inland from the *kuapā* of Kō'ie'ie (see Figure 5 below). This could very well be the area that by 1941 had become a salt flat. Given the extent of silt deposition in the nineteenth century, it is likely that the pond as shown in 1921 would have been shallower and smaller than the original fishpond.

Nineteenth Century Settlement and Land Use

Historic documents generated during Land Commission hearings of the middle nineteenth century indicate that the 'ili of Kalepolepo was an important coastal locale within the district of Kula. Despite its relatively small size, nineteen claims were made by Native Hawaiians for *apana* within the 'ili boundaries (Waihona 'Aina Database); three of these claims were made by 'ali'i during the King's *Mahele*. Two of the three *ali'i* claims were awarded, including the *ahupua'a* of Ka'ono'ulu to H. Hewahewa, and an *apana* to N. Namauu. A third *ali'i* claim by Salai Hiwauli to Kalepolepo Pond (noted above) was not granted. It is likely that the pond was included in the *ahupua'a* award to Hewahewa, and was therefore not parceled out to Hiwauli, who was awarded a number of *apana* in Honolulu that were left in her charge by Hewahewa when he sailed for Maui in 1837 (Claim No. 851, Native Register 475v2).

Hapakuka Hewahewa's family was located in Mahukona, Kohala when Kamehameha was ascending to power on the Big Island, and his parents received lands in Kona and Kohala from Kamehameha after the decisive battle of Mokuahi. At the time of the *Mahele*, Hewahewa relinquished his control of six *ahupua'a*, including four on the Big Island and two on O'ahu. In exchange, he received an 'ili in Kalihi and the *ahupua'a* of Ka'ono'ulu. In his Native Register claim, Hewahewa states that Kalepolepo was his permanent place of residence (Native Register 48.6, Dec . 30, 1847). Hewahewa was officially granted the 5,715 acre *ahupua'a* award after his death, which was in 1848. This chief apparently maintained direct control over Ka'ono'ulu during the time that he lived at Kalepolepo (1837-1848), and is named as the grantor in a number of claims to house lots in Kalepolepo. The location of Hewahewa's houselot at Kalepolepo is not known. It is likely that the foreigners who settled in this 'ili (Shaw and Halstead) did so only by permission from Hewahewa.

A second chief to receive land in Kalepolepo was Namau'u, who was also granted claims in Kona, Kohala, Hilo, Ka'u, Hamakua on Hawai'i Island; Lahaina and Hamakualoa on Maui; and Ewa, O'ahu. Namau'u claimed one house lot in Waiohuli, "adjoining Kalepolepo at Kula, East Maui"; and "a small canoe landing, between A.Keliihonui's and Kaumaelani's, next to my house lot" (Native Register 5580559v4). Land claims made by these two neighbors of Namau'u could not be located in the Waihona 'Aina database.

Among the 16 *kuleana* claims recorded in the 'ili of Kalepolepo, eight were awarded, all of which consisted of house lots (Table 1). In all cases, the Kalepolepo awards represented one *apana* among three to seven that were awarded to the claimants. Among the eight claimants that were awarded *kuleana* in Kalepolepo, the average number of *apana* awarded was five. The other *apana* consisted primarily of kula lands in Waiohuli, Ka'ono'ulu, or Kēōkea. Only one claimant (Konohia) other than Hewahewa and Namauu received *apana* outside of the Kula District, in Waikapu (Table 1).

Ko'ie'ie Fishpond Survey

LCA No.	Claimant	Apana	Kalepolepo Description	Ref.*
3108	Konohia	<ol style="list-style-type: none"> 1. Two moo of kalo, Waikapu 2. Kula and lo'i, Waikapu 3. House lot in Kalepolepo 4. Potato land and house lot, Waiohuli 5. Potato ground, Waiohuli 6. Potato ground, Waiohuli 	<p>"No. 3 is bounded: Mauka by Hewahewa's land Honuaua by the sea Makai by Mahiai's land Wailuku by Hewahewa's land. Ahupua'a: Ka'ono'ulu, Kula</p>	<p>N.R. 36-37v6 F.T. 472v7 R.P. 2814</p>
4120B	Kapohaku	<ol style="list-style-type: none"> 1. Pasture, Wailuku, Keokea 2. Pasture, Molokai, Keokea 3. Kalo land, Punokeowa 4. Kalo land, Piimoo, Keokea 5. Pasture, Pualoa, Keokea 6. Pasture, Pualoa, Keokea 7. House lot, kuopa (kuapa), Kalepolepo 	Missing	<p>N.T. 38v7, RP 5067, July 19, 1849</p>
4750	Maia	<ol style="list-style-type: none"> 1. Kula, Moonui, Waiakoa 2. Kula, Kalihi, Waiakoa 3. Kula, Koonaulu (Kaonoulu) 4. House lot, ili of Kalepolepo, Koonaulu (Kaonoulu) 	<p>No. 4 is bounded: Mauka by Kauhiahwi's land Makawao by konohiki Makai by Konohia's houselot Honuaua by konohiki</p>	<p>N.R. 196-197v6 N.T. 67v7 F.T.205v8 R.P. 2206</p>
5267	Kauhiahwi	<ol style="list-style-type: none"> 1. Kalo land, Alanoho, Keokea 2. Kula, Alanoho, Keokea 3. House lot, Kalepolepo 4. Kula (Irish potatoes), Ohia, Waiohuli 5. Kula (Irish potatoes), Waieli, Waiohuli 6. Kula (Irish potatoes), Punokaohulu, Kaonoulu 	<p>"A small house site is above kuapa of Kalepolepo." No. 3 is bounded: Mauka by Kapohaku's land Makawao by konohiki Makai by Maia's house lot Honuaua by sea shore, and/or konohiki (N.T. 64-65v7)</p>	<p>N.R. 255v6, 18 Jan. 1848 F.T. 203v8</p>
5279	Kapelekai	<ol style="list-style-type: none"> 1-3 Taro in Wailuku ili of Keokea 4. Taro in Piimoo, Keokea 5. Pasture, Ahulua, Waiohuli 6. Pasture, Pualoa, Keokea 7. House lot, Kalepolepo, from Hewahewa in 1847 	<p>No. 7 is above kuapa, bounded: Mauka by Kuihelani Makawao by konohiki Makai by Kahoomano Wailuku by konohiki</p>	<p>N.R. 259v6 N.T. 40v7 R.P. 6523 19 Jan. 1848</p>

* N.R. = Native Register; N.T.= Native Testimony; F.T = Foreign Testimony; R.P. = Royal Patent

Table 1. Summary of Land Commission Claims Awarded, 'Ili of Kalepolepo (continued on next page)

Ko'ie'ie Fishpond Survey

LCA No.	Claimant	Apana	Kalepolepo Description	Ref.
5376	Lono	<ol style="list-style-type: none"> 1. Pasture, Kaonoulu 2. House lot, Laie, Waiohuli 3. House lot, Kalepolepo ahupuaa 	No. 3 is bounded: Mauka by Kuihelani Makawao by Kono (Konohia?) Makai by Napela Honuaula by sea	N.R. 279v6, 18 Jan 1848 N.T. 109v7
5407	Mahiai	<ol style="list-style-type: none"> 1. Kula (Irish potatoes), Kaonoulu 2. Kula (Irish potatoes), Kupalaia, Kaonoulu 3. Same as 2 4. House lot, Laie, Waiohuli 	"Furthermore, there is a small house lot which is upon the kuapa of Kalepolepo. The witness is Hewahewa" (N.R.)	N.R. 286-287v6, 19 Jan 1848 F.T. 155v8
6720B	Nahelu	<ol style="list-style-type: none"> 1. Kula, Pualoa, Keokea 2. Kula, Kaluahonua, Keokea 3. Kalo land, Wailuku, Keokea 4. Kula, Kahuihanau, Waiohuli 5. Kula, Kahilinamac, Waiohuli 6. House lot, Kalepolepo, Waiohuli 	No. 6 is bounded: Mauka by Mahai's land Makawao by konohiki's land Makai by Kaehoa's land Honuaula by konohiki's land	F.T. 210-211v8

Table 1 (Con't). Summary of Land Commission Claims Awarded, 'Ili of Kalepolepo

The house lot descriptions shown in Table 1 are informative regarding the general features of the immediate area surrounding Kō'ie'ie Fishpond in the nineteenth century. For example, three lots are bounded on the Honua'ula (south) side by the ocean. These include Lono's, Kauhihiwa's and Konahia's lots, all of which are located immediately inland of the existing south wall of Kō'ie'ie Pond. Lono's lot is still visible on modern Tax Maps, as is Nahelu's, which is described as being *makai* of Mahia's lot. Note that Mahia's house was situated "upon the *kuap'a* of Kalepolepo". This information suggests that the fishpond wall extended inland a considerable distance from its current location, and that there was a pronounced peninsula along the south side of the pond that was not inundated by the ocean or by the wetland.

Other documents from the middle nineteenth century indicate that Native Hawaiian claimants were not treated fairly by the Land Commissioner handling land claims in Kalepolepo. Three of the claimants who were awarded house lots in Kalepolepo, along with four others, filed a complaint against Ka'auwai, a land agent who apparently realigned lot boundaries to accommodate foreigners. Two of the signers of the complaint, Lono and Kapelikai, had house

lots immediately adjacent to Halstead's house; it is therefore likely that Halstead (discussed below) was one of the foreigners referred to in the complaint, which dates to the same year that Halstead arrived in Kalepolepo. A third signer, Pupuka, may have had a house lot near the Shaw residence, in the vicinity of Malo's church and school house (Kolb 1995:63). No LCA record of Pupuka's claim could be located. One of the signers, Kahuluhaei, filed a claim for a house lot in Kalepolopo, but it was not awarded. Apparently, the petition was dismissed, because Halstead and Shaw did not relocate. As noted below, Halstead was in good standing with the Monarchy, which was undoubtedly a factor in his ability to establish a business at this location, and to obtain the cooperation of the local land agent. The text of the complaint is as follows:

Before you, High Highness,

Keoni Ana,

Premier Minister of the Interior of the King, before whom we fall down on our knees, and make a petition of you.

We, the ones whose names are written below, are Hawaiians, living under the protection of the laws of his Gracious Majesty. We have met with some trouble and grief because of the loss of our houses, and the places recorded as kuleana made in August, 1849, here at Kalepolepo, by the Commissioners to Quiet Land Titles of the king, and we held possession thereof, only awaiting receipt of the Royal Patent in fee simple.

One of the Land Commissioners, Z. Kaauwai, opposed our former rights and our ancient titles from our forefathers, and granted by said Land Commissioners. Z. Kaauwai said that our kuleana would be that which is in the shadow of our houses, and the sites outside thereof and the lots surrounded by walls, and the places unoccupied and marked according to ancient boundaries made by the former occupants, these places have been acquired by strangers and people from foreign lands.

Because of this we are losing our permanent places and our inalienable rights from our forefathers. We have a continuous affection for our permanent places. But if your ideas coincide with that of Kaauwai, then that will be like refusing us the right of being kama'aina on the land of Waiohuli, from the mountain to the seashore.

And we might become strangers in the land, and our lands might be taken by strangers from distant places, and we and our children will become wanderers in the land.

[Signed]

- | | |
|---------------|---------------|
| 1. Keliiauka | 5. Itiona |
| 2. Lono | 6. Kauhiahiwa |
| 3. Kahulukaei | 7. Mahiai |
| 4. Pupukai | |

Department of Interior, Kingdom of Hawai'i, 16 January 1850 (as reprinted in Sahlins 1992:137)

Halstead and The Koa House

Captain John J. Halstead arrived in Lahaina from New York in 1838 and married Kauwikilani Davis, great granddaughter of Isaac Davis. Halstead worked for Kamehameha III as a carpenter until about 1850, when he obtained a lease (presumably from Hewahewa) for a house lot at Kalepolepo. Halstead built a large, three story Pennsylvania Dutch style house near the south wall of Kō'ie'ie Pond and opened a trading station on the ground floor. Halstead's station provided a closer trading point for the Kula farmers, who had already begun intensive Irish potato farming in response to market demands from Whalers and from California, where the gold rush was creating high demands for potatoes. In 1851, a petition was submitted to the Hawai'i Legislature, requesting that Kalepolepo become a port of entry and harbor. The petition was signed by twenty-five Native Hawaiians, who identified themselves as *kama'āina* of Lahaina. Among the signers was David Malo, who at the time was well established at Kalepolepo. The text of the petition follows:

By law, only certain ports on each island were to be entered by trading vessels and inter-island coasters. Maui's only port of entry was Lahaina. The following is a petition to the 1851 Legislature to allow Kalepolepo to become a trading port:

We, the undersigned, native-born [po'e kama'aina] of Lahaina, hereby tell our ideas. We wish to have the California ships sail to Kalepolepo and other nearby places, and to have Kalepolepo become a harbor.

We do not seek ways to bar the progress of agriculture in various places in this archipelago. If the California ships are prohibited from sailing there, will it not become a reason for interest in agriculture to diminish?

When the potato crop is brought here it is hard work and much of it rots because of being brought by sea to Lahaina in rowboats.

Some of us really have worked at taking potatoes from Kalepolepo to Lahaina in these past years., and we know that the potatoes rot when wet by the sea, and also, it is hard work.

We do not wish the foreign ships to be prohibited from sailing there for the reason that they would not purchase our produce, because most of them stop here at Lahaina first and it would be possible for them to buy from us.

If your idea is that the reason to prohibit the vessels from sailing there is because of the commotion it would cause, then an agent could be designated to control it, just as, in Lahaina, when there is a disturbance, there is a government official to control it.

Signed:

Kekai	Hihio	Ihihi	C. Kuata
Kahevahevanui	S. Hoepaepa	I. Keokokaua	I. Kahookano
Kuhio	Mt. Keau	Kupuhi	Ke
Kaivioni	Hanaeholo	Kalieipaihala	Z. Nawaokoa
P. Nahaolelua	Ilae	Hinau	David Malo
Obed Huakini	Kekahaloa	A. Moku	Kahikona
Davis Hueu			

(Legislative File, 1851 Petitions, Translated by Frances Frazier, reprinted in Barrere 1975:64)

The timing of this petition suggests that the signers were probably aware of Halstead's plans, and may have been supportive of his trading post. There are no records or references to Halstead conducting trade illegally, so it appears that some type of formal or informal government approval was given for his operation. A fully functional harbor was never established at Kalepolepo; however, Halstead's station became a regular stopping point for Hobron's interisland schooner, the *Maria*, which stopped roughly every ten days at Kalepolepo while *en route* from Lahaina to Makena (Thomas 1983:42). Halstead was also visited by Kamehameha IV in 1854, and his trading post gained regional notoriety as a showcase for exotic goods and fine koa furnishings (Ashdown 1941, 1946).

A photograph taken of Halstead's koa house *circa* 1921 is informative regarding the immediate environment (Figure 5). The orientation of the photo is from the southwest, and it was taken from the shoreline at the southern end of Kō'ie'ie fishpond. In the background at the left side of the photo is a wooden structure situated on a seawall that is most likely the fishpond *kuapū*; in the background to the right is a fairly extensive wetland area, with a wooden structure situated on a narrow peninsula, or along the shoreline of the wetland. A pier is adjacent to the structure, suggesting that at one time, this area was accessible by boats. Note the stick and narrow paddle-like tool on the canoe in the foreground. These would have been useful for maneuvering a boat in shallow, flat water.

Halstead's trading post remained in operation until 1876, when he moved to Ulupalakua, where he died in 1887. Halstead's granddaughter, Lucy Wilcox remained at the koa house into the twentieth century, and Charlotte Halstead lived there until her death in 1937. For the next decade, the house was apparently left unattended, and Ashdown reported that during World War II, "...the building was broken into and most of the valued treasures were looted and the interior and furniture wantonly destroyed" (Ashdown 1964:1).

By 1881, the land on which the koa house stood and all of Hewahewa's *ahupua'a* lands had been consolidated with adjacent grants and sold to Young Hee, a Chinese immigrant. At some time during the 1890's, Hee returned to China and sold his holdings to William H. Cornwall, who then sold the land to Harold W. Rice. This purchase was one of five different ranch properties acquired and consolidated by Rice, making him the largest individual landholder on Maui (Fredericksen et al. 1994:3). Rice's Ka'ono'ulu Ranch was financially successful during the early twentieth century, and Rice pursued a long career as the Maui Senator to the Territorial Legislature. Rice leased the beach front land surrounding the Halstead house to the Maui Yatch Club in 1946; and that same year, the koa house was intentionally burned to the ground, with the assistance of the Maui County Fire Department (Ashdown 1946). In reporting this action, Ashdown reflected on the loss of a structure that had long been recognized as both a historic landmark and a symbol of Kihei's role in the whaling era and the days of interisland steamboat travel.

RECEIVED AS FOLLOWS

Ko'ie'ie Fishpond Survey

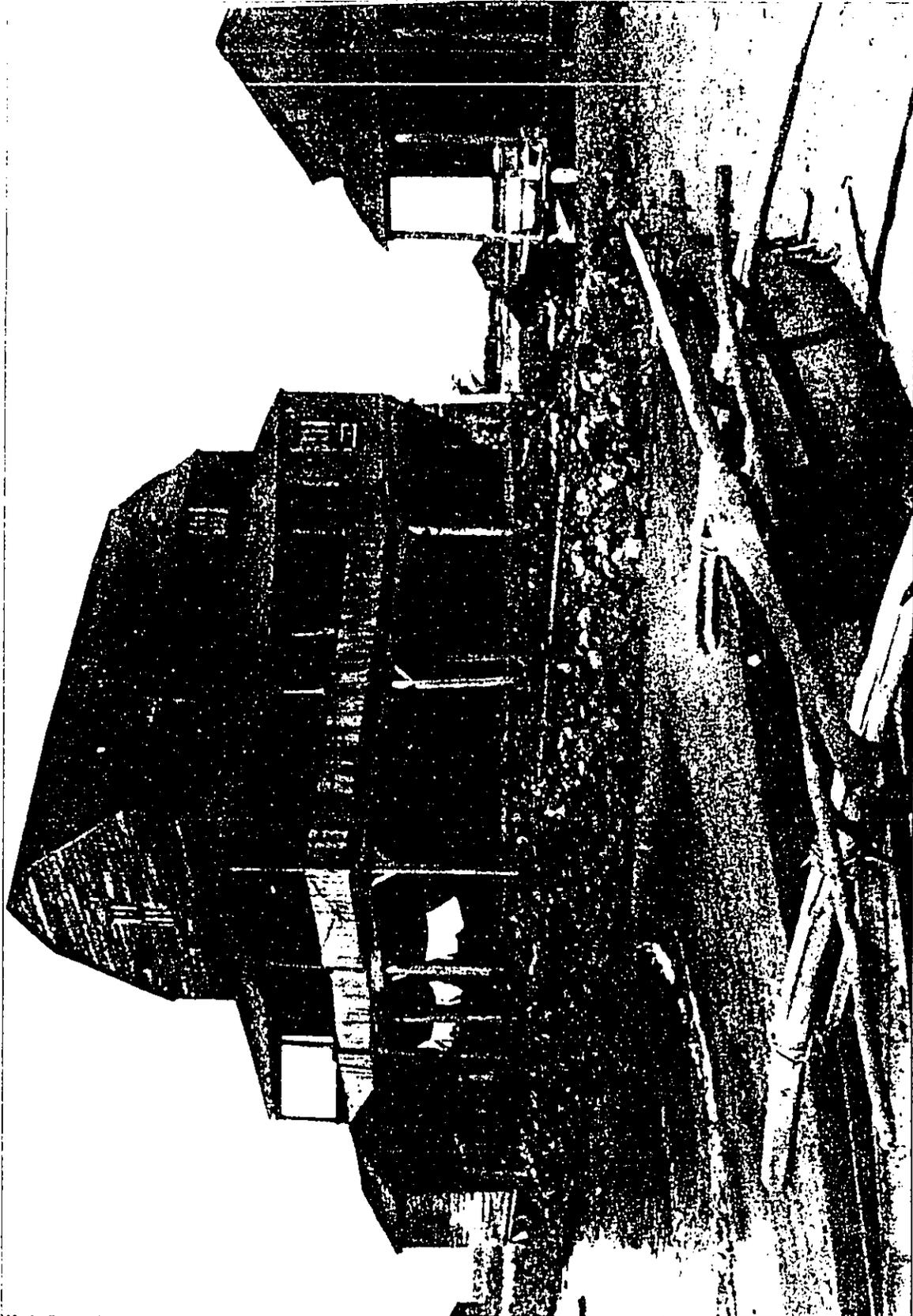


Figure 5. Photograph of the Koa House, taken circa 1921 (B.P. Bishop Museum Archives, Neg. No. CP 114, 506)

Twentieth Century Land Use

The desirability of Kalepolepo as a harbor did not cease with the closure of Halstead's trading post. During the 1930's a local yacht club called Hui Moku O Kalepolepo began a campaign to get the area designated as a harbor by the Territory. In 1939 the Hui petitioned the Territorial Board of Public Works to dredge a harbor and channel, to be used for both commercial and recreational purposes (Faris 1939). The legislature that year authorized \$40,000 for improvements of a harbor, on the condition that the Hui Moku O Kalepolepo guarantee that at least \$75 per month could be generated in revenue from harbor usage. The Hui responded by launching a membership campaign and enlisting support from fishermen who would use the harbor (*Maui News* April 13, 17, 1940). The Hui's project was temporarily stalled by the events surrounding military presence in the area as a result of World War II.

In December 1940, the United States Navy acquired a strip of land at Kalepolepo and enlisted the aid of the County to begin construction of a classified installation. The action was reported in the *Maui News* as follows:

Important naval developments in Maalaea Bay appeared imminent this week as County laborers proceeded with the grading of a 300 ft. wide strip of beach property near the old koa house beyond Kihei, reportedly as the site for a two-story building to be constructed for the Navy...Local Navy officials refused to comment on the development at the Kihei beach, but it was learned from a usually reliable source that the present work is in preparation for highly important installations in the Bay about which there will be no official announcement. *Maui News*, December 18, 1940

The two-story building referred to above (along with four utility structures) was completed in 1942, and used to house a degaussing system (DEGS) for the Navy. This process was developed and used to make warships and submarines safer, by neutralizing the magnetic fields surrounding ships and thereby making them undetectable to magnetically triggered mines. Ships were outfitted with degaussing loop-coil amplifiers, magnetometers, loop cells, and cables, which were fitted around the hulls (Polyamp 2002). The neutralizing cables and on-board degaussing systems were maintained, processed, and fitted to ships at the Kalepolepo facility during the war.

Historical records indicate that the Navy purposely exploded portions of the reef in the area of Kalama Park in Kihei in order to access the beach for training purposes. No references of reef destruction by the military at Kalepolepo could be found; however, field findings suggest that dredging was probably conducted in the area at some point (discussed in Chapter 5). As indicated below, dredging may have been conducted by the Yacht Club and/or the Navy. At the time the DEGS facility was built, there was apparently a need to site the main structure as close to the water as possible. The area was filled and the new shoreline fronting the building has been armored with large boulders (Figure 6). It is not known whether the boulders were set at the time of construction, or at a later date. Today, the DGES building protrudes out from the shoreline, into Kō'ie'ie Pond.

Kō'ie'ie Fishpond Survey

After World War II, the degaussing facility was used as a radio station, and the Navy considered using the site as a base for an air/sea rescue unit. This plan was contingent on the development of a harbor at Kalepolepo, and the Navy offered to assist Hui Moku O Kalepolepo with their harbor proposal.

In 1946, the 12-member Hui Moku changed their name to the Maui Yacht and Boat Club, and they leased the parcel to the south of the Navy facility, now the site of Menehune Shores Condominium (Mott-Smith 1946). The club's plans were described as follows:

The area will be filled with small scale dredging from the fishpond. A small boat pier and mooring will get immediate attention in this larger undertaking. A temporary club house and sea scout headquarters will be "firsts" on the agenda....Awakening from many years of slumber, Kalepolepo will again come to life. (Lillian Mott-Smith, *Maui News*, March 2, 1946)

No additional information or follow-up stories on the Yacht Club's activities could be located in the *Maui News*. Based on current conditions, it seems unlikely that the club actually dredged the fishpond, although they may have dredged a shallow channel to the shoreline along the south side of the pond wall. It is certain that the Yacht Club's leasehold parcel was filled prior to construction of Menehune Shores. The Naval facility was turned over to the National Oceanic and Atmospheric Administration (NOAA) for use as an Ionosphere Station, and the Federal property was subdivided into three lots, two of which were deeded to Maui County circa 1976 (discussed on page 4). As noted above, the Kalepolepo County Park parcel was filled sometime after 1981. The County parcel to the north of the NOAA facility has not been artificially filled, however, it is gradually being transformed from a wetland into an area of drifting sand dunes. A channel was dredged through the center of the lot to permit drainage of the wetlands into the ocean; this created an opening in the coastal dune formation and has fostered conditions for increased inland movement of the sand.

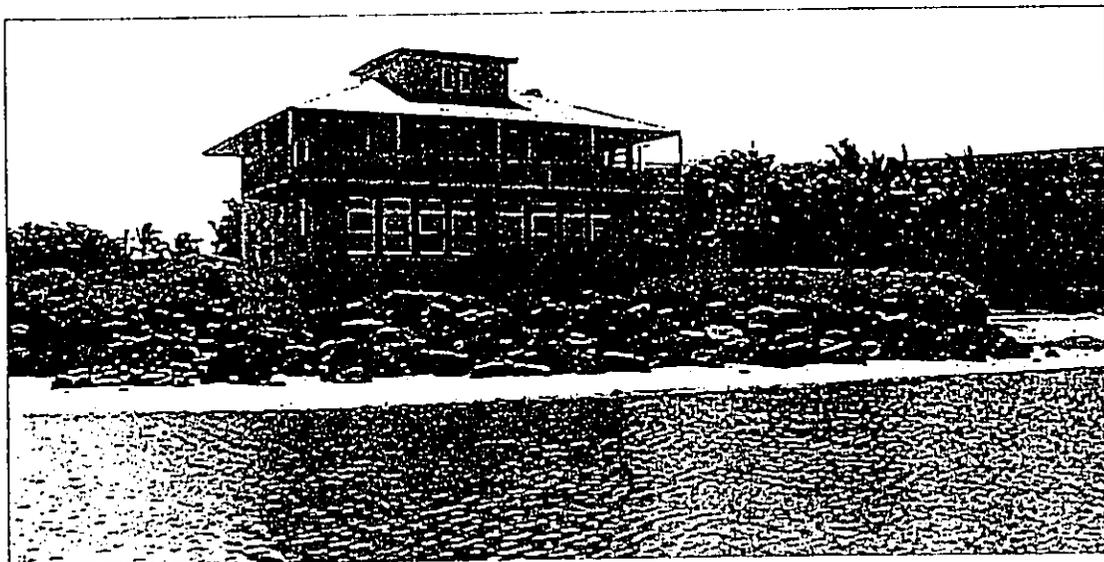


Figure 6. Navy DEGS building and armored shoreline. View from north wall of Kō'ie'ie Fishpond

3. RESEARCH PROBLEMS AND APPROACH



Previous Archaeological Studies of Hawaiian Fishponds

There are approximately 488 identified fishponds in the Hawaiian Islands (DHM and ARG 1989, DHM et al. 1990), and it is likely that many more ponds once existed, but are now buried under fill or broken apart by waves and completely submerged in shallow offshore waters. Fishpond technology reached a more advanced stage in Hawai'i than in any other Polynesian archipelago in terms of the size, numbers and general engineering features of the ponds (Kikuchi 1973:8). Despite the technological and social importance of fishponds, relatively few studies of these sites as a group have been conducted by archaeologists. Studies that have been conducted on the fishponds are primarily for purposes of identifying significant or well-preserved ponds that would either be eligible for National Register status, or for reconstruction and reuse. The exception is Kikuchi's 1973 dissertation work, which synthesized a large body of data on known fishponds. Kikuchi's effort was focused on formal variation, and considered general spatial and temporal patterns in the formal aspects of the ponds. Kikuchi did not identify specific variables or indicators of temporal change in fishpond technology or form.

Fishponds were recorded along with other archaeological features during the early twentieth century surveys of the various Hawaiian Islands by Bishop Museum archaeologists such as Walker (1935), McAllister (1933), Stokes (1909), and others. The earliest study to focus on fishponds in Hawai'i was conducted by John Stokes (1909, 1911), who collected descriptive information on the walled ponds and fish traps of Moloka'i and the Pearl Harbor area of O'ahu. Stokes took measurements at five fish traps (*loko 'umeiki*) on Moloka'i and compared the features of these traps with similar forms found elsewhere in Polynesia.

Catherine Summers (1964) later used Stokes' data in her study, which focused on the ponds of Moloka'i and O'ahu. Summers identified five types of ponds, based on traditional Hawaiian categories. These included the walled shoreline ponds (*loko kuapa*), walled shoreline fish traps (*loko 'umeiki*), inland ponds located near the sea and connected via a channel (*pu'uone*), fresh water inland ponds (*loko wai*), and fishponds in taro patches (*loko i'a kalo*). Summers provides a general overview of the historic information and best examples for these various types of ponds; an exhaustive inventory was not attempted. Primary sources used by Summers include Kamakau's *Mo'olelo o Hawai'i*, Stokes (1909, 1911), and a study by Emma Beckley (1883), part owner of a fishpond on Moloka'i. She also references production and sales records of the commercial operations that were using fishponds at the beginning of the twentieth century.

The first State-wide inventory of fishponds was conducted by William Kikuchi, as part of his doctoral dissertation at the University of Arizona (1973). Kikuchi utilized the categories as previously described by Summers (1964); however, he added one type to the group of

fishponds found in taro *lo'i*, and he identified two additional aquaculture structures, the weir found across fresh water streams (*kahē paniwai*), and the artificial fish shelter made of heaped stones, located in shallow shoals (*umu imu*). His final classification consisted of eight types and thirty subtypes (Kikuchi 1973: 227-233). The subtypes were generally distinguished on the basis of surrounding natural features, elements of construction such as presence or absence of sluice grates, or relationship to other ponds. For example, among the *loko kuapā*, Kikuchi distinguished seven subtypes that capture differences in how the pond walls were constructed and how the shoreline was used (Figure 7). Three of the subtypes (Ia₂, Ia₃, and Ib₁) are distinguished on the basis of construction sequencing, and are therefore potentially of use in the development of chronological trends. The *loko kuapā* subtypes are further discussed below.

To date, Kikuchi's typology has not been critically examined to determine whether it accounts for the full range of formal variation that existed among functional fishponds. There has also been no consideration of whether or how historical changes in land use and local ecology might effect the formal appearances of fishponds. For example, Kō'ie'ie Fishpond as it appears today is a Type Ia *Loko kuapā*. However, does this classification fit the pond as it was originally engineered and constructed?

Kikuchi's inventory consisted of a list of sites by island, and provided the name of the pond, its location, type and subtype, size and other available information such as wall length, width and number of sluice grates (*makahā*). His information was taken from aerial photos, previously collected archaeological data, Tax Maps, and limited field checks. Unfortunately, the inventory list does not specify his sources of information for the various ponds. Kikuchi also developed his own numbering system for the ponds, which is not correlated with State Inventory numbers.

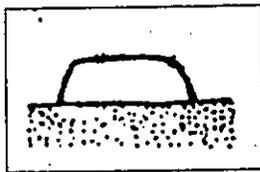
In addition to his inventory, Kikuchi's study also includes a detailed discussion of fishpond technology, such as how the walls were constructed, how the ponds were maintained, how fish were harvested, and the environmental parameters of the various types of aquaculture structures. Kikuchi also provides a general chronology of fishpond construction and use in Hawai'i (Kikuchi 1973:181-186), and he mentions specific ponds that are associated with certain chiefs. His chronology, which is ordered by century beginning A.D. 1300, is developed from sources such as Summers (1964), Kamakau (1961), Malo (1951) and Fornander (1880).

In 1975, Kikuchi and Apple conducted a second State-wide survey of fishponds, based on the inventory developed by Kikuchi (1973). This study was conducted for the National Park Service, with the following goals:

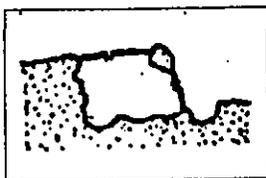
The purpose of this study is to identify for public and private interests those surviving Hawaiian fishpond remnants worthy of preservation as part of the cultural heritage of the State of Hawai'i and the United States of America. Highest value is given in this study to those surviving remains judged to have deviated least from their conditions when in operation, i.e., about 1800. (Apple and Kikuchi 1975:3)

Type I *Loko Kuapā*

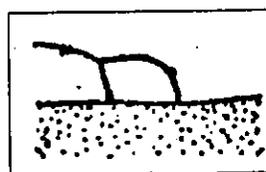
A fishpond of littoral water whose side or sides facing the sea consist of a stone or coral wall containing one or more sluice grates.



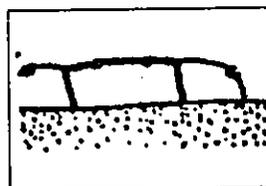
Ia *Loko kuapā* with wall is built from a point along a relatively straight shore to another point on the same shore, forming an arc.



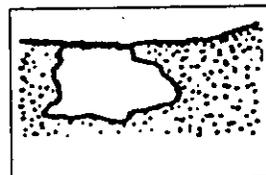
Ia₁ *Loko kuapā* built at a natural curvature of the shoreline utilizing an islet as part of the arc of the seawall.



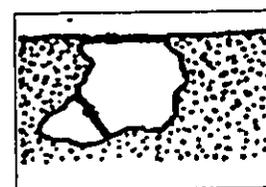
Ia₂ *Loko kuapā* which shares part of its wall with an adjoining pond.



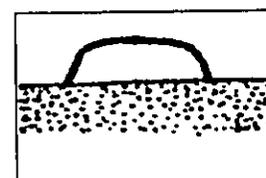
Ia₃ *Loko kuapā* built between two existing ponds utilizing the walls of both adjoining ponds as parts of its own wall.



Ib *Loko kuapā* with the wall completely closing the mouth of a bay.



Ib₁ *Loko kuapā* within a type Ib pond formed through subdivision by a secondary wall.



Ic *Loko kuapā* similar to a Ia or Ia₁ pond, but having no discernible sluice grate.

Figure 7. Descriptions of the seven *loko kuapā* subtypes identified by Kikuchi (1973).

Ko'ie'ie Fishpond Survey

Apple and Kikuchi use the same typology developed by Kikuchi (1973), and the same numbering system. Their study was focused on the coastal areas, and began with an aerial survey of the islands, using Kikuchi's maps as guidelines. Apple was able to locate 157 fishponds from the air (Apple and Kikuchi 1975:65). On the basis of this fly-over, 101 of the ponds were eliminated from consideration, "since it was obvious that they did not possess sufficient integrity to merit preservation" (Apple and Kikuchi 1975:65). The remaining 56 ponds were revisited and given integrity ratings which reflected the quality of the pond basin, contents (percentage still in open water), and setting. Aerial photographs are provided in the report for the 56 ponds that were revisited, all of which were considered eligible for listing in the National Register of Historic Places.

In 1989 and 1990, the Office of State Planning and the Department of Land and Natural Resources retained DHM Planners of Honolulu and Applied Research Group (ARG) of Bishop Museum to conduct a more intensive inventory and assessment of the fishponds within the State. The first phase of the study included the islands of Moloka'i, O'ahu and Hawai'i (DHM and ARG 1989), and the second phase included the islands of Maui, Lana'i and Kaua'i; and a re-survey of Hawai'i Island (DHM et al. 1990a and b). The study included general inventories for each island and in-depth studies of selected fishponds. The purpose of the in-depth studies was to conduct field visits in order to verify descriptive information and to verify the significance assessment assigned to ponds using documentation and aerial photos (DHM and ARG 1989:II-2). Ponds for in-depth studies were selected on the basis of the significance rating they received from the document reviews. Most of the ponds visited were rated I or IIa, where class I represents ponds with walls in good to excellent condition, minimal siltation or vegetation encroachment, and at least three National Register criteria applicable. Class IIa is the same as Class I except the wall is in good to fair condition (DHM et al. 1990a:III-3).

The DHM survey utilized six of Kikuchi's types to classify the ponds formally; and utilized a rating system that was similar to Apple and Kikuchi's, however it used discrete classes as opposed to the numerical values assigned by Apple and Kikuchi. This survey identified a total of 488 fishponds, including 178 on O'ahu, 74 on Moloka'i (DHM and ARG 1989:III-4), 138 on Hawai'i, 50 on Kaua'i, 44 on Maui, and 4 on Lana'i (DHM et al. 1990a: III-4). Of these ponds, 147 were identified as *loko kuapā* and 21 were identified as *loko umeiki* (DHM et al. 1990a:III-4). General inventory information provided for all the ponds includes the pond name, location, type, significance rating, and whether it is privately owned or State-owned.

In-depth studies were conducted at 114 ponds; 33 of which were *loko kuapā*. These studies included descriptive information such as the pond size, dimensions of the wall, number of makahā, construction and materials, in addition to location and ownership data (DHM and ARG 1989; DHM et al. 1990b). Aerial photos, maps and on-ground photos of these ponds are also provided in the in-depth study reports. The information contained in the in-depth studies of 33 *loko kuapā* provides the primary descriptive data that is used in this study.

In 1975, Marion Kelly conducted an ethnohistoric study of He'eia Fishpond in Kane'ohe, O'ahu. This study includes oral testimony from members of the Hee family, who operated the fishpond commercially between 1927 and 1958, as well as historic archival research on the various tenants and owners of the pond. Kelly also documented various structural changes that were made to the pond as the result of river floods, tides, and siltation. A number of additional non-archaeological studies have been conducted of Hawaiian fishponds from various perspectives, including ocean engineering, commerce, viable pond reuse, and specific aquacultural topics. These studies will be cited where relevant in the following discussion.

Traditional Shoreline Aquaculture: Form and Function

Kikuchi's study provides a detailed examination of the various conditions that are required for a *loko kuapā* to be functional. The primary factor limiting the location of this type of pond is the presence of a fringing coral reef which creates a protected off-shore shoal area no more than five feet deep at high tide (Kikuchi 1973:37). The geographic distribution of *loko kuapā* around the various islands directly reflects the presence of these reef areas, and explains why the islands of O'ahu and Moloka'i contain the majority of these ponds (114 of 147, or 78%). The environmental requirement for a water depth range of three to five feet directly affects the variation found in fishpond walls. Kikuchi found that wall heights are consistently within this range, with the mean of his sample (37 ponds) at 3.84 feet high (Kikuchi 1973:55). Wall height data in the DHM in-depth studies are presented as ranges, nearly all of which are between 3.0 and 4.0 feet. These data indicate that in most locations, a wall around four feet high was generally of sufficient height to be exposed during high tide.

Unlike wall height, the width of an individual fishpond wall can vary considerably, and most data on wall width are recorded as a range from anywhere between three and twelve feet. There is general consensus among archaeologists, pond users, and engineers that wall width is directly related to the ability of the wall to withstand wave and surge impacts at a specific locale. For example, Farber indicates that on Moloka'i there is a tendency for the eastern sides of ponds to exhibit wider walls than the western end, due to the prevailing currents and waves (Farber 1997:12). When the average widths of individual pond walls are compared, the range is not great, and Kikuchi obtained an overall mean of 6.5 feet (Kikuchi 1973:55) for his sample. This finding is also verified by the DHM in-depth studies, which found most pond walls to be an average of six feet wide.

A second environmental factor influencing the location of the fishpond is the presence of fresh water. Kikuchi notes "All ponds and traps grade from fresh to brackish water, with some water environments approaching the upper limits of brackishness (salt water is approximately 31%)" (Kikuchi 1973:41). Based on water salinity tests taken by Kikuchi and others inside offshore ponds, he concludes, "wherever shore ponds occur springs and seepages occur" (Kikuchi 1973:44). This requirement would have an impact on the function of a pond if

for some reason the source(s) of freshwater dried up or were diverted so that they no longer flowed into the pond basin. Madden and Paulsen (1977) note that modern levels of fresh water flowing in from seeps are inadequate to maintain the optimal salinity levels in most fishponds (Madden and Paulsen 1977: 14). This is no doubt related to the large-scale diversion of much of the surface water before it has had an opportunity to percolate into the groundwater system, resulting in dry springs and extremely low volume fresh water seeps. As noted in the preceding chapter, Kō'ie'ie Fishpond is located at the mouth of Kūlanihāko'i Stream, which once emptied into a natural wetland/estuary. Presently, the stream has been channeled and flows into the ocean approximately 400 feet (122 meters) north of the fishpond.

Water turbidity is identified by Malone (1968) as one of the most important factors in determining the productivity of life forms within ponds. High turbidity results from wind stress and a high volume of particles (silt and organic) that become suspended in the water. Thus, ponds subjected to silt run-off from inland sources would tend to have a lower productivity level, unless they were cleaned regularly. Kelly reports that the amount of silt or mud in a pond also affected the taste of the fish (Kelly 1975:22).

Kikuchi compares the artificial environment of a fishpond to that of a natural estuary, where the shallow, warm water provides a breeding ground for phytoplankton and zooplankton, which provides a food base for fish. Marine plants are an important element of the fishpond environment because they produce oxygen required for the growth of phytoplankton such as filamentous algae. Maintenance of good water circulation is a primary factor in keeping the estuary-like environment of the fishpond. Fishponds were therefore located in areas that were already natural estuaries or in areas that could be engineered to create such conditions.

Recent engineering studies sponsored by the University of Hawai'i Sea Grant Program substantiate what was previously suspected regarding the role of *makahā* in contributing to the circulation of water in ponds. Traditionally, *makahā* were immovable sluice gates (Apple and Kikuchi 1975:20), or were open linear channels that were directed either into or out of the pond or *'umeiki*. In a recent study of circulation at One Ali'i Fishpond on Moloka'i, Sundararaghavan and Ertekin (1997) found that circulation is most effective when two sluice gates are present, but only one is opened at a time, depending upon the tide (ebb or flood). Using computer-generated models of circulation, the authors found that a *makahā* located near the center of the wall provides best circulation at flood tide, and a *makahā* at the southeastern side of the wall, closer to shore, provides best circulation at ebb tide. Two *makahā* were present in the wall at One Ali'i Pond, however, one of them had been blocked up with stones for an unknown reason. Based on their study, it was recommended that the blocked *makahā* be reopened and used to improve circulation in the pond (Sundararaghavan and Ertekin 1997:12-13).

A second study at Keawanui Pond on Moloka'i (Yang et al. 1999) found that water velocity at the *makahā* is higher during ebb tide than at flood tide, and that the *makahā* oriented with the ebb tide will have a more controlling effect on overall pond circulation, especially if it is the wider opening (Yang et al. 1999:14). This finding suggests that if there is only one *makahā*, it will not be very effective unless it is located so as to take advantage of the ebb tide. Summers indicates that there does not seem to be any set pattern to the number or location of *makahā* in fishpond walls (Summers 1964:9), suggesting that these were placed in individual ponds as needed to ensure proper circulation. The *makahā* were important in removing silt from the pond, which was accomplished by moving it toward the *makahā* at ebb tide. It is therefore likely that the location, size and number of *makahā* reflect the ocean current conditions at a particular fishpond. Changes in either the sea conditions or in the microenvironment of the pond (i.e., decrease in depth due to silt, resulting in poorer circulation) might therefore be expected to result in changes to the *makahā*. The site-specific conditions dictating *makahā* make particular traits of these features difficult to use for comparisons between ponds.

Social Considerations: Labor and Materials

Summers (1964:2) and Kikuchi (1973) both conclude that the *loko kuapā* were considered the property of the *ali'i*, and were only built when an *ali'i* made the decision to conscript the labor of the residents of the district. Information regarding the number of people required to build a pond can be found in various sources, including the Native Testimony of the Land Commission Awards (Summers 1964:2). Testimony found by Summers not only provides sworn testimony on how many people built the walls, but also provides a sound construction date for certain ponds. Examples she found include testimony from several Moloka'i men who swore that all the people from Kamalo'o to Halawa (the eastern side of Moloka'i) were commanded by Ilae to build the fishpond at Puko'o circa 1829. This number included women and children who were responsible for gathering coral to cement the wall. A second example includes testimony that "all the people of Moloka'i" were brought from "every point of Moloka'i" and commanded to build a certain fishpond (Summers 1964:2).

Summers also cites a nineteenth century manuscript by Kamakau (1869), who reported that repair work on a 500 foot long section of the south wall of Kalepolepo (Ko'ie'ie) Pond at Kihei, Maui took several months of work. This work witnessed by Kamakau was conducted in 1840 under the direction of Governor Ho'apili, using labor from the Maui penal colony (Wilcox 1921:67). In another reference from a Kamakau manuscript cited by Kikuchi (1973:51), Umi ordered a reconstruction of three ponds at Kalepolepo on Maui, engaging the labor of 10,000 men. Kikuchi estimates that an average fishpond wall 1600 feet long by three feet wide and three feet high contains 33,719 cubic feet of rock (Kikuchi 1973:55). It is possible to assign a minimal labor requirement value to each fishpond, using its three dimensional measurements and a labor estimation based on labor hours per cubic foot of rocks. This sort of formula would not, of course take into account the labor involved in acquiring the stone or coral, which could

be considerable for certain areas. For example, Kamakau also notes that the stones for the Kalepolepo Ponds were carried from the uplands of Maui and some of the individual boulders required 40 men to carry (Kikuchi 1973:154). Based on the above data and other references, Kikuchi concludes that

The massiveness of some of the shore type fishponds suggests that construction was intensive and lengthy, as well as costly in terms of material, manpower, and subsidy in feeding and housing. (Kikuchi 1973:51)

In consideration of these factors, the larger *loko kuapā* were of such huge proportions and required such immense labor input that they clearly qualify as monumental architecture. It is likely that certain *ali'i* intended such ponds to be visible signals of their leadership capabilities and symbols of socio-economic power.

After a fishpond was constructed, full-time maintenance was required in order to keep it functional and productive. This included the removal of silt, ensuring the fish were fed, fertilizing the algae, and repairing breaks in the wall as they occurred. Kelly's interviews with the Hee family indicate that they had work to do every day at He'eia Pond (Kelly 1975:33). In addition to the duties listed above, the Hees had to pump fresh water into the pond when the tide was too low to allow fresh water from the river to flow into the pond (Kelly 1975:35). This indicates that pond salinity had to be monitored and measures taken as needed to maintain proper salinity. He'eia Pond required two men working full time to keep the walls repaired, and seven additional full time workers to do other maintenance chores. At times, labor crews of up to 48 individuals were hired for emergency repairs (Kelly 1975:33).

He'eia Pond is approximately 88 acres in area; based on Kelly's information, the minimal manpower requirement for normal maintenance translates to roughly one full time person per 9 acres of pond. If repairs are irregular, more labor investment would be required because the maintenance would not occur as needed, therefore it would require more work to bring the situation under control. For example, if small breaks in the wall are not repaired, they become large breaks. There is no question that larger fishponds require more labor to maintain than smaller fishponds. In cases where labor resources are scarce, it would stand to reason that smaller fishponds would be more manageable and as a result more productive per acre than larger ponds.

Summers' ethnohistoric information indicates that people who cleaned and maintained the ponds were permitted to take fish from them. She cites a nineteenth century reference from Beckley (1887) who states that women most frequently obtained fish from the ponds. Kikuchi also notes that much of the pond cleaning was done by women. Indications are that fish were obtained on a regular basis by the families who maintained the ponds and lived at the sites. This sort of use conflicts somewhat with the image of ponds being *kapu* to all but the chief. In a practical sense, chiefs and *konohiki* had to allow those who labored at the ponds some reward; otherwise it is not likely that the ponds would be maintained in their absence.

Modeling Fishpond Variability

A primary research question for this study examines how Kō'ie'ie Fishpond compares with other documented Hawaiian fishponds that have been grouped as the same type, i.e., other *loko kuapā*. Secondly, we are looking for formal differences that may correlate with or signal historic changes in fishpond morphology through time. Metric data previously collected for *loko kuapā* includes the pond area in acres, as estimated from aerial photographs; and overall wall length, height and width, as estimated and in some cases measured on-site. The data set available is from the most recent fishpond surveys, conducted by DHM and ARG (1989) and DHM et al. (1990a and b). Other descriptive information available for some ponds includes the number of *makahā*. Consideration of the environmental factors affecting fishpond wall construction indicates that the width and height of walls are determined to a large extent by engineering constraints. In addition, the available data for these attributes has been normalized for each pond, so that an average value is provided. These averages therefore exhibit little to no variation (DHM and ARG 1989; DHM et al. 1990b). When combined with the overall length of the pond wall, average wall width and height can be used to derive an estimate of the volume of stone used in wall construction. This variable reflects to a large degree the length of the wall, which can also be used to provide an indication of labor investment.

In general, Summers and Kikuchi found that the length of a fishpond wall does not correlate with the size of the fishpond. This is due to the variability of coastlines, and the fact that some very large ponds have only one constructed wall whereas three sides are naturally determined. The implication of their conclusion is that wall length provides a measure of labor investment in the wall *only*; it does not provide a measure of pond size or shape, or labor investment in overall pond maintenance. It should be noted that this conclusion is based on a consideration of all the *loko kuapā* subtypes as a single group.

Fishpond shape is not included in the descriptive data collected by any of the fishpond surveys. Kikuchi notes that pond shape is determined by the natural features of the coastline, and is therefore not subject to temporal variation. This observation is correct for ponds that exhibit one or two built sides (Kikuchi's subtypes Ib and Ib₁). However, for ponds that have only one side defined by a relatively straight shoreline (Kikuchi's subtypes Ia, Ia₁, Ia₂ Ia₃ and Ic), the shape of the wall could be a significant attribute. For example, some ponds exhibit a nearly round plan, while others exhibit a more oblong plan, with walls that tend to be nearly straight. Preliminary examination of these differences indicate that there should be a way to quantify these formal differences so that comparisons of fishponds could be made. For this purpose, a variable was obtained by dividing the straight-line length of the pond along the shore (L) by a perpendicular width (W) as measured from the (L) line to the inside of the outer pond wall. A high L/W ratio indicates that the pond is considerably longer than it is wide (more oblong in plan), and a low L/W ratio indicates that the pond is nearly as wide as it is

long (nearly round in plan). The data needed to obtain this ratio were taken from aerial photographs or maps of fishponds provided in the DHM and ARG (1989) and DHM et al. (1990b) in depth-studies.

In order for the pond shape variable to be meaningful, it can only be applied to those ponds which have at least 75% of their shape determined by a constructed wall, which includes Kikuchi's subtypes Ia, Ia₁, Ia₂, Ia₃ and Ic. This condition reduces the original group of 33 *loko kuapā* to 17 (Table 2). Among these 17 ponds, there are indications that overall wall length does in fact correlate with pond size. Information on wall length was available for 14 of the 17 ponds in this database. When wall length is plotted against acreage, a clear trend of increasing wall length with increasing acreage is indicated (Figure 8). This trend suggests that for *loko kuapā* built in a certain shoreline setting (Kikuchi's subtypes Ia, Ia₁, Ia₂, Ia₃ and Ic), wall length is a good indicator of overall pond size, and rock volume would therefore provide a quantifiable estimate of construction labor investment.

A second potentially interesting trend in the data is the relationship between the fishpond wall length to width ratio and fishpond acreage. When these values are plotted, the trend is for the ratio to decrease as acreage increases (Figure 9). Low sample size is affecting the expression of an actual trend in these data; however, preliminary findings suggest that a significant relationship may be present. There are a number of ponds of the appropriate subtype for which there is currently insufficient data available to include in this preliminary study. Obtaining sufficient data to increase the sample size would involve conducting field visits to the pond and acquiring the measurements.

Potential Temporal Trends

An implication of the social considerations of fishpond construction is that pond size is to some degree determined by the amount of available labor energy at the time it is constructed. Continued use and maintenance of a pond is also dependent upon available labor energy; if a pond is too large to effectively maintain, it would quite possibly be abandoned in favor of a smaller pond. By extension, it would stand to reason (hypothetically) that if the available labor decreased, then smaller ponds might be constructed within the basin of larger ponds, using stone from the existing walls. There are indications in historic records that when certain ponds were rebuilt, they were reduced in size. These cases, which were observed by living informants, occurred during the nineteenth century, when the population (and available labor force) had been reduced considerably by introduced diseases.

Additional evidence for the building of smaller ponds within the basin of larger ponds can be found on aerial photographs and maps. In fact, a number of "old fishponds" are noted on Tax Maps that were included in the DHM surveys. These older ponds were not included in the surveys, and so remain unrecorded. Among the 17 *loko kuapā* included in this particular database (Table 2), aerial photos or maps provided show a larger pond outside the walls of

Kalohoiki and Ni'aupala Ponds on Moloka'i. Kō'ie'ie Fishpond is documented as being reconstructed several times and was reportedly decreased in size during the time of Kamehameha I (Kamakau in Kikuchi 1973:257).

Ni'aupala Pond has a wall length to width ratio of 4.0, and Kalohoiki Pond has a wall length to width ratio of 6.3. These ratios are all well above the mean length/width ratio for the sample (2.8, $s=1.3$), suggesting that when the ponds were rebuilt, the length along the shoreline was maintained while the opposite wall was moved in closer to shore. This modification resulted in an oblong plan view. It can be suggested that maintenance of the shoreline frontage of the pond was critical to maintaining an acceptable level of fresh water seepage or spring flow into the pond. Pulling the wall in toward the shore rather than making the shoreline frontage shorter would help to keep proper salinity levels in cases where the volume of fresh water was decreased from former levels.

NAME	SIHP NO.*	TYPE	ACRES	L/W RATIO
Kanohuliuiwi	50-80-10-344	la ₂	3	2.3
He'eia	50-80-10-327	la ₁	88	1.9
Kaloko'eli	50-60-03-133	la	28	2.0
Pahiomu	50-60-04-149	la	20	1.8
Kainaohe	50-60-04-160	la ₁	17	2.5
Kalohoiki	50-60-04-157	la ₁	4	6.3
Kupeke	50-60-05-206	la ₁	34	3.0
Kaoini	50-60-03-136	la	30	2.2
Kanoa	50-60-03-137	la	46	1.9
Kipapa	50-60-04-150	la	10	2.1
Kawi'u	50-60-04-146	la	12	4.7
Kihaloko	50-60-05-212	la	10	1.4
Waihilahila	50-60-05-213	la ₃	5	2.0
Ni'aupala	50-60-05-192	la	36	4.0
Haneo'o	50-50-13-1483	la ₁	11	3.5
Kuamaka	50-50-13-1483	la ₁	1.3	2.0
Kō'ie'ie	50-50-09-1288	la	3.1	3.6

* Note: 50-80=O'ahu; 50-60=Moloka'i; 50-50=Maui

Table 2. List of fishponds and variables used in metric analysis (source: DHM et al. 1990a & b)

Ko'ie'ie Fishpond Survey

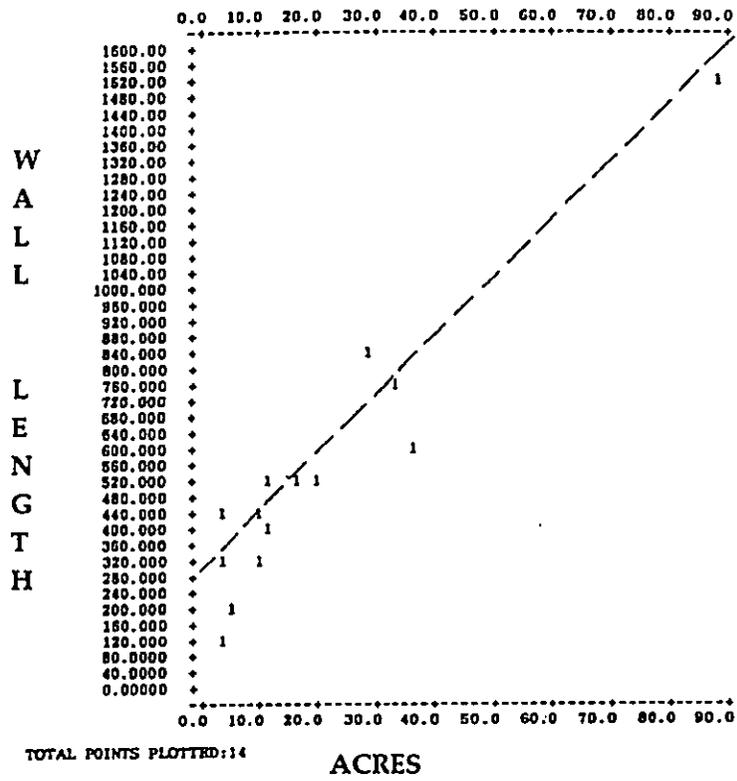


Figure 8. Plot of Loko Kuapā acreage (x) and wall length (y)

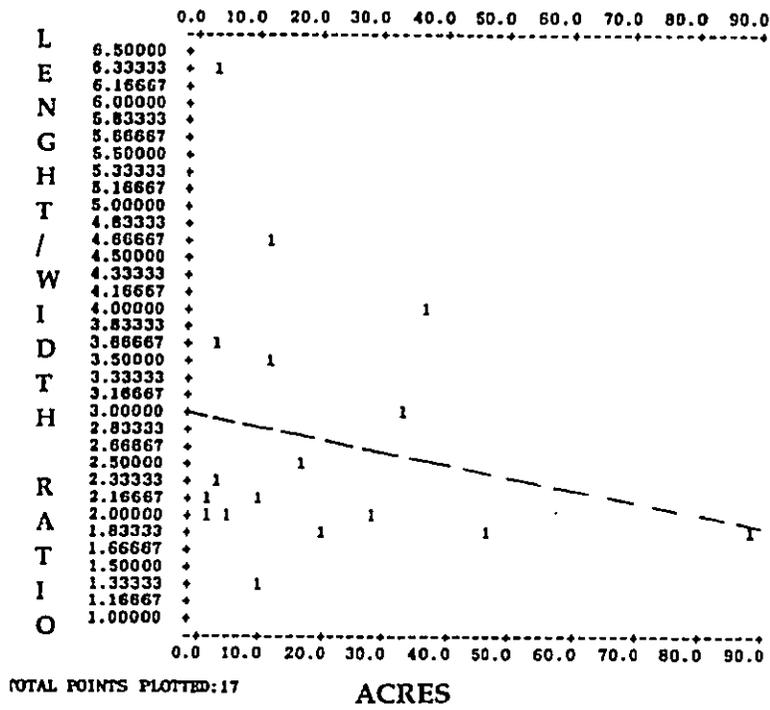


Figure 9. Plot of Loko Kuapā acreage (x) by Length/Width Ratios (y).

Kō'ie'ie Fishpond has a wall length to width ratio of 3.6, which is also above the sample mean ratio of 2.8. Plan views of this wall also show a tendency toward an oblong shape rather than rounded. Is the current footprint of Kō'ie'ie Fishpond and its ancient footprint one and the same, or is Kō'ie'ie another example of a pond that was reduced in size when it was last rebuilt? Available aerial photographs for the area around Kō'ie'ie Fishpond do not show an obvious older pond wall outside the existing wall. However, data from existing documented fishponds (shape and size) suggest that the wall of Kō'ie'ie Fishpond is potentially smaller now than when it was originally constructed. One of the goals of the underwater survey is to determine if there are remnants of an older pond wall outside the existing wall.

A second factor to consider is whether or not Kō'ie'ie Pond was originally built as a Type Ia *loko kuapā*. Historical information regarding the configuration of the pond is sketchy, and is based on oral testimony of land claimants as well as on old photographs. These sources suggest that Kō'ie'ie could have been more akin to a Type Ib *loko kuapā*, a pond formed by the walling of an embayment or natural estuary, rather than by a wall built out into the ocean, along a linear stretch of shoreline. If this was the case, the length to width ratio of the pond wall as it appears today will not be comparable to other Type Ia pond walls, and the wall length will not provide an accurate indicator of original pond size. Determination of the full former inland extent of the area once included as Kō'ie'ie Fishpond is beyond the scope of this project; however, information obtained during the underwater survey should help to determine whether or not the existing wall footprint is on or near its original location.

Research Questions

Topics examined here in connection with the underwater survey of Kō'ie'ie Fishpond include the social and environmental contexts of *loko kuapā* construction, the range of architectural styles and sizes represented among known ponds, and an analysis of that variation to determine whether patterns emerge that could be related to temporal and/or environmental change. Former fishpond studies indicate that certain formal attributes of walled fishponds inform us of ecological conditions at the time of construction, such as ocean resources, fresh water resources, or geomorphology of the local coastal landscape. Specific questions framed for Kō'ie'ie Fishpond and addressed in a preliminary fashion include the following:

1. Is there sufficient data to reconstruct the original fishpond? If so, does Kikuchi's typology account for Kō'ie'ie Fishpond as it was originally engineered?
2. How can the formal attributes of the Kō'ie'ie Fishpond inform us about its age, original configuration and possible period of construction?
3. How can the former and present configuration of Kō'ie'ie Fishpond inform us of changing ecological and shoreline conditions along the coast of Kula ?

Transects inside and outside the fishpond were surveyed by a team of two to three archaeologists. The location of all portable items and features encountered during the systematic survey were plotted using tape and compass, and were tied into the established baselines. For the purposes of this survey, features included aligned or clustered cobbles or boulders, large, apparently isolated boulders, and modern or traditional non-portable structural remains. Due to the shallow water conditions, underwater work was conducted by free-diving with snorkels rather than SCUBA

The fishpond wall was surveyed and mapped separately as a single structural feature. Examination and detailed mapping of the wall was conducted during low tide, by walking on the wall, wading and swimming. Baselines were set along the main axis of the three wall sections and used to measure wall width as well as to plot locations of portable items that were lodged among the stones. In addition to being plotted, portable remains (in the wall and submerged) were measured and described, and to the extent possible, photographed.

Photo-documentation of submerged artifacts and features at the time of discovery was hampered in most cases by extremely turbid water conditions. Return trips to photograph items were made on several occasions; these trips were not always successful because sand would often accumulate and bury the items, precluding their re-location; or turbid conditions were again present. The survey area is within the wave surge zone, where water conditions are generally always in high-energy movement. This situation is not conducive to obtaining clear photographs. In general, photographs had to be taken in the early morning hours.

Reconnaissance Survey

Reconnaissance survey was conducted by one or two archaeologists, and was completed by swimming transects oriented N-S and spaced at approximately 10 meter intervals. The transect lines were maintained by use of an underwater wrist compass. The location of features identified during reconnaissance was recorded by either tape and compass or hand-held GPS (global positioning system) unit. When GPS was used, the hand-held (e-Trex) unit was operated by one person who remained on the surface in a kayak. When an artifact or feature was found by divers, the kayaker was called to the location and a GPS reading was taken directly above the find. The GPS readings were then tied into the survey base map through use of a shoreline datum. The margin of error for the GPS readings was 5 meters. For this reason, the location of certain features were verified through tape and compass measurements where possible. The accuracy of the hand-held GPS readings were field checked against post-processed and averaged data collected by a Magellan Promark X-CM system with a multipath resistant antenna. Data from this receiver is accurate within .3 meter when post-processed. Base data for post-processing was obtained on-line from the NOAA/National Geodetic Survey CORS (continuously operating reference station) at Upolu Point, Hawai'i Island.

Metal Detector Survey

The north fishpond wall and area of wall fall on the inside of the pond were subjected to a metal detector survey. The detection was conducted using a Fisher brand pulse induction underwater metal detector. This equipment detects all types of metal, and is best suited for use in salt water, sand, and in highly mineralized black sand or rocks. Maximum depth penetration under ideal conditions is about two feet. When a "hit" was encountered during metal detection, it was given a number and marked with a pin-flag. These hits were then plotted on the base map using a baseline and tapes. The location of the hit was then examined to determine if the metal item was within the first few inches of sand, or beneath surface stones. If the metal item was found, it was described and left in place. Exceptions included rubbish, such as beverage cans, that were retrieved and discarded rather than left in place.

Subsurface Testing

Subsurface probing and limited hand excavations were conducted in the beach area, just inland of the north wall of the fishpond. The purpose of the probing and excavation was to determine if buried portions of the fishpond wall continued inland of the currently visible wall. Probing was conducted with a one meter long steel probe rod. Shovel excavations were conducted in conjunction with the probing in order to obtain greater depth. Maximum depth was obtained by hand excavation of two 1.50 by 1.0 meter units to a depth of .7 meter, where water was encountered. The sand removed during this excavation was culturally sterile beach sand, and was not screened. The exposed face of the trench was profiled and the sand stratigraphy was described and photographed. Samples of sand layers were also collected for further examination and description. Probing was conducted from the base of the trench excavation, approximately 1.0 meter into the existing water table.

Mapping and Data Analysis

The extent of the fishpond wall, the shoreline, features along the shoreline, and surface profiles across the wall were generated using a Topcon brand automatic level on a tripod and a stadia rod. Three mapping datum points were used along the shore, at the southern, central and northern ends of the fishpond. The final map was produced by hand based on computations made from the distance, angle and elevation readings.

Plot diagrams and least-squares lines for the fishpond measurements were computed using ABSTAT software, version 5.13 (Anderson-Bell). GPS post processing was conducted using MSTAR software, version 2.06 (Magellan Systems). Terrestrial photographs were taken using a SONY Mavica 10X digital camera; underwater photographs were taken using a Bonica Vision XMS with strobe attachment.

Ko'ie'ie Fishpond Survey

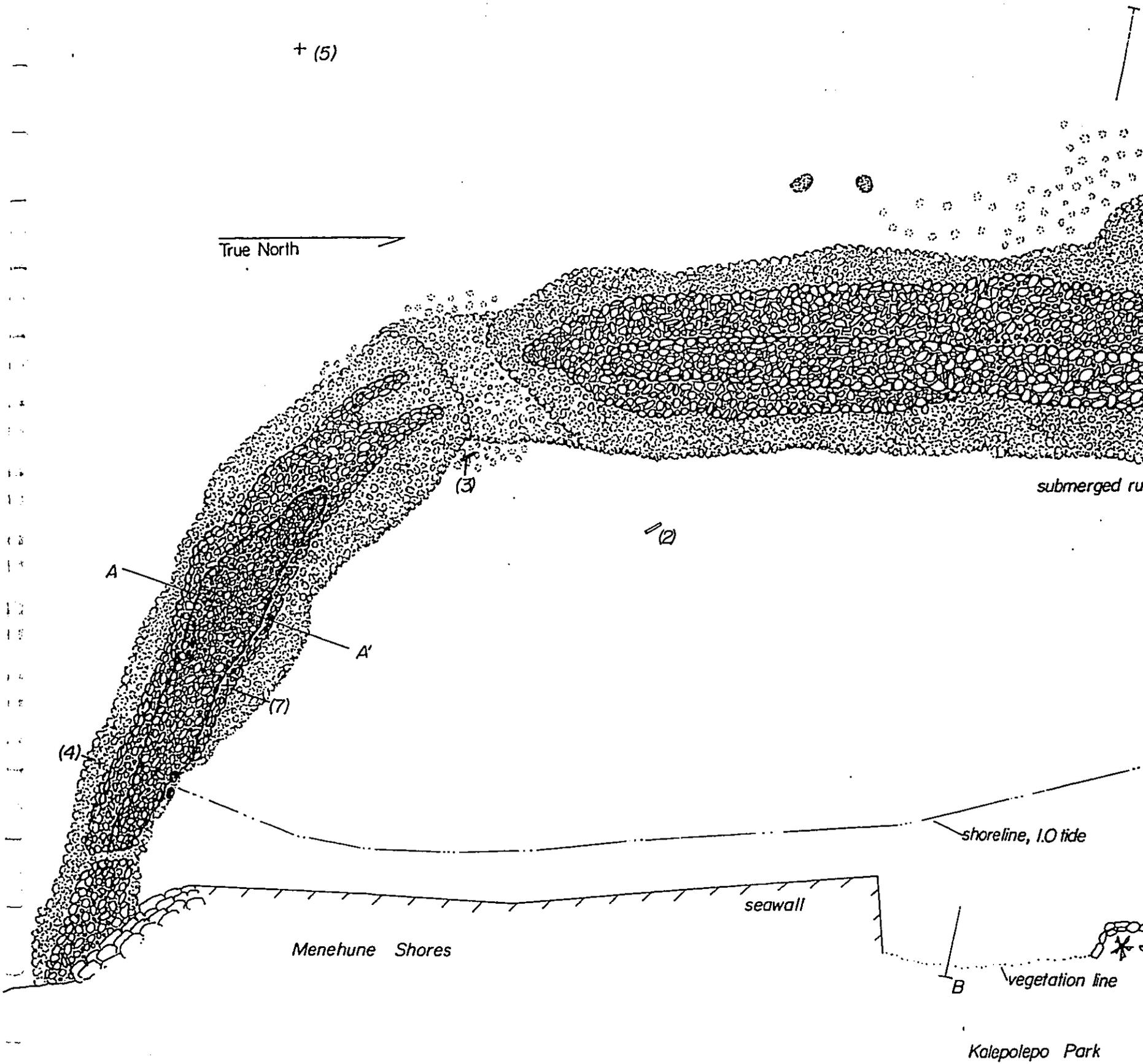
meters (141 feet) along the north end of the west wall to 8.0 meters (26.2 feet) at the north end. The south portion of the wall reaches a maximum width of 25 meters (82 feet), and is narrowest at the end, where it is 12 meters (39.3 feet) wide. Wall widths as measured from the top of the wall at 0 tide are considerably narrower, and range from 2.0 to 9.2 meters (6.5 to 30.2 feet).

Wall height was determined by taking elevation readings of the pond bottom and the seafloor adjacent to the edge of the wall rubble, and deducting these values from the elevation of the top of the wall along the same line. These measurements were taken at three locations (Figure 12), and are illustrated as cross-sectional profiles (Figure 13). Maximum wall height along the west wall was obtained in the center of the west wall, where it rises 1.1 meter (3.6 feet) above the bottom of the fishpond and 1.60 meter (5.2 feet) above the seafloor outside the fishpond. At this location (profile line B), the seafloor is limestone reef with some coral rubble and no sand accumulation. The south portion of the wall reaches a maximum height of 1.55 meter (5 feet) above the bottom of the fishpond and 1.4 meter (4.6 feet) above the seafloor outside the wall. At this location (profile line A), the seafloor is sand with no rubble or limestone outcrops noted. Maximum wall height along the north portion of the wall is 1.5 meter (4.9 feet) above the bottom of the fishpond and 1.8 meter (5.9 feet) above the seafloor outside the wall. At this location (profile line C), the seafloor is mixed coral rubble and sandy bottom. As previously noted, all portions of the wall are entirely below sea elevation during periods of high tide.

The interior area of the fishpond that is currently sand or loose coral rubble bottom (area with no wall stones) measures 225 meters (738 feet) along the shoreline and 150 meters (492 feet) along the inside of the western wall. Width of the pond bottom varies from 35 meters (114.8 feet) at the north end in front of the NOAA building, to 72.5 meters (237.8 feet) at the south end, in front of the Menehune Shores seawall. At both of these locations, the maximum width of the pond is measured from armored shorelines, and would be greater during high tide if the shoreline was natural.

Using the perimeter of the submerged wall rubble line along the base of the wall, the total interior area of the fishpond bottom at 0-1 foot tide is calculated at 9,485 square meters (.95 hectare) or 2.25 acres (98,009 square feet). If we estimate an average actual wall width of 10 meters, with the center of the original wall along the high point of the existing wall, a minimum of 2450 square meters (6338.5 square feet) of surface area would be added to the interior of the pond. This would bring the interior area of the pond to 2.4 acres. If we estimate that the original wall was 10.0 meters wide and located closer to the outermost extent of the existing rubble, the area of the pond would increase to approximately 3.7 acres. This estimate is based on the overall area of the pond and all wall rubble at 4.5 acres, minus 37,728.5 square feet (.8 acres) of estimated wall area. A more accurate estimate of the pond interior may be an average of the current area and the maximum area as estimated from the outermost extent of wall rubble. This value is 3.1 acres.

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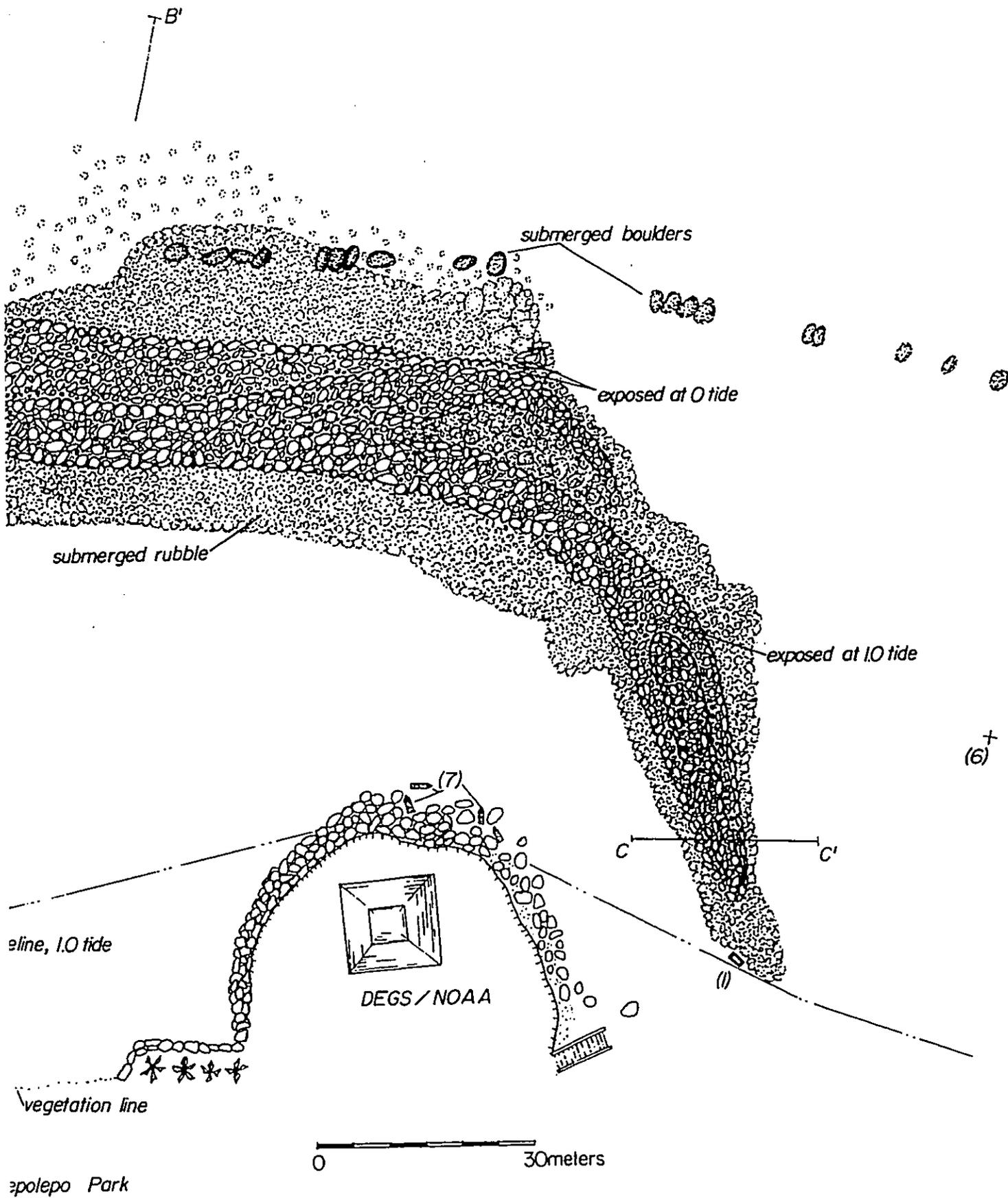


Figure 12..Scaled Plan Map,
Kōie'ie Fishpond Wall

Note: Numbers in parentheses
indicate mapped artifacts

A consideration of the fishpond shape in plan view shows that it is asymmetrical, and that the northwest corner is sharper and more angular than the southwest corner, which is a gradual curve rather than an actual corner.

Boulder Alignment

A previous survey of the fishpond wall noted the presence of large boulders along the outer edge of the wall at the northwest corner, and described the feature as follows:

An alignment of large boulders, which appears to serve as a protective breakwater, is located off the northwestern corner of the pond wall. It is not known whether this feature was part of the original pond; the boulders are larger than most of the visible pond wall stones. The alignment is set at the edge of a reef shelf, approximately 10 meters from the outside of the pond wall. The area between the breakwater and the pond wall is filled with stones, and it is not possible to determine whether these are disturbed or purposely set stones (Donham 1996 7-8).

The underwater survey was able to verify that the boulder alignment consists of purposely set stones, and that it extends in a discontinuous arc from the northwest corner of the fishpond to the shoreline, 170 meters to the north. The alignment consists of very large boulders, up to 3.0 meters along a major axis, with associated smaller boulders and cobbles. It is identifiable along the west edge of the existing fishpond wall, where it is oriented parallel with the west wall of

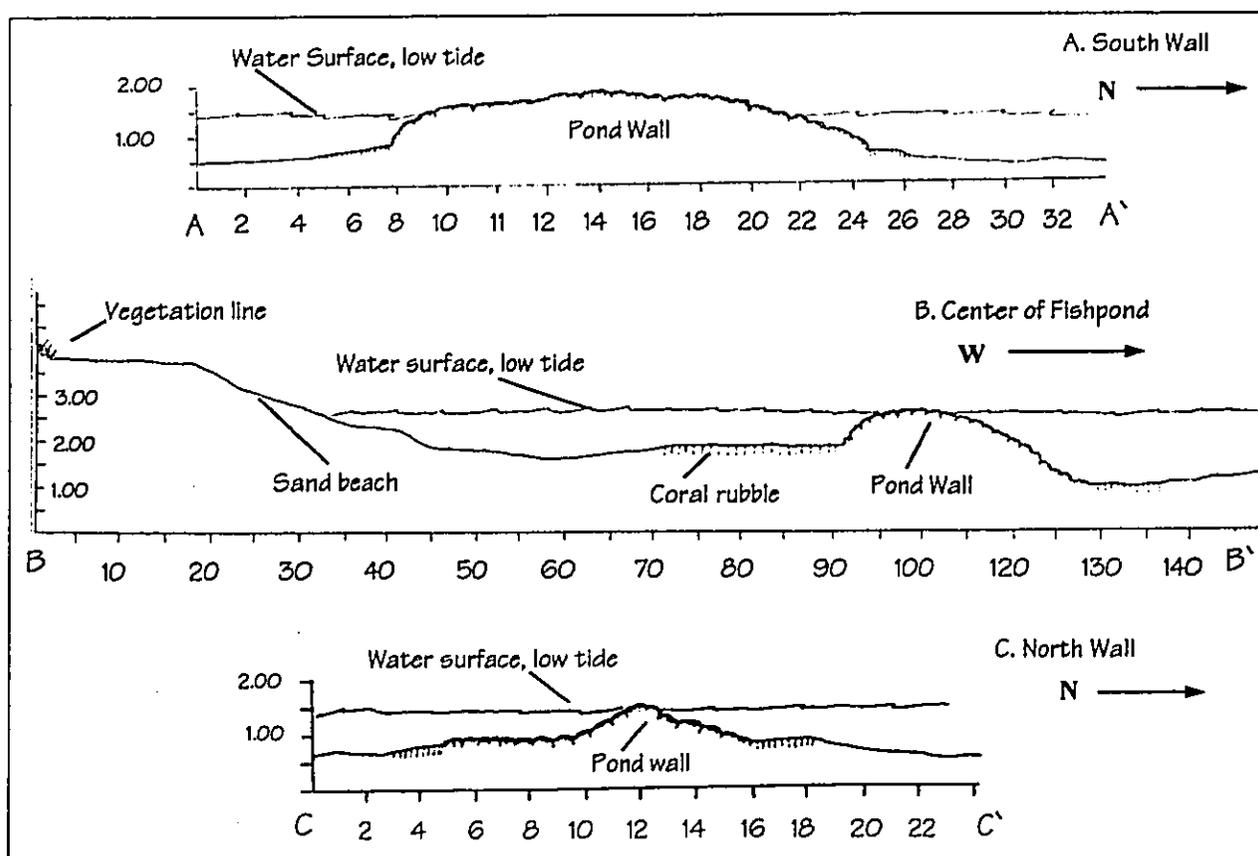


Figure 13. Elevation profiles of Ko'ie'ie Fishpond walls (See Figure 12 for locations of profile lines)

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Kō'ie'ie Fishpond Survey

the fishpond. The alignment continues north and east from the northwest corner of the fishpond, forming a broad arc. After this feature was identified underwater, it was possible to trace its path on an aerial photograph (Figure 14). The boulders located along the arc some distance from the fishpond are similar in size and orientation to the boulders that are adjacent to the west wall of the pond. In most cases, the long axes of the stones are oriented perpendicular to the alignment, and where more than one stone are together, they are fitted tightly, with no spaces between (Figure 15). Sections of the alignment show up to fifteen boulders fitted together; in most cases, there are three to four boulders, with gaps between the grouped stones.

The alignment has estimated overall length of 305 meters (1000.4 feet). It is likely that the alignment continues to the southeast, however, it appears to be buried under wall rubble. Two large boulders were observed outside the west fishpond wall, to the south of the existing alignment. These two stones are not in the same orientation as the alignment, however they could have been at one time (see Figure 12). Given the large size of these boulders and their association with the existing fishpond wall, it is feasible to suggest that they may be remnants of the original wall base, a portion of which is still under the south and west portions of Kō'ie'ie Fishpond wall. If this interpretation is correct, then about half of the original wall and a good portion of the base stones under half of the wall were removed, most likely for use in constructing a new north wall and repairing other sections of the wall.

The northern end of the submerged boulder alignment ends a short distance from an arced formation of small boulders and cobbles that is visible along the shoreline, 170 meters north of



Figure 14. Aerial View of Kō'ie'ie Fishpond With Boulder Alignment Shown (White arrows).
Photograph taken by Tryck, Nyman & Hayes, Inc., Honolulu 1970 (On file SHPD Office, Wailuku)

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the north wall of Kō'ie'ie Fishpond. This stone feature was noted on Guinther and Bartram's 1979 offshore and coastal map (see Figure 3). It is comprised of stones that are similar in size to those along the top of the existing Kō'ie'ie Fishpond wall. There are no large boulders currently exposed under these stones, however, large displaced boulders are present a short distance inland of this feature. This feature differs from modern jetties and revetments in that the stones are considerably smaller than what is normally used for modern armoring or jetties (Figure 16). It is possible that these stones were buried under beach or silt deposits at the time that the former pond wall was disassembled. This would account for the difference in stones here as opposed to the large boulders that remain underwater.

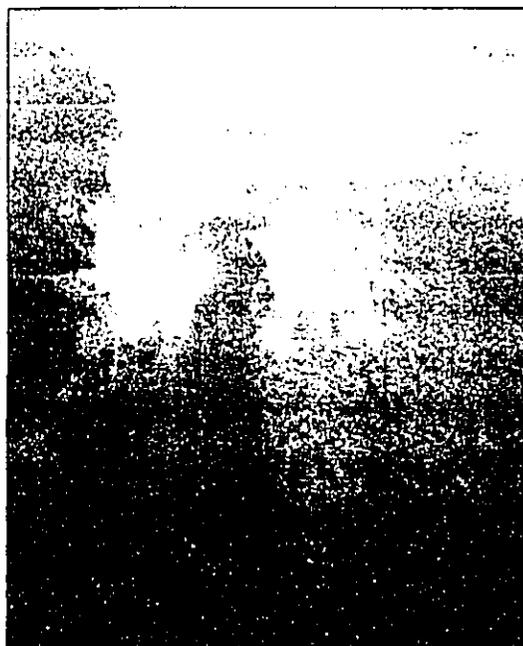


Figure 15. Submerged Aligned Boulders
North of Fishpond View to North

Information gathered to date cannot conclusively prove that the boulder alignment that extends from the northwest corner of the fishpond to the shoreline is in fact a remnant of the original fishpond wall. However, there is sufficient evidence to warrant further investigation of this hypothesis. The discovery of this alignment resulted in an expanded reconnaissance survey area that was not part of the original project area. Thus, it was not subjected to a systematic transect survey, but a more generalized reconnaissance level investigation.



Figure 16. Scattered Boulders at Beach North of Fishpond,
Associated with Submerged Boulder Alignment
View to West

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Ko'ie'ie Fishpond Survey

Artifacts

Artifacts observed and recorded during the underwater survey consist primarily of metal or concrete items that were most likely discarded during operations or during demobilization of the U.S. Navy degaussing station. One possible exception is a submerged anchor that could date to the nineteenth or early twentieth century. Submerged artifacts observed include two partial steel drums, cart wheels, a single-axle trailer, concrete posts, metal posts, a metal box, and an anchor. These items were plotted on the site map and were measured, described and to the extent possible, photographed. The submerged items were either partially or mostly buried in the coral rubble or sand seafloor. They were not moved from their locations or excavated in any manner; hence, the descriptions are not as complete as those obtained for items that are retrieved and brought to the surface.

Three of the artifacts were located inside the fishpond; these include two metal posts or stakes and a metal box-like item whose original function is indeterminate. This latter item was located in the sand near the end of the north wall (Artifact #1, Figure 12), just inside the pond area. It was exposed briefly (for one or two days) after a period of heavy surf, and was not seen again during the course of the fieldwork. Subsequent metal detection in the immediate area of the artifact did not produce results, suggesting that it was buried under at least two feet of sand, or it was removed from the site. The item is rectangular in plan, measuring .95 by .70 meter (3.1 by 2.3 feet). It is box-like or tray-like in shape, with one of the sides either absent or broken off. Unfortunately, the item could not be photographed before it was reburied in sand (or removed).

Two metal poles or stakes were located inside the pond, in the vicinity of the wall opening (Artifact #2 and 3, Figure 12). Artifact #2 is a rounded metal pole that is set into or buried in the bottom of the pond, currently at an angle. The exposed section of the pole is .76 meter (2.5 feet) long. The original diameter of the pole is difficult to ascertain, it appears that it was approximately 5/8 inches. Artifact #3 is an angle-iron stake set into the bottom of the pond, and is also currently at an angle. This item is close to the south side of the opening in the wall. The exposed portion of the stake is 1.45 meter long. The original function of these two items is not known. It has been suggested that they are related to the degaussing station activities, which is indeed possible.

Surface artifacts located on the fishpond wall include three small cart wheels, located in a cluster along the outside of the south wall (Artifact #4, Figure 12). These items are essentially identical, and are from a single rail cart. The rims are concave, and appear to have been used on a track, with no tires.

Artifact #5 is located approximately 45 meters southwest from the southwestern corner of the fishpond. This item is a large kedge or yatchman's type anchor with a chain still attached to the head. The chain is iron with 4" links and is buried in the seafloor, which is coral rubble at

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this location. The overall length of the anchor is 2.9 meters (9 feet), and maximum width is 1.5 meter (5 feet), as measured from the ends of the flukes (Figures 17 and 18) . The stock (or shank) is oblong in cross section, and varies in width from 5 inches wide near the base to 3 inches near the head. The end of the fluke is expanded and flattened with a maximum width of .25 meter (.82 foot), and may have originally been diamond or oval shaped with a distinct point at the end. There is currently no crossarm at the upper end of the stock, but it is likely that an arm was once present. This anchor is nearly identical to an item on display at a private residence along Halama Street in Kihei, near the southern end of the Waiohuli Fishpond. It is likely that the displayed anchor was obtained from the Kihei waters, in the general vicinity of Kō'ie'ie. A second anchor of the same design is on display at Lahaina Harbor near the *Carthaginian* maritime museum. The Lahaina display item reportedly dates to the whaling era; it is somewhat smaller than the two Kihei anchors.



Figure 17. Example of Kedge Type Anchor, Halama Street, Kihei. This item is similar to the submerged anchor at Kō'ie'ie, except the crossarm is present here.

It is possible that the Kō'ie'ie anchor was used as a mooring weight by the Navy; however, the kedge was not a common style in use during World War II naval operations in the Pacific. The Danforth style anchor was the preferred ground tackle and was most widely used by the U. S Navy for their Pacific operations (US Coast Guard 1990:2-16).

Anchors are portable, and are often moved from vessel to vessel, or salvaged from underwater wreck locations for reuse; they cannot therefore always be definitively tied to a specific vessel or vessel type (Baker 1998:18). Given the shallow provenience of this particular anchor (c. 12 feet), it is possible that it was placed at the location to serve as a mooring for smaller boats.

The anchor most likely dates to the period of Halstead's trading post; however, we cannot state

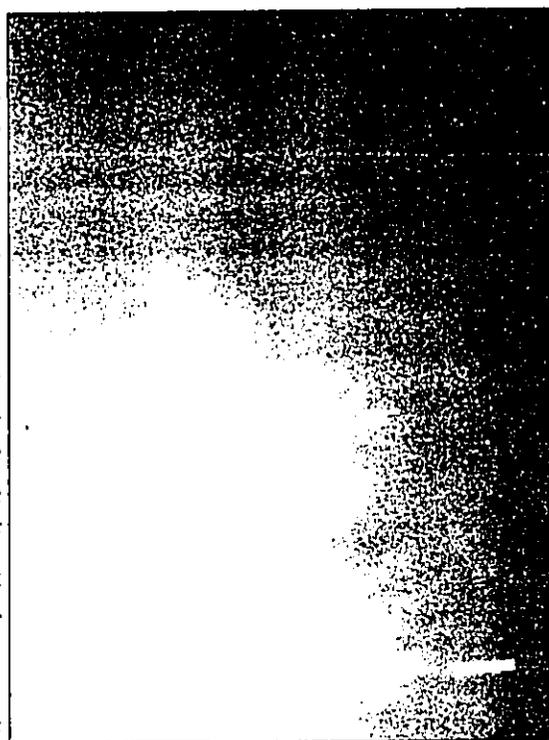


Figure 18. View of anchor *in situ*, looking east

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Ko'ie'ie Fishpond Survey

with confidence that it was left at this location during the nineteenth century. The anchor is a sufficient distance from the fishpond wall that it will not be affected by restoration activities.

Other artifacts observed along the outside of the fishpond wall include two collapsed 55 gallon steel drums, located outside the west wall; and a single axel trailer, located 32 meters north from the outside of the north wall (Map #6, Figure 12). This item appears to be a World War II era trailer. It consists of a single axel with a triangular neck; one wheel with the tire intact is

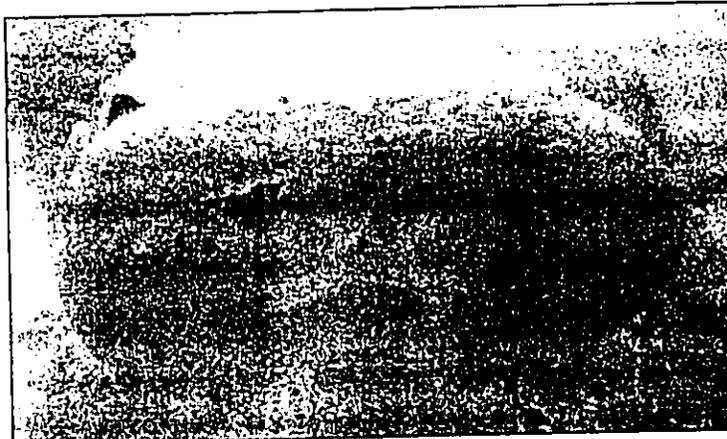


Figure 19. Single Axel Wheel with Tire, View to West

still on the axel (Figure 19). This item is presently 45 meters offshore in waters that average about eight feet deep. It may have been purposely disposed of during demobilization of the DEGS station. There is no evidence of what was on the axel; this could have been a gun, or some type of utility carriage box, such as the one observed at the end of the north pond wall. This item is a sufficient distance from the wall that it will not be affected by the restoration activities.

Four formed concrete posts with metal pipe inserts were observed along the shoreline, scattered among the boulders fronting the DEGS building (Map #7, Figure 12). These items are identical in size and design, and most likely all served the same purpose. They are .90 meter long and are four-sided, measuring .35 meter on a side. The top is pyramidal in form and coated with a metallic type of paint or glaze. The center pipe is 2 inches in diameter and protrudes 2 to 4 inches from the top of the concrete post (Figure 20). The pipes in all observed



Figure 20. Concrete post with pipe inset, along shoreline fronting DEGS building, view to northeast.

examples are broken, so the actual length of the pipes is unknown. The function of these posts is unknown. Given their location and design, it is likely that they were connected with the DEGS operation in some capacity. A second possible function may have been as boundary markers at the *makai* corners of the federal property, as surveyed in 1940.

Other items observed along the boulder revetment fronting the DEGS building include two sections of 3 inch pipe, one section of 2 inch pipe, and a modern car or truck wheel rim (five lug).

Subsurface Testing and Metal Detection

Two hand-excavated stratigraphy trenches and two shovel probes were excavated inland of the north end of the fishpond wall, in order to determine if the wall might continue inland beneath the present beach deposits. The two trenches were oriented north-south and were aligned on an east-west line that was located 15 meters east from the observed end of the north pond wall. The trenches measured 1.50 meter north-south by 1.0 meter east-west, and were spaced 1.30 meter apart. Eight distinguishable layers of beach sand were encountered in the stratigraphy trenches between the surface and the water table, which was encountered at .7 to .8 meter below surface (Figures 21 and 22). The layers averaged .10 meter or less in thickness, with no unusually thick or thin layer. The general deposition pattern shown is alternating layers of loose coralline and very fine silty sand. The lowest layer observed was very coarse coralline sand with weathered marine shell fragments. This layer continued .4 meter into the submerged zone. Excavation could not continue below this level due to excessive slumping into the submerged zone.

One rounded basalt cobble was located in Stratigraphy Trench 2, at .08 meter below the water table. This stone was .20 by .26 meter in diameter, which is smaller than most of the stones comprising the fishpond wall. The area around the find was probed; no additional stones were identified. If a submerged portion of the fishpond wall were present under beach deposits in this area, we would expect to find it just above, or at least near the water surface, at an elevation similar to that of the existing wall.

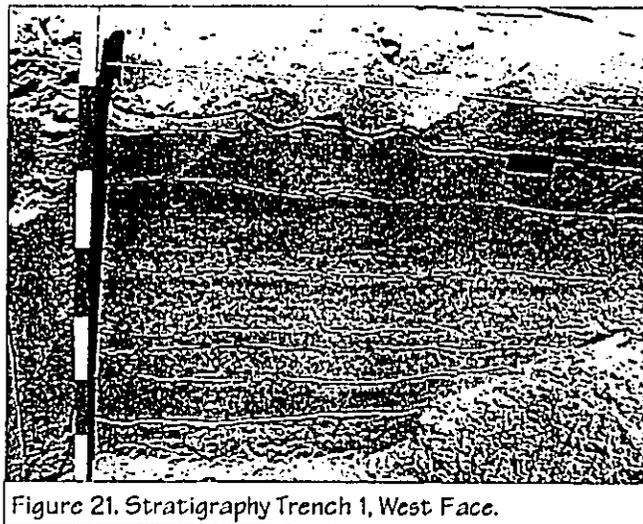


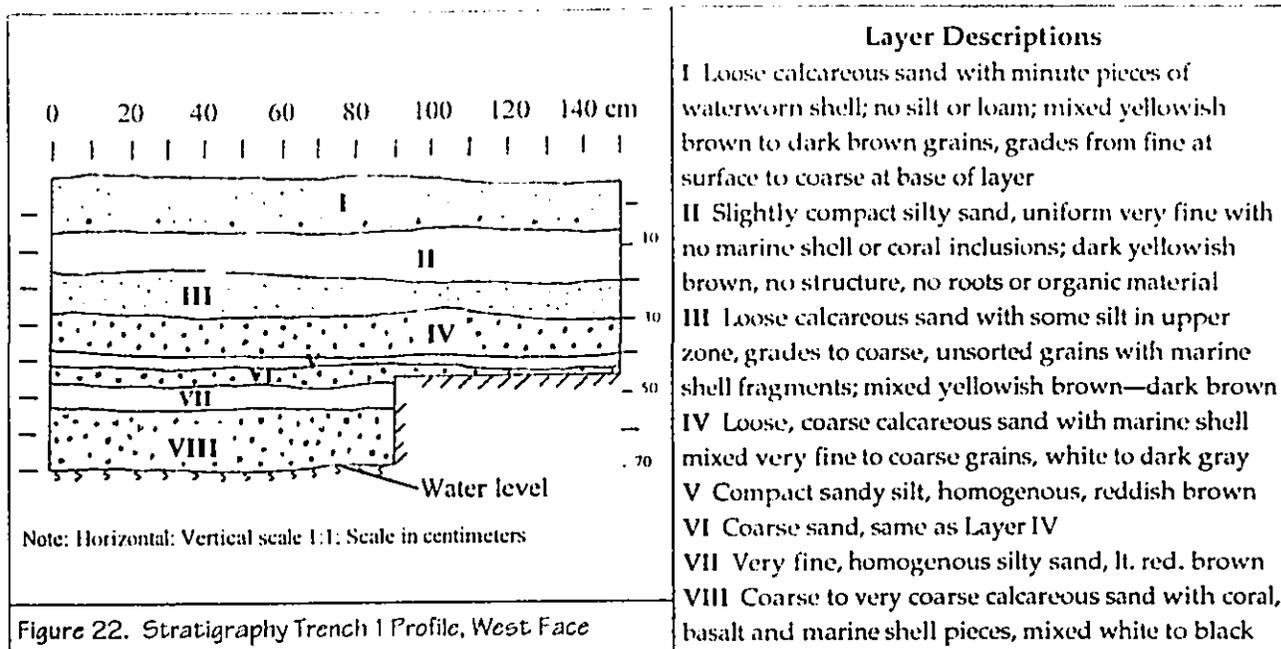
Figure 21. Stratigraphy Trench 1, West Face.

The shovel probes were spaced between the stratigraphy trenches and the visible end of the pond wall, at 3 and 9 meters from the pond wall respectively. The probe located 3 meters from the end of the wall was in shallow surf and encountered buried stone at .3 meter below surface. The second probe encountered coarse beach sand at .30 meter below surface, and water at .5 meter below surface. Coarse black submerged sand was encountered .90 meter below surface. No stones were encountered in shovel probes or during probing with a steel rod from the base of excavation to a maximum depth of 1.3 meter below surface. This depth range is well within the expected depth of the fishpond wall.

It is possible that there could be wall remnants beneath the base of the probes and test trenches. Upper layers of stone could have been removed, leaving base rocks in place. In order to reach greater excavation depths, large areas of the beach would need to be opened with machinery. This is not necessary, as this area of the beach will not be affected by the project.

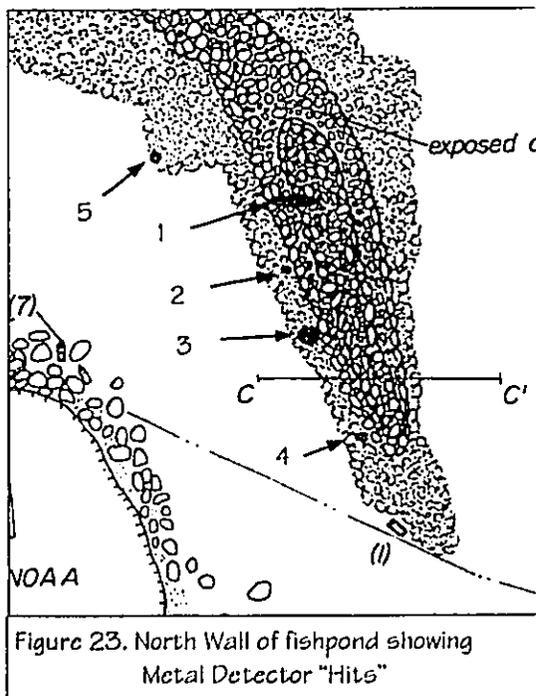
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Ko'ie'ie Fishpond Survey



Metal Detection Survey

The metal detection survey was designed to sample a portion of the fishpond wall to determine the likelihood of encountering metal items during the restoration process. As described above (page 36), metal detection was conducted of the north wall of the fishpond. Five buried metal items were encountered (Figure 23). Probing was conducted at all hits to determine if they were located just beneath the surface. One item (#4) was found, all others were buried beneath large impacted stones and could not be reached without considerable excavation effort. The identified item consisted of an aluminum beverage can. Two of the unknown items (#1, #3) appear to be rather large, whereas the other two unknown items are small points (#2, #5).



Findings of this sample area indicate that there is likely to be numerous metal objects mixed in with the displaced wall stones. These items tend to occur along the inside of the wall rather than the outside. Types of metal expected to occur under displaced stones include structural debris associated with the DEGS station, miscellaneous military paraphernalia, and general refuse, such as the beverage can that was found. This type of material is not expected to be particularly significant; however, it could potentially aid in reconstructing activities at the DEGS station during world War II.

6. DISCUSSION



Summary of Findings

The underwater survey of Kō'ie'ie Fishpond was able to verify that the site plan map as prepared for the NRHP nomination form is generally accurate; however, the overall areas of submerged stones were expanded both inside and outside the wall. The survey found that the wall is relatively well defined, with little dispersion of stones, along the exterior sides of the south and southwest portions of the wall. The exterior side of the north wall is likewise quite distinct. In all of these locations, however, there is no evidence of formal stacking along the outer face of the wall. It has a mounded, berm-like morphology rather than faced sides and a flat, fitted top. Considerable horizontal dispersion of the wall stones is apparent along the interior of all sides, and along the exterior of the northwest section. The northwest section exhibits the greatest width, reflecting dispersion of the stones toward the interior of the pond. Large wall base boulders were observed along the west exterior of the pond; some of these were buried under jumbled stones; others were completely exposed and appear to be part of an alignment that continues to the north, well beyond the limits of the present fishpond wall. The alignment appears to come ashore 170 meters north of the present pond wall, where smaller boulders and cobbles are also apparent. This feature is thought to possibly represent an earlier footprint of the fishpond.

The present opening in the pond wall at the southwest end is too disturbed to determine its original size. Given the absence of other openings in the wall, it would appear that this was an original *makahā*. It should be noted, however, that structural remains found inside the fishpond suggest that the opening was used by the DEGS station, and could therefore have been expanded by the U.S. Navy. A coral rubble berm has either developed or was deposited inside the pond and along the inner side of the wall opening. This berm creates very shallow conditions along the inside of the wall, and also serves to keep the wall stones from washing further toward shore. The coral rubble deposit may represent a dredging episode that may have occurred along the exterior side of the south wall and/or in the pond basin.

Portable remains found during the survey are not related to the fishpond use *per se*, but are related to activities that occurred along the shoreline at Kō'ie'ie. These include a possible nineteenth century kedge anchor and several items of the World War II period, including 55 gallon drums, wheels, a trailer, pipes, and structural debris. Additional metal artifacts are known to be buried beneath displaced wall stones, and submerged underwater.

Investigations inshore of the north wall of the pond failed to locate buried portions of the wall, suggesting that either it did not extend inland any further than its present configuration, or the inland portion of the wall was removed so that the beach area could be accessed from the north. This may have occurred during filling of the area for construction of the Navy DEGS structure.

Consideration of Fishpond Morphology

The research design developed for this project prior to initiation of fieldwork was based on data collected from a state-wide survey of Hawaiian fishponds, and on comparisons made between ponds that were classified in that survey as *loko kuapā*, and Kikuchi's types Ia, Ia₁, Ia₂, and Ia₃ (see Chapter 3). Based on those data, it was suggested that smaller fishponds exhibiting a somewhat oblong shape (based on wall length to width ratios) might represent reconstructed forms that post dated larger, more rounded fishponds. In these cases, the smaller, oblong fishponds would be situated within the basins of the older ponds, but would retain all or most of the shoreline area of the original fishponds. This model predicted that due to its shape and relatively small size, Kō'ie'ie Fishpond might be situated within the basin of a larger pond, and that the former pond wall would occur outside the western wall.

The findings of the archival research and field investigations raised a number of questions regarding the model, and indicate that it is too simplistic to adequately predict the shape and location of the original fishpond wall. Information from historic research raises the question as to whether Kō'ie'ie Fishpond was originally built as a Type Ia *loko kuapā*. In its present form, the pond is a good example of this formal type. However, historic information suggests that at one time, the pond was a Type Ib *loko kuapā*, or a form that combined elements of Type Ia and Ib. This would include a wall that extended out into the ocean, but also enclosed a natural estuary, formed at the mouth of Kulanihāko'i Stream.

Findings of the underwater survey support the hypothesis that Kō'ie'ie Fishpond was once larger than its present configuration; however, the former wall configuration was not located in the area that was predicted by the model. In this case, it appears that the original fishpond wall (if indeed the alignment represents the original wall) enclosed a larger area of shoreline, and did not extend any further out into the ocean than the present pond. The model predicted that the original wall would enclose a similar area of shoreline, but would extend farther out into the ocean. If the boulder alignment identified in the survey is in fact a former wall footprint, then Kō'ie'ie Fishpond would have fully enclosed the seaward side of the Kulanihāko'i Stream estuary, and the bulk of the ponded area would have been inland of the shoreline. The area of ocean enclosed within the wall would have been approximately five acres (3.1 in existing pond plus an additional 1.9 acres). The area of inland water enclosed within the fishpond would have covered 549 meters (1800 feet) along the shoreline and could have easily extended c. 250 meters (820 feet) inland, for a minimum inland area of 17 acres, for a total pond area of 22 acres. This acreage compares well with a number of traditional fishponds and is more in line with what would be considered a large pond, per Walker (1929).

Additional fieldwork could help test the proposition that the identified alignment is the former fishpond wall. This might include subsurface testing of the area inland of the north end of the alignment, to determine if large base stones are present, and if the wall extends inland. It was

noted that Walker's *heiau* survey of 1929 located the Kalaihi Heiau just inland of the north wall of Kō'ie'ie (Kalepolepo) Fishpond. The platform remnants identified by Keau in 1981 and possibly relocated during this survey are located just inland of the boulder alignment, on a low hill overlooking a remnant of the former fishpond. Is this site Kalaihi Heiau? If the site were found to be a possible *heiau*, it would support the hypothesis that the alignment is the former north wall of the fishpond. This possible platform feature is outside the current project area; however, it would be beneficial to have this site recorded and listed in the State Inventory. If it were found to be mostly intact and represent a possible *heiau*, the site could be incorporated into the educational program developed for the fishpond.

The NRHP record indicates that the wall of Kō'ie'ie Fishpond "...is situated along the edge of a coral reef, and was constructed offshore from a sand beach area" (Donham 1996:7-7). The findings of this survey indicate that the wall is not at the edge of the coral reef; and it is likely that only a portion of the shoreline was a sandy beach area at the time the pond was first built. It appears that the pond was built to enclose a fresh water estuary. There may have been low sand berms along a portion of the shoreline, but for the most part, the sand beach appears to have arrived at least two centuries after the fishpond wall was first built, and possibly after it was decreased in size.

Analysis of sedimentation rates in the Kulanihāko'io drainage basin show that this area began to rapidly fill with silt just after the turn of the nineteenth century. Much of the silt would have settled in the lower portions of the basin, specifically in the area of the estuary, resulting in a decrease in water depth as well as overall area of the wetland. In this situation, moving the pond wall away from the mouth of the stream would have removed an impediment for silt, and allowed it to continue flowing out into the ocean. This would have also decreased the workload of wall maintenance, given the decreased size of the fishpond. In this case, the size of the pond wall would not have directly controlled pond size. Pond size was being controlled by the processes of erosion, and the newly released volumes of silt coming down the mountain.

Historic references indicate that there were two episodes of wall repair during the early nineteenth century, and Kamakau noted that Kamehameha's work in or around 1812-1815 resulted in a decreased pond size. The second work was conducted in 1840 under the direction of Governor Hoapili. It is feasible that the silt problem was already of concern when Kamehameha's repairs were begun, and it certainly would have been an issue by 1840. Conceivably, either of these two repair sessions could have realigned the north wall. The excess stones would have been used to armor the remaining wall, after the newly constructed north wall was completed. From the appearance of the present wall, most of the excess stones were deposited on the north portion of the west wall. In this area, the berm created by stones is up to 43 meters (141 feet) wide at the base.

Potential for New Findings

The results of the underwater systematic survey within and around the fishpond indicate that there is a high potential for new findings of metal artifacts and debris relating to the World War II era and a medium to low potential for new findings of metal artifacts relating to the whaling era. These items could occur under coral rubble or sand on the seafloor both inside and outside the fishpond; or they could occur under wall rubble. Metal detector survey indicates that buried metal items are more common along the interior sides of the walls and under wall rubble in the interior of the fishpond.

There is a low potential for new findings relating to the stone architecture of the fishpond to be found inside the pond, but a greater potential for new findings of stone architecture outside the existing wall. This would include additional portions of the original wall base that are now buried under wall rubble. These findings would be most likely to occur in the southern portion of the west wall and possibly under wall rubble along the outside of the south wall.

Site Significance and Identification of Effects

The fieldwork and archival research conducted for this study supports the significance assessment of Kō'ie'ie Fishpond as previously determined by the SHPD and confirmed by the Keeper of the National Register. The NRHP documentation states that the site is significant under Criteria A, B, C and D. A full discussion of the four eligibility criteria as they apply to Kō'ie'ie Fishpond is presented in the NRHP nomination form and is not repeated here.

The original wall base of the pond has been identified outside of the current configuration of the west wall. This wall base consists of large aligned boulders that are set into the seafloor. Use of this wall base for reconstruction of the west wall would not constitute an adverse effect, because this alignment was part of the original pond wall and it is appropriate to reincorporate it back into the fishpond wall, if possible.

The discontinuous boulder alignment identified to the north and east from the northwest corner of the fishpond may represent the original wall base; however, this assertion cannot be made with full confidence based on reconnaissance level survey data. If these boulders are moved to be incorporated into the fishpond wall, there is a potential for adverse effects, since all traces of this possible original wall alignment will be lost before it is fully documented and understood.

Removal of displaced wall rubble from the inner and outer slopes of the existing wall and placement of these stones in a more secure fashion will not constitute an adverse effect to the site. In fact, this action would be a beneficial effect, as it will enhance the integrity of the wall as representative of a traditional fishpond, and it will significantly aid in preserving the site for future generations.

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March 3, 2003

Theresa Donham
Akahele Archaeology
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LOG NO: 31794
DOC NO: 0302MK15

Dear Ms. Donham,

**SUBJECT: Historic Preservation Review - 6E-42 - Archaeological Inventory Survey
Ko'ie'ie Fishpond, prepared for 'Ao'Ao O Na Loko I'a O Maui
Ka'ono'ulu Ahupua'a, Makawao District, Maui
TMK: (2) 3-9-01**

Thank you for the opportunity to review this report which our staff received on January 9, 2003 (Donham 2003, *Underwater Archaeological Inventory Survey of Ko'ie'ie Fishpond [State and National Register Site No. 50-50-09-1288] Ka'ono'ulu Ahupua'a, Kula District, Kihei, Maui [TMK (2)-3-9-01]*... Akahele Archaeology ms). The inventory survey has been conducted as a preliminary step to restoration efforts for the fishpond to fulfill requirements of SHPD.

The background section acceptably establishes the ahupua'a settlement pattern and predicts the likely site pattern in the project area. The background research conducted as part of this project presents an extensive and detailed examination of the project area and its environs. In addition, the incorporation of a section on "Research Problems and Approach" is especially useful given the nature of the project, and that the data has not been examined in this light previously.

The survey has adequately covered the project area documenting this known historic property. Systematic underwater transects were conducted intensively (5.0 m intervals) within the fishpond, and within a 50 m radius outside the pond walls. Additional reconnaissance level transects were executed to a distance of between 100 to 150 meters beyond the systematically covered area. Limited subsurface probing was conducted in the beach area adjacent and inland of the north wall of the pond to identify if buried portions of the pond wall existed.

Submerged structural features identified included both the existing fishpond wall, and a discontinuous alignment of boulders that appears to represent an earlier episode of construction. The alignment is visible on the aerial photo (*Figure 1-4*) and suggests a much larger, previous configuration. It also suggests that much of the beach and property immediately inland of both the current and previous configurations has resulted from infilling and siltation episodes. Artifacts were observed under the present wall (identified as metal but not examined) and within and outside of the present wall (steel drums, cart wheels, trailer, concrete posts etc.). One artifact of note (Acc. # 5) appears to be a large kedge type anchor with chain still attached. While precise age has not been determined, comparisons with existing anchors exhibiting similar attributes date to the whaling era.

Theresa Donham
Page 2

We concur with the significance assessment that Site 50-50-09-1288 is significant under multiple criteria "A", "B", "C", and "D", and that, with the current level of inventory work, controlled restoration of the fishpond will both enhance the pond integrity and provide a remarkable educational opportunity.

We also concur with mitigation recommendations as stated on page 51 and summarized here:

1. Restoration of the walls should, when possible, make use of stones from the existing wall and rubble, and that all imported materials should resemble these original stones.
2. No stones shall be collected from adjacent Waiohuli fishpond or from the boulder alignment to the north identified during this survey.
3. Portable artifacts may be removed with adequate documentation prior to removal.
4. All nineteenth and twentieth century artifacts may be left in place, awaiting "coordinated conservation" efforts.
5. On-call and periodic monitoring should be conducted during all phases of reconstruction, to facilitate the work, document newly discovered finds, provide additional interpretation, and assure that the previous four conditions are met.
6. Further inventory level work is appropriate for the general area of the Ko'ie'ie fishpond, and areas immediately north of the existing pond. Identification of siltation events and examination of the possible platform on County property is included in these recommendations. The inland portions of the project area warrant subsurface testing.

We find this report to be acceptable. The next steps in the process will be the submission of an acceptable, detailed restoration plan and an acceptable monitoring plan. We await (1) a restoration plan that contains detailed information on the materials and methods of restoration, in accordance with applicable county, state and federal laws, and (2) a monitoring plan outlining the procedures to be followed for on-call and periodic monitoring, as well as procedures for documentation of new finds. As soon as the restoration and monitoring plans are accepted, the long-awaited restoration of the Ko'ie'ie Fishpond may commence. As always, if you disagree with our comments or have questions, please contact Dr. Melissa Kirkendall (Maui/Lana'i SHPD 243-5169) as soon as possible to resolve these concerns.

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

MK:jen

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Appendix C

Cultural Impact Assessment

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Final Cultural Impact Assessment

Kō'ie'ie Loko I'a

Kalepolepo, Ka'ono'ulu, Kula, Maui



November 2002

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I. INTRODUCTION

Along the shorelines of South Maui lies an ancient royal Hawaiian fishpond anciently known as Kō'ie'ie in Kalepolepo, Kīhei. Today, it is often referred to as Kalepolepo Fishpond and is part of the National and State Registers of Historic Places. The fishpond and its surrounding area has a vibrant and colorful history however its cultural value is at risk of being lost in the hustle and bustle of the surrounding growing Kīhei community. To offset the continued loss of this cultural treasure, the board of 'Ao'ao O Nā Loko I'a O Maui (Association of the Fishponds of Maui), comprised of many concerned citizens, educators and government employees, has proposed to revitalize this particular fishpond for future generations to enjoy its historical, cultural, archaeological, educational and recreational purposes and is promoting the revitalization of the culture through its language by bringing back the name of Kō'ie'ie Loko I'a.

Methodology

In order to satisfy one of the many requirements of the environmental impact statement prepared for the revitalization of Kō'ie'ie Loko I'a, this cultural impact assessment was prepared to identify and assess the cultural resources, practices and beliefs of the area. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, November 19, 1997), its contents and methodology guidelines were used as the foundation for the information contained within this report. The information includes an examination of the project site's cultural resources, practices and beliefs obtained through documentary research and oral history interviews.

The documentary research was conducted on the islands of Maui and O'ahu. The institutions and repositories consulted were Bishop Museum Archives and Library, University of Hawai'i Mānoa Hamilton Library Hawaiian Collection and Map Collection, University of Hawai'i at Mānoa's Center for Oral History, the Hawai'i State Archives, Hawai'i State Library and Kahului Library and the Veterans of Foreign War. Several trips to O'ahu were needed to complete the necessary research resulting in a high level of effort when travel expenses, time and available resources are considered. The literary materials consisted of studies, reports, texts, historical aerial photos and maps, archival photos, chants and various other literature.

Local individuals and organizations familiar with the cultural resources, practices, beliefs and features associated with the project area were sought out. A total of seventeen oral history interviews were pursued due to the lack of previously recorded interviews reviewed at the above institutions. Of the seventeen pursued, five interviews were successfully completed. The remaining twelve contacts were unavailable for interviews for reasons such as they felt they had inadequate information to offer, they had time constraints and they did not understand what was being asked of them. These attempts continued for four months and every possible attempt was made to clarify the intent of the interview.

Many attempts were made to expand the geographical area of the information throughout the *ahupua'a* of Ka'ono'ulu. This also included contacting the Rice family who has owned Ka'ono'ulu Ranch since 1916. The ranch covers

the Ka'ono'ulu area like an *ahupua'a* of its own. (Engledow 2001: 92). With every effort made, the final list of interviewees consist of those who have spent their younger years at Kalepolepo and now live in various areas of Maui.

The names of all interviewees were obtained by consulting board members of 'Ao'ao O Nā Loko I'a O Maui, volunteers and staff of the Hawaiian Islands Humpback Whale National Marine Sanctuary, the Veterans of Foreign War, local markets and Azeka's shopping center in Kihei as well as local residents in the area. Once contacts were made and interviews conducted, the interviewee generously offered additional possible contacts. Generally, contact information was obtained by word-of-mouth. Every contact name was considered as a possible interviewee.

The interview was conducted at the interviewee's preferred location. Suggestions were made to conduct the interviews at the project site but due to lack of transportation, physical restraints and convenience, the interviewees preferred to discuss the subject either by phone, at their home or a public location. Four interviews were tape recorded and one interview was performed via telephone.

Once granted permission by the interviewee, the recorded information was then transcribed. These transcripts are located in Appendix 1 of this assessment. Four of the interviewees have been given an opportunity to review the information and have granted permission to have the information disclosed to the public. One interviewee, Helen 'Āhia-Walrath, agreed to a telephone interview but it was later determined that her knowledge was not specific to the project site. Rather, it covered the general idea of rebuilding a *loko i'a*. Therefore, her information has been withdrawn from this assessment.

During the interviews, a portfolio of pictures was given to the interviewees to jog their memory of the project site. These pictures included recent photos of the fishpond from different angles, photos of the fishpond's neighboring properties (headquarters of the Hawaiian Islands Humpback Whale National Marine Sanctuary, Kalepolepo Park and Menehune Shores), and a recent aerial photograph of the fishpond. An older picture of the Koa House and aerial photographs of the Kihei area in the mid-1900's were also included. Appendix 2 contains the photos that were used during the oral history interviews.

None of the interviewees requested information to be kept confidential. However, at the request of the interviewer, Joylynn Nākoa Oliveira, lengthy conversations regarding the interviewer's genealogical background, which is irrelevant to the assessment and project site, was excluded from the transcripts.

Biographical Sketches of Oral History Interviews

Mr. Eugene Clark Sr.

Mr. Eugene Clark Sr. is a nationally recognized massage and reflexology therapist. He lives in Kīhei, in the home bought by his father in 1946. He originally lived in Waikīkī, O'ahu and in his early childhood years in the mid-1930's. His father was an army instructor responsible for overseeing the Kīhei area. When he was a teenager, he began his lifelong career shining shoes for the army. Once retired, he took on the task of healing people with his hands. He credits his mother for providing him with many values which has made him the successful man he is today.

Mr. Moriaki "Aki" Nakashima

Mr. Moriaki Nakashima, better known as "Aki" was born in 1922 and grew up with his family in North Kīhei, within walking distance from Kō'ie'ie Loko I'a. As a youngster, he attended Kīhei School then worked for his father cutting *kiawe* wood in Kīhei. At the beginning of World War II, Mr. Nakashima worked for airport constructors as a truck driver. He later moved to Hilo and onto Honolulu to work at several other airports. In 1945, he entered the army and was discharged two or three years later. He returned to Maui to work on an *aku* boat in Kīhei and cut scrap iron as a side job. For a short time, he made a living selling *kiawe* wood to several stores in Maui and Kona. Following this, Mr. Nakashima worked 36 years for Kahului Railroad until retirement. He has been a resident of Pukalani since 1960.

Mr. Roy Suda

Mr. Roy Suda was born in 1942 and has lived his entire life in Kīhei, Maui. His family, of Japanese ancestry, is known for their popular store in Kīhei, Suda Store. He spent his childhood days fishing, swimming, diving and enjoying the Kalepolepo area. He'd often pass by the fishpond as he'd walk toward the wharf across Suda Store from his childhood home at Ke'ala Place across from today's Kalama Park in Kīhei. Mr. Suda's purchased the business in 1961. He currently is keeping the family tradition alive by running the family business at Suda Store.

Mr. Clarence Tavares Sr. a.k.a. "Sonny Vick"

Mr. Clarence Tavares Sr., better known as "Sonny Vick", resides in Mākena, Maui. Born with Hawaiian/Chinese ancestry in Kula, Mr. Tavares would visit the Mākena area during the weekends and summers with his family during his younger years. Later in his life, in the early fifties, he worked for Haleakalā Ranch, Kama'ole section. He cared for the fences, water and cattle which led to his connection to Kō'ie'ie Loko I'a. On a weekly basis, he and his fellow co-workers would go to the Kalepolepo area and trade vegetables with a Filipino man who lived near the fishpond.

II. PHYSICAL SETTING

Project Area Description –

The area of Kalepolepo graces the island of Maui, Hawai'i on its southern coastline. It is situated within the *moku* of Kula and the *ahupua'a* of Ka'ono'ulu. Here within Kalepolepo, lies the project site of Kō'ie'ie Loko l'a.

Kō'ie'ie Loko l'a is one of many fishponds that has an architectural design unique to Hawai'i known as the *loko kuapā*. This design resembles a crescent-shaped wall with each end connecting to the shoreline. Located along strategic points of the wall, sluice gates were constructed to allow the circulation of water as well as permit small fish to enter the pond. Many of these ponds were reserved for the *ali'i*, the royal class of Hawai'i. (Summers 1964: 2, 8)

To the west of the wall is reef and Mā'alaea Bay. East of the fishpond from south to north is Menehune Shores Condominiums, Kalepolepo Beach Park owned by the County of Maui and the Hawaiian Islands Humpback Whale National Marine Sanctuary, owned by the federal government.

Kō'ie'ie Loko l'a (TMK: 3-9-01) encompasses three acres. Its wall is in fair condition and has diminished from its original length in excess of 180 meters. This curved wall has a slight break on its south side and is constructed of large basaltic boulders, cobbles and pebble. (DHM Inc. 1990: 118) Figure 1 is the "Scaled Plan View Map of Kalepolepo Fishpond (SHPD 1996)" taken from the National Register of Historic Places.

The project site, also known as Ka'ono'ulu Kai and Kalepolepo Fishpond, is one of several fishponds in the Kihei area with at least two, if not three, additional fishponds built upon the neighboring fringing reef. Waiohuli Kai and Keokea Kai are south of the project site. It is possible that an additional fishpond is also located further south. (National Register Sect. 7, pg. 1)

In 1964, Barbara Lyons described the fishponds of Kalepolepo in the *Maui News*.

"On the shores of Maalaea Bay lies the site of the ancient fish ponds of Koieie, better know as Kalepolepo. These ponds were dedicated to the use of royalty, and the mullet caught in them were highly prized.

It can only be guessed when they were first made. But in the sixteenth century King Umi of Hawaii, who was acting as overlord of Maui, ordered the sea walls of the three ponds to be rebuilt.....

Through the years, earth has washed down from the Kula uplands and sand has drifted in to fill these once famed ponds. Parts of the sea walls can still be seen, but as fish ponds they, like the little men who built them, are only a memory." (Sterling 1998: 251)

RECEIVED AS FOLLOWS

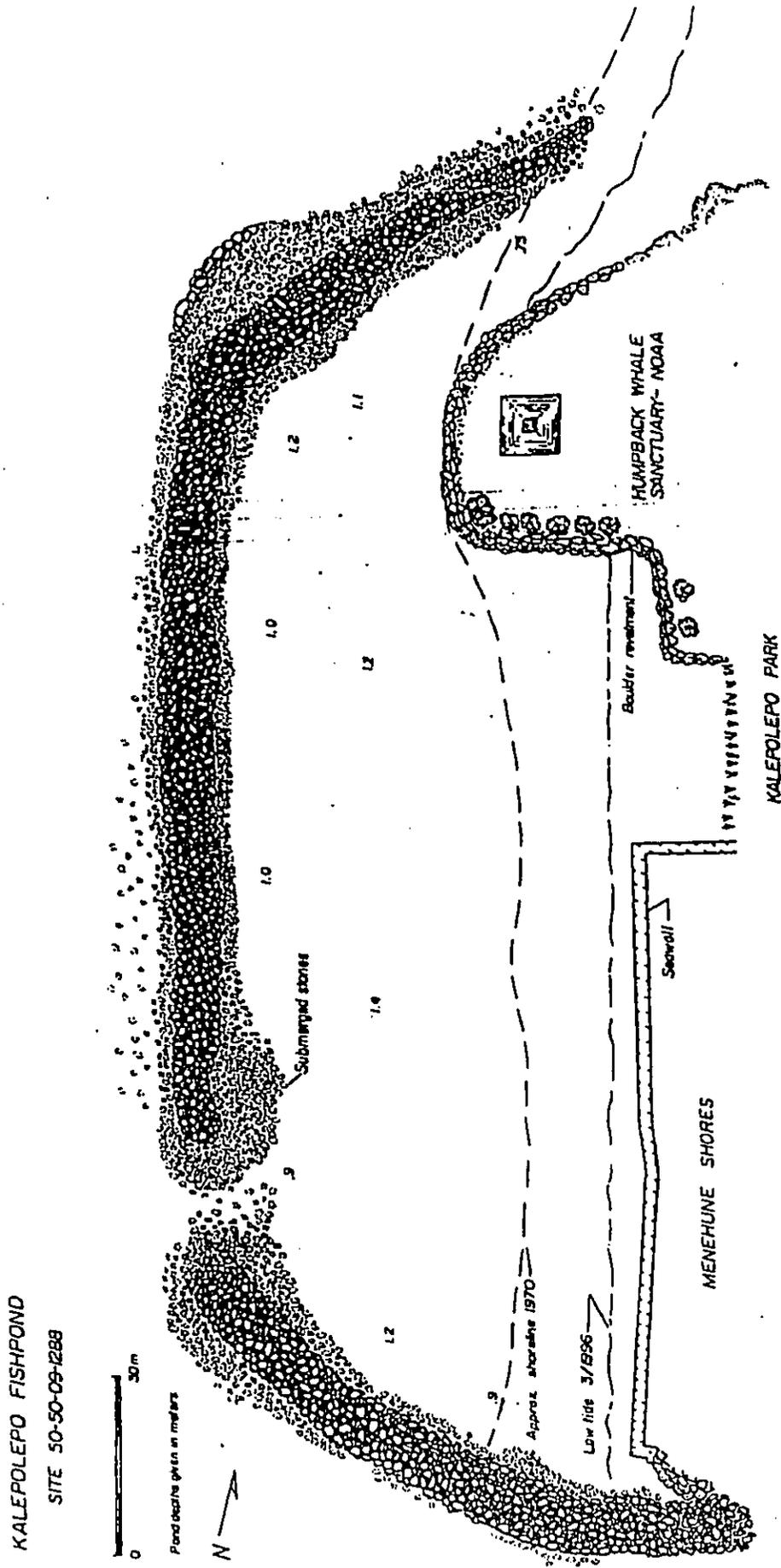


Figure 1. Scaled Plan View Map of Kalepolepo Fishpond (SHPD 1996) taken from the National Register of Historic Places.

RECEIVED AS FOLLOWS

Land Divisions --

Moku of Kula

The *moku* of Kula is one of the largest on the island of Maui. It, like the other seven *moku* of East Maui, meets at Palaha on the northeast side of Haleakalā and travels down west toward the middle of the island and the southern shore of Haleakalā. (See Figure 2 for a map of the *moku* of East Maui.) (Sterling 1998: 2-3)

Kula is known for its dry arid plains. Thus giving it its name meaning, "open country, or plain as distinct from valley or stream bottom," a dominant characteristic of the area. (Handy and Handy 1991: 510-1)

The following is an excerpt from *Native Planters of Hawai'i Their Life, Lore, and Environments* which explains the lands of Kula further.

"There were some patches of upland taro, not irrigated; but this was a notable area for sweet potato, which, combined with the fishing, must have supported a sizable population although it cannot be counted as one of the chief centers." (Handy and Handy 1991: 272)

Ahupua`a of Ka`ono`ulu

Within this *moku* is one of several *ahupua`a*, Ka`ono`ulu. The Ka`ono`ulu *ahupua`a* is nestled between five other *ahupua`a* of the Kula district. To its south lies Waiohuli, Keokea and Kama`ole and to the north lies Pulehunui and Waiakoa. The *ahupua`a* of Ka`ono`ulu covers merely one mile at its maximum width (800 ft AMSL), reaches its maximum height at 9,000 ft AMSL at Kalepamoa and is approximately 0.4 mile wide at sea level. It is within the southern most area of Ka`ono`ulu that Kō`ie`ie Loko I`a, the project site of this assessment, is found (National Register Section 7, pg. 1).

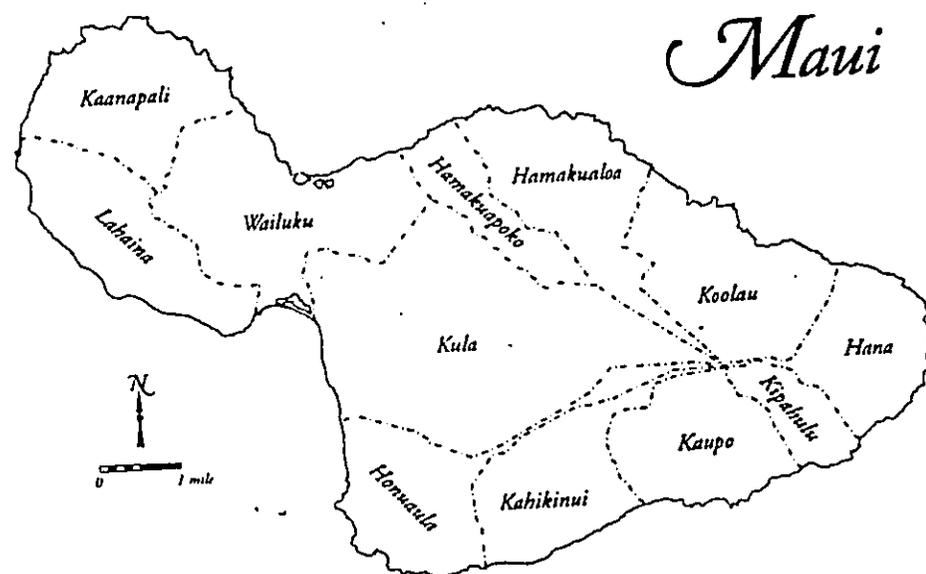


Figure 2. Map of the *moku* of Maui (Sterling 1998: 2-3).

Natural Surroundings -

Vegetation and Landscape

Today, the landscape of Kalepolepo is constantly changing. The *kaumuku* wind which blew during the mid-1800's like a "small tornado" (Wilcox, 1921: 66) still blows today forcing sand dunes to shift about the loose shoreline. On the north side of the fishpond, lies a sandy beach predominantly covered with *kiawe* trees. The mouth of the Kūlanihāko'i stream is also located in this area and flows during heavy rains. (Clark 1989: 48)

Just south of this somewhat secluded beach is a Native Hawaiian plant revitalization project on the property of the Hawaiian Islands Humpback Whale National Marine Sanctuary. These coastal plants have added support and stability to the ever changing sand dune migration. *Naupaka kahakai* (Beach *Naupaka*, *Scaevola sericea*), *pōhuehue* (Beach Morning Glory, *Ipomoea pescaprae*), 'aki'aki grass (Seashore Rush Grass, *Sporobolus virginicus*), *kou* (no common name, *Cordia subcordata*) and *milo* (Portia tree, *Thespesia populnea*) trees are just some of the many types of native vegetation in the area. (HIHWNMS 1999) Ironwood trees were also part of this landscape at one time (Keau 1981: n.p.) but have since been removed. Some of these native plants are also considered counterparts of animals living in the ocean and offers a cultural connection of the land and sea consistent with the concept of an *ahupua'a*.

Adjacent to the federal property is Kalepolepo Beach Park which meets the waters of the fishpond's center. Here, mostly grass, *kiawe*, a few *kamani* nut and coconut trees are found. To the south of the park is Menehune Shores Condominium. The landscape here has been changed from a sandy shoreline to a seawall and swimming pool for guests. Further south is another sandy beach which accumulates thick seaweed (including *Ulva spp.*) during the reproductive season. At times, this seaweed will also be found within the project area.

In 1921, Wilcox described the vegetation and landscape of the area during the nineteenth century.

"During the fifties Kalepolepo was not so barren looking a place. Coconut trees and kou trees grew beside pools of clear water, along the banks of which grew the taro and the ape (a giant plant which grows nowhere else on earth to-day), and was the scene of the labors of David Malo, the noted Hawaiian scholar.

In the seventies and later, the Kula mountains had gradually become denuded of their forests, torrential winter rains were washing down earth from the uplands, filling with silt the ponds at Kalepolepo. And cattle trampling down the brush and grass of the nearby fields caused sand dunes to drift, filling up the big Kalepolepo pond, and the daily breezes which once cooled the heated air had changed to a scorching daily simoon, sweeping clouds of dust and drifting sand over the partly abandoned site of the village." (Wilcox 1921: 67)

Endangered Species

Kalepolepo and its surrounding waters plays an important part in the survival of two endangered species, the hawksbill sea turtle and the humpback whale. These two species find shelter during different seasons of the year in these waters and perpetuate their populations during these reproductive seasons.

During the summer months, the 'ea (hawksbill sea turtle) nests along the southern shoreline producing up to seven clutches of eggs during the season. These clutches produce over 800 eggs each summer. After a two month incubation period, these eggs finally hatch and over a hundred young turtles struggle to reach the ocean's edge. Once they're in the open ocean, they will feed on algae and grow at a very slow rate. Eventually, at the age of 13 – 18, the turtles will return to the reef zone and begin grazing on algae and seaweeds along the reef. When the female is mature, it will mate and is most likely to return to its birthplace along the southern shore of Maui to begin the cycle once again. It is estimated that less than two dozen nesting female 'ea are alive to propagate their population which makes them one of the most endangered sea turtles in the world.

Kō'ie'ie Loko I'a and the surrounding sandy shores offer a safe haven for these turtles to forage for food and lay their eggs. The *honu* (green sea turtle) also finds shelter along the reefs near Kō'ie'ie Loko I'a to feast on the algae and seaweed. These *honu* are known to enter the fishpond and find shelter along its stone wall at times.

The second endangered marine species is often easily viewed by spectators from the shoreline of Kalepolepo. Within Mā'alaea Bay and the waters of Maui County, is one of the most important breeding, calving and nursing habitats of the *koholā* (humpback whale) in the North Pacific. It is estimated that two-thirds (5,000 – 6,000) of the North Pacific stock of *koholā* come to Hawai'i during the winter months from Alaska. Breaches, pec slaps, tail lobs and other behaviors are enjoyed by many. Kalepolepo was once an area of whaling which will be discussed in the following section. Today, the area contains the headquarters of the Hawaiian Islands Humpback Whale National Marine Sanctuary whose goal is protecting this endangered species.

III. HISTORICAL SETTING

Kihei - A Growing Community

The Maui News once described the Kihei area of 1935 as "a small fishing village front by a long stretch of golden beach" (Sterling 1998: 254). This is far from the case of today. As one travels along South Kihei Road, one of two main transportation arteries in the area, they are greeted with breathtaking coastal sceneries, practically deserted beaches as well as condominiums, strip malls and private homes sandwiched together leaving only several feet for public beach access.

In the mid-1900's Kihei was mostly comprised of mudflats with very few homes scattered about. Water was a limiting factor and a deterrent for newcomers. In the late 1960's this all changed as the Central Maui transmission line was constructed supplying the high demand for water from Kihei to Mākena. Not long after, a few condos were constructed. Soon apartment structures were built and barren lava fields suddenly erected into millionaire homes. (Speakman, Engledow 1978: 146-7) Kihei quickly developed into one of the most rapidly growing cities of the U.S.

Kalepolepo's History

The area of Kalepolepo had a vibrant past. In the first half of the nineteenth century, Kalepolepo was a bustling shipping port for the Wailuku and Kula regions (Wilcox 1921: 66). In the late 1830's, Kula cultivated Irish potatoes which were carried down to the shore of Kalepolepo and either sent to Lahaina or sold to visiting ships (Kuykendall 1938: 313). "Lumbering bullocks hauled a yearly crop of 20,000 barrels down the mountain to whaling ships anchored at Lahaina or Kalepolepo" (Bartholomew 1994: 115). It's also possible that some of the goods transported during this time were wheat from Makawao which experienced a wheat boom during the 1850's and early 1860's (Wilcox 1921: 66).

During the height of the whaling era in Hawai'i, Kalepolepo housed a small whaling station from the 1840's to 1860's. Whales would be hunted in Mā'alaea Bay during the winter season and brought into Kalepolepo where its oil was extracted. (Wilcox 1921: 66)

A Mormon church and a Protestant church were also built in the area during the mid-1800's. The Protestant church is historically famous for its founder, David Malo, who was the church's minister as well as scholar in Hawaiian history. (Clark 1989: 47)

In the midst of these booming industries, the famous landmark, the Koa House, was constructed by John Joseph Halstead near the wall of Kō'ie'ie Loko l'a. The three story store/residence was the center of trading between the upland potato farmers of Kula and visiting sailors. Wilcox notes that a cartload of potatoes equivalent to 30 to 40 bags would be readily exchanged for a bolt of silk. The store contained wood shelves and counters made of *koa* and Halstead made use of his craftsman skills by building prized furniture of the same wood. (Wilcox 1921: 65)

In 1876, Halstead closed up shop due to a lack of demand for his goods. By this time, the entire area of Kalepolepo took on a ghostly abandoned appearance. The vegetation on Haleakalā was depleted, torrential rains soiled the Kalepolepo area and sand dunes shifted. Kalepolepo had become a desolate area with the exception of a few families of fishermen by the turn of the century. (Clark 1989: 48)

IV. CULTURAL SETTING

The Origin of a Name

Kalepolepo was better known to the ancestors of Hawai'i's time as Kō'ie'ie (Wilcox 1921: 66). Its name changed from its English translation of "rapid waters" to the more recent, literal translation of Kalepolepo meaning, "the dirt" (Pukui, Elbert 1986: 160). It is believed that it was not until the late 1500's, during the time of 'Umi, when repair work was being done on the fishponds, that this area took on its new name of Kalepolepo (Wilcox 1921: 66).

"In building the sea walls men were stationed in long lines, passing stones by hand from the rocky sidehills miles away to the workmen laying the courses for the walls in the sea. The trappings of so many busy feet raised much dust, and workmen throwing dust at one another prompted the Konohiki to call them derisively, "Kanaka o Kalepolepo eku i ka lepo" or "Men of Kalepolepo root in the dirt." (Wilcox 1921: 66)

The project site is often referred to as Kō'ie'ie Loko l'a but has also taken the names of Kō'ie'ie fishpond and Ka'ono'ulu Kai fishpond in the past. (National Register sect. 7, pg. 1) The proposed revitalization project has focused its efforts in revitalizing the older name and also uses the Hawaiian translation of fishpond. The pond is often referred to as Kō'ie'ie Loko l'a by 'Ao'ao O Nā Loko l'a O Maui.

Kalepolepo Fishponds

The Rebuilding of the Fishponds -

Till this day, it is uncertain when and who originally constructed the fishponds of Kalepolepo. Kamakau states that "*ka po'e kahiko*" made the ponds long ago (Kamakau 1976: 47). Kikuchi identifies these ponds as being built by the *menehune* people of Hawai'i (Kikuchi 1973: 50). Only accounts of the rebuilding of the ponds are available to retell the history of the site.

During the time of 'Umi (late 1500's), when he was *konohiki* of the *moku* of Kula as well as other *moku* on Maui, the earliest account of the rebuilding of the Kalepolepo Fishponds were recorded (Wilcox 1921: 66). In the following centuries, other chiefs repaired the walls including Kekaulike, chief of Maui during the mid-1700's (National reg. Sect. 7 pg. 3). Later, during the early 1800's, Kamehameha I ordered the rebuilding of the fishponds of Kalepolepo as well as Haneo'o. The people of East Maui worked on rebuilding the pond of Haneo'o and those from West Maui rebuilt Kalepolepo. It took approximately 10,000 men and women to do several months of work which was most likely just shy of one-fourth the work done by the original engineers. (Kamakau 1976: 47)

In the early 1840's, the prisoners from the penal settlement of Kaho'olawe were sent to Kō'ie'ie Loko l'a to restore the project site. Only this fishpond was restored because at that time, the other two south of Kalepolepo appeared to have already been abandoned for quite some time. The prisoners are said to have made use of the rocks of the Waiohuli fishpond to rebuild the project site's wall. (Wilcox 1921: 67)

The fishpond of Kalepolepo was still filled with "choice mullet" during the early to mid-1800's. During the 1870's the fishpond was reported to have eventually been filled with silt when forests were destroyed and torrential rains washed the soil in to the stream. (Wilcox 1921: 66-7)

A Fishpond Fit for a King –

In the mid-1700's, Kekaulike who was the *mōʻī* of the island of Maui at the time, made use of the mullet in the fishpond. (National Register Section 7, pg. 3) Years later, with the Koa House being a main trading hub and Kō'ie'ie Loko I'a in the foreground with its choice selection of the prized mullet, the area was a great attraction to many of Hawai'i's reigning monarchs of the post-contact era. (Wilcox 1921: 66)

Not long after he was crowned king and was traveling his royal tour, Kamehameha IV took up an invitation from John Halstead to spend a night at the Koa House in 1854. Also visiting the area were Kauikeauoli (Kamehameha III) and Kamehameha V. Thus dictating its importance as a royal Hawaiian fishpond. (Wilcox 1921: 66)

Traditional Knowledge

Traditional practices originate from traditional beliefs and knowledge. Quite often, proverbs, legends and place names were formed in Hawaiian culture to capture these beliefs and practices and were passed down generation after generation. The following are some examples of traditional knowledge regarding the project area, Kalepolepo. The knowledge displayed can be observed throughout history and still today as traditional knowledge should be.

Chants of Old

The Bishop Museum Archives contained a *mele* manuscript written by Charles Kana'ina which included descriptions of the *ahupua'a* of Waiohuli and Ka'ono'ulu. Line two of the thirty-third part of the *mele* manuscript collection of Helen Roberts (box 4.9) describes the plains of this *ahupua'a*. This is an excerpt of the fifty-one part *mele* entitled "*Ka Pua ka Koili Lani Maui*".

Ho'i ke ahi a uka o Waiohuli,
Ho'opuoko i na kula o Kaonoulu,
Ame he weli la i ke oho o ke pili,
Momoe hohoni me kukui honihoni,
Ho'ao aloha me ka pua mamane,
Me ka pua kookoolau o Alena e,
Holoia ae ka wai lana o ke kanaka,
I ma'ema'e maikai ka'u aloha,
Ua ike au.

NA KANAINA.

The fire returns to the uplands of Waiohuli,
It casts a glow on the plain of Kaonoulu,

And a streak of light over the leaves of the pili grass,
The grasses bend over to kiss Kukuihoni,
They are lovingly married to the mamane blossoms
And to the kookoolau blossoms of Alena.
The water ran by the man made an overflow,
That washed my love clean
This I know.

Composed by Kana'ina.

Hawaiian Proverbs

"Uala li'ili'i o Kalepolepo."
Small potatoes from Kalepolepo.
Said of a stupid person. (Pukui 1983: 309)

This *'ōlelo no'ēau* most likely came from a story retold by Wilcox (1921) when a ship's captain was fooled by the quality and size of the bag of potatoes he had purchased. This story is in the next section.

Traditional Stories

Charles Wilcox provided a wealth of information in his article "Kalepolepo", in *Paradise of the Pacific* (1921). Along with details of the project area, he provided anecdotes of the people of Kalepolepo and its history. Here are several excerpts describing interesting times of the days when potatoes were traded amongst whalers, when messengers were on the run for the ali'i and one moment in history when Kō'ie'ie Loko l'a was being rebuilt.

"Kalepolepo the Place of Small Potatoes" -

"Once a whaling captain who called there for his supplies made very careful examinations and was satisfied that only good-sized potatoes were being offered him by the dealer, who insisted on a cash payment before the ship master could take his potatoes.

The captain paid and took his potatoes, only to find that the insides of the nice looking heaps of potatoes were of small size. Arguments did no good, so he took his purchase and had the small potatoes served to the sailors, who knowing how the "old man" got trimmed in the potato deal, made jolly over it and jokingly called Kalepolepo the place of small potatoes, "Uala Liilii Kalepolepo." (Wilcox 1921: 65)

The Messengers of Kalepolepo -

"In olden times the mullet from these ponds were highly prized and many a Kukini won fame from the speed with which he ran to deliver the freshly caught fish still alive and flopping to the waiting table of chief or king at Wailuku or wherever royalty happened to desire this well known table delicacy." (Wilcox 1921: 67)

The Konohiki's Struggle to do the Work of the Menehune -

Wilcox also describes a legend of the rebuilding of the Kalepolepo Fishponds during the time of 'Umi. Although it is quite lengthy, it is presented here as the author had written to provide many important details of the project site pertaining to its history, its cultural value and restoration which may have not been clearly defined if this were summarized.

"When the Konohiki summoned the people of Maui to build fish ponds for the king at Keokea-kai, Waiahuli-kai and Kaonoulu-kai, one man, Kikau, a Kilo, protested that no such works could be completed without the help of the menehune (Hawaiian Lilliputians). For this Kikau was told that when the king's ponds were completed he should be baked in the imu (oven in the ground).

In building the sea walls men were stationed in long lines, passing stones by hand from the rocky sidehills miles away to the workmen laying the courses for the walls in the sea. The trappings of so many busy feet raised much dust, and workmen throwing dust at one another prompted the Konohiki to call them derisively, "Kanaka o Kalepolepo eku i ka lepo" or "Men of Kalepolepo root in the dirt."

Once a gust of wind blew up so much dust that the Konohiki was so badly besmeared that his eyes blinked through the dirt. He fancied Kikau, who happened to be near, was mocking him, so he ordered Kikau and those with him to dive and bring up heavy stones from the bottom of the sea for the walls of the ponds as their punishment.

At the completion of the Keokea-kai pond the Konohiki gave splendor to the event by riding on the capstone while it was being carried in a litter of stout poles on the shoulders of over twenty men to its resting place at the northeast corner of the pond.

After the ceremony he summoned Kikau and asked him what he thought of it, and Kikau replied that the works were still unfinished. "When the last stone of the last pond is laid your life shall be forfeited," replied the Konohiki.

The completion of the sea walls of the Waiohuli pond was marked by a similar ceremony, and two heavy boulders were carried on separate litters from the quarry a mile away to the northwest corner of the pond. The Konohiki rode on the larger of the two capstones, preceded by his wife on the other, both dressed in the costume of their rank, attended by Kahili bearers and Kauhaus chanting mele.

Again the Konohiki taunted Kikau and again, Kikau replied that the aumakuas were all powerful and would render the works to nothing before the last stone was laid.

As the sea walls of the Kaonoulu pond neared completion, a block of lava about a ton in weight was selected and placed on a litter of poles by the workmen. On the day selected for the ceremony the Konohiki dressed in his war cloak mounted on the rock and forty men put their shoulders to

the litter. At the word the bearers uplifted the great stone to their shoulders, then with Kahilis waving and the Kauhaus chanting meles, the procession moved full one-third of the way when the litter broke down, the big stone fell and the Konohiki was overthrown from his lofty perch and fell sprawling face down in the dirt. And the common people felt that he had become as one of them, having got his initiation as the Konohiki of Kalepolepo (Ua Konohiki no Kalepolepo, ua eku i ka lepo!)

That night a great storm came up, the wind, rain and hail, thunder and lightning, and earthquake and a heavy sea with a flood of red waters from the uplands spent its fury on Kalepolepo. Under cover of the storm the elves or eepa, birth brothers of Kikau, were seen to have gathered, and the lightning flashes revealed the host of elves at work tearing down the sea walls, undoing the work of the Konohiki that Kikau might not die!

By daylight the storm had passed and the sea walls of the ponds were seen to have broken down and the big boulder-last ridden by the Konohiki, the setting of which in place meant completion of the work, had disappeared.

Again the people were summoned to rebuild the fish ponds, again the final ceremony ended in an accident, another storm to come up, a swarm of elves at night and the work undone as before.

At this the Konohiki sent the black pig offering for Kikau, acknowledged his fault and asked Kikau's advice for rebuilding the ruined fishponds, which must be done or his own life would be forfeited to the king.

Kikau advised him to summon the people of Koolau to bring apae (shrimps) and the people of Wailuku to bring ha-kalo (baby taro or taro shoots) in great quantities, and when these were ready Kikau would invoke the aumakua (spirit force) to summon the menehunes to the task.

When these supplies were brought in, the taro and the opae cooked and laid in ti leaves, Kikau advised the Konohiki to proclaim a tabu of silence. That night the people were to remain indoors, no fire to be lighted, no pig to squeal, no dog to bark and no rooster to crow and the tabu was so announced.

That evening the signs of the coming of the hosts of menehunes were seen by the rising of far off spirals of red dust in the uplands, growing in numbers as they neared the lowlands until swirling clouds of red dust filled the air above Kalepolepo. But not until the evening star had set did their clamor break the silence of the taunted night, and the menehunes appeared in swarms and in great numbers, so that the hum of their voices drowned the sound of the surf breaking on the reefs, as they quickly fell to work by companies.

In no time the ruined pond walls were rebuilt, and they then gathered together for the task of laying the capstone to mark the completion of their work, the big rock at the northwest corner of the Kalepolepo pond now known as "Kikaupahaku." They formed a massed line of moving hands and

heads from where the rock lay a mile inland to the unfinished gap at the furthest edge of the great sea wall when the capstone was to be laid.

When all was ready four of their chiefs headed by Kuapaikee mounted the rock and gave the word. The hum of voices fell to a sigh, changing to a long-drawn droning sound rising to a bellow, a groaning sound that followed the burden down the line as the pigmy host heaved the rock to their shoulders, into the palms of their uplifted hands and sent it swiftly swaying and lurching from side to side down the long, massed lines of uplifted hands, like a chip afloat on the crest of a rushing stream with four pigmies on top of it, and the drone of voices about them. Along the broad top of the finished wall it sped to the yawning gap where deft hands slid it in place and there it still lies, the capstone laid by the elfish workmen of the myths of Hawaii.

At the completion of their task the menehunes gathered about the long halaus where the food prepared for them was stored, and each took one opae (shrimp) and a bite of ha-kalo (taro) and were refreshed. After the feast they formed in companies and took part in field sports and tests of strength, and their gambols stirred up clouds of dust, and those who got an eyeful of dirt were dubbed the Kalepolepo menehunes.

With the rising of the Morning Star the menehune host left for their usual haunts in the lonely uplands, and glens and mountain vales. With the completion of these ponds the fame of Kikau as a Kilo who could summon the menehunes to work filled the land, and he was sent for to live at the court of King Umi in the valley of Waipio, Hawaii." (Wilcox 1921: 66-7)

Mo'o Mokuhinia

The culture of Hawai'i often involves supernatural beings such as 'aumākuā or the mo'o who provide a link between reality and the supernatural world. Kamakau noted one such mo'o to be Mokuhinia. She was seen many places throughout Maui and on one occasion "she showed herself at Kalepolepo at the time that Kamehameha Kapuaiwa died" (Kamakau 1976: 83).

V. A REFLECTION OF THE DAYS OF YESTERDAY

Many cultural resources, practices and beliefs were identified and recollected by interviewees during the oral history interviews. The time period that they referred to mainly focused between the 1930's through the 1950's. This section summarizes many of their comments that still stand true till today.

Cultural Practices of the Project Area –

Like many locals of today, the tradition of conservation was practiced by several of the interviewees. Mr. Roy Suda described in his interview that he'd "take enough to feed ourselves and go." Mr. Clarence Tavares, Sr. would also trade simple goods such as vegetables with Filipino fishermen at Kalepolepo living the traditional *ahupua'a* concept of sharing between the land and sea.

Mr. Suda also recollected Kō'ie'ie Loko I'a as being his play ground when he was growing up in the area during the mid-1950's. He, his friends and family would swim in the shallow waters and occasionally walk along the fishpond wall.

One fishing technique that he recalled was known as *lamalama* fishing or torch fishing. They would shine a light at night and walk along the reef looking for fish. During the day, he'd also fish, throw net, spear and go crabbing.

He also recalled when the tide would come in, he'd continuously slap the rice bags on the surface of the water to scare the fish into the net. They'd call this style *paipai*.

When they would collect *wana*, Mr. Suda and others used thick potato sacks. The *wana* would be placed in the bag to protect them from the long spines. Then they'd thrash the bag around to remove the needles. This would be done right at the shoreline in the water to salvage the taste of the *wana*.

It seems as if these practices were common during this time. Mr. Tavares Sr. also recollected times when he'd see a Filipino man who lived in the immediate area of the project site fish, spear fish and set traps, perhaps for crabs. Mr. Eugene Clark Sr. remembered when he'd dive and surround net, a common fishing practice.

In the late 1950's, Mr. Moriaki Nakashima would also fish and swim daily in the area. Occasionally, he'd go spear fishing and recalled some men in the area who would use a cave knife to catch eels. The *lamalama* fishing technique was also done by Mr. Nakashima. Another technique that he recalled was described as *kōkō*. This was done when they'd surround a net around a school of fish and pull it on to shore.

Industries Recollected –

During the childhood lives of the interviewees, many recalled the industries that were in practice during the 1940's and fifties. Mr. Nakashima made a living at one time selling charcoal that was made from the large *kiawe* trees in the area.

Aku boats were also popular during this time. Mr. Suda would go to the Kīhei Pier across Suda Store and help unload the ship's catch. Everyone from the community would go to the area to help and in return, they'd receive a generous helping of fish. He recalls that nine *aku* boats would anchor in this area. They were the Sudi Turn, Amberjack, Olympic, Aikane Maru, Tradewind and a few others. (The correct spelling of these names are uncertain.) Mr. Nakashima also recalled about four or five *aku* boats as well as sampans that would be anchored right off the immediate area of the fishpond. Some, he said, were from Honolulu.

Whaling was also part of Kalepolepo's history. Mr. Clark remembered a time when whaling ships would bring in their catch. A burner was located near the fishpond and lard was extracted from the whale fat.

Resources from the Sea -

Throughout the conversations with the interviewees, several resources were mentioned. The following is a list of these resources consisting of many of the common reef fish, invertebrates and crustaceans still found today near Kō'ie'ie Loko I'a.

The Fish -

Kala
Kūmū
Manini
Moi, found once in awhile
Mullet, a plentiful supply and grew to a foot in length
Nehu, used for *aku* bait
Oama, a plentiful supply
Palani
Sharks
Uhu

The Seaweeds -

"Chop chop", nickname
"Green limu", present then but "not like today" described Mr. Suda who continued to state that it accumulated along the south shore.

Ogo
"Opihi limu"

Other Resources

Crab, white Hawaiian
'Opaelolo
'Opihi
Sea cucumbers, also referred to as *namako*
Squid
Tako, day and night and would reach two to three pounds
Wana, black
White eels, found at night

Physical Features -

Mr. Clark felt that the structure of the wall was slightly higher back in the mid-1950's than it is today and did not remember having any physical *mākāhā* present. Only the opening in the pond's wall on the southern side was visible. Similarly, Mr. Suda only saw one large opening in the wall in this same area with no sluice gate. It is interesting to note that Mr. Nakashima recalls the break in the wall but also thought that there was a second opening closer to shore along the southern end of the wall.

Mr. Nakashima also remembered a large stone which protruded upwards from the wall. This was a very noticeable rock and was along the south side of the fishpond. It was not made clear however, whether or not the stone was on the wall or beside the wall.

When discussing the rebuilding of the fishpond wall, Mr. Nakashima suggested that some of the rocks may have come from the balast of the whaling ships. The ships needed to equalize their load and would occasionally use stones for this purpose. This led him to suggest that the whaling ships either removed or replenished the fishpond with these stones. He also thought that the neighboring Wilcox family that lived near the pond may have brought some rocks in for restoration purposes.

Even during the early to mid-1900's, Mr. Nakashima recalled the area of Kalepolepo as being dusty and sandy. Once in awhile, large floods would occur during Kona storms which would bring in heavy rains.

The shoreline of Kīhei is not what it had been half a century ago. Mr. Suda would walk along the shoreline from the project site to his family's home near Kalama Park. Today, this is not very easily done because of shoreline development.

During the 1950's, most of the surrounding terrestrial landscape was of *kiawe* trees and sand dunes. Mr. Clark would access the fishpond from the main road through a small path. Mr. Suda recalls when the seawall of Menehune Shores had not been built yet, this entire area was filled with sand dunes. Mr. Nakashima remembered when the condominium area was mudflats.

On the south side of the wall there was a ditch that would flow occasionally. A stream, possibly from where this ditch was located, flowed from where the Menehune Shores Condominiums stands today and on the southern side of the south wall. Mr. Clark remembers the Sharp family who had a house located close to this stream. When Menehune Shores was built, this stream was covered up by the construction. On the northern side of the fishpond is also a second stream that still exists today and flows during rainy seasons.

Mr. Clark also stated that a channel was made along the southern end of the south wall. Two tall poles protruded from the water and was used to guide boats in safely. Towards the shoreline of these poles were railroad tracks which extended back towards the property of Menehune Shores. Large hand winches were used to crank up the whaling boats and they were brought to shore along these tracks.

When asked whether or not any significant cultural sites were located in the area such as burials, Mr. Nakashima did not recall any. In 1981, Charles Keau and Earl Neller performed a reconnaissance survey which uncovered no significant Hawaiian sites in the area of Kalepolepo with the exception of two fenced off areas in the park vicinity which they thought may have been grave sites. They also studied the subsurface deposits and found none to be present. (Neller 1982: n.p.)

As with many people of this era, World War II affected the interviewees' lives as well as the landscape. They recalled the coastline being filled with barb wire from this project area all the way till Mākena and cement bunkers facing the ocean along the shores. Some of these bunkers can still be seen today.

Several structures were recalled by the interviewees during the 1940's and 1950's. Mr. Suda stated that there was a white house with a shack on the south side of the wall which was used by fishermen to store their nets and fishing equipment. He also recalled a house surrounded by water who he had thought belonged to the Kenolio family. Mr. Clark recalled several houses and stores reserved for the whalers which held nets and other supplies. The structures ran along side the train tracks. Mr. Tavares would visit a Filipino man who lived in the area. This man's home was located where today's Kalepolepo Park showers are.

Mr. Nakashima also recalled homes in the area. One house was along the north side of the fishpond wall and was built on stilts. During the 1940's, he also remembered when the Bureau of Standards building was built near the north wall. This is where the Hawaiian Islands Humpback Whale National Marine Sanctuary now resides. In the old days, the building was also the office of the Bureau of Standards and a radio station for airplanes.

By the 1950's, most of the Koa House had been destroyed. There appears to be conflicting information as to the location of the landmark. Mr. Tavares stated that the Koa House was on the north side of the Sanctuary building. Mr. Nakashima stated that it was in the vicinity of where Menehune Shores stands today. While Mr. Clark also thought that it was located along the north side of the pond. He recalls that the building was not damaged when he was growing up but was later destroyed during the war. A drawing included in Neller's study (Figure 3) suggests that the Koa House as well as several other structures were located near the break in the fishpond's southern wall (Neller 1982: n.p.).

Further to the south of Kalepolepo, some of Mr. Clark's family was raised in a small fishing village located near today's Maui Sunset. This village only comprised of four to six plantation style homes and many Filipinos lived here. These families would sometimes visit the Kalepolepo area to fish on flat bottom boats powered by a pushing stick.

The pier that once stood across from Suda Store, was used to ship cattle to the neighboring island of Kaho'olawe. Ranches in this area would bring their cattle here. The Haleakalā and Thompson ranches were also in this area.

Several families were mentioned during the interviews and many of these names are still well known in the area today. Mr. Suda said that the Nakashima family lived on the *ma uka* side of the main road and the Kenolio family lived on the south side. Mr. Tavares also remembered the Kenolio family but said that their home was across the Maui Lu, further north from the fishpond. This may have

been an extended family of that described by Mr. Suda. He also recalled Harold Rice who raised pigs behind Maui Lu's second entrance. Mr. Clark also remembered Harold Rice being in the area as well as Harold Sharp and the Eisenhart family. Finally, Mr. Nakashima stated many family names including Perreira, Wilcox, Akina, Ting, Kūkahiko, Waihe'e and Rose families. The Hamashigi family were all fishermen.

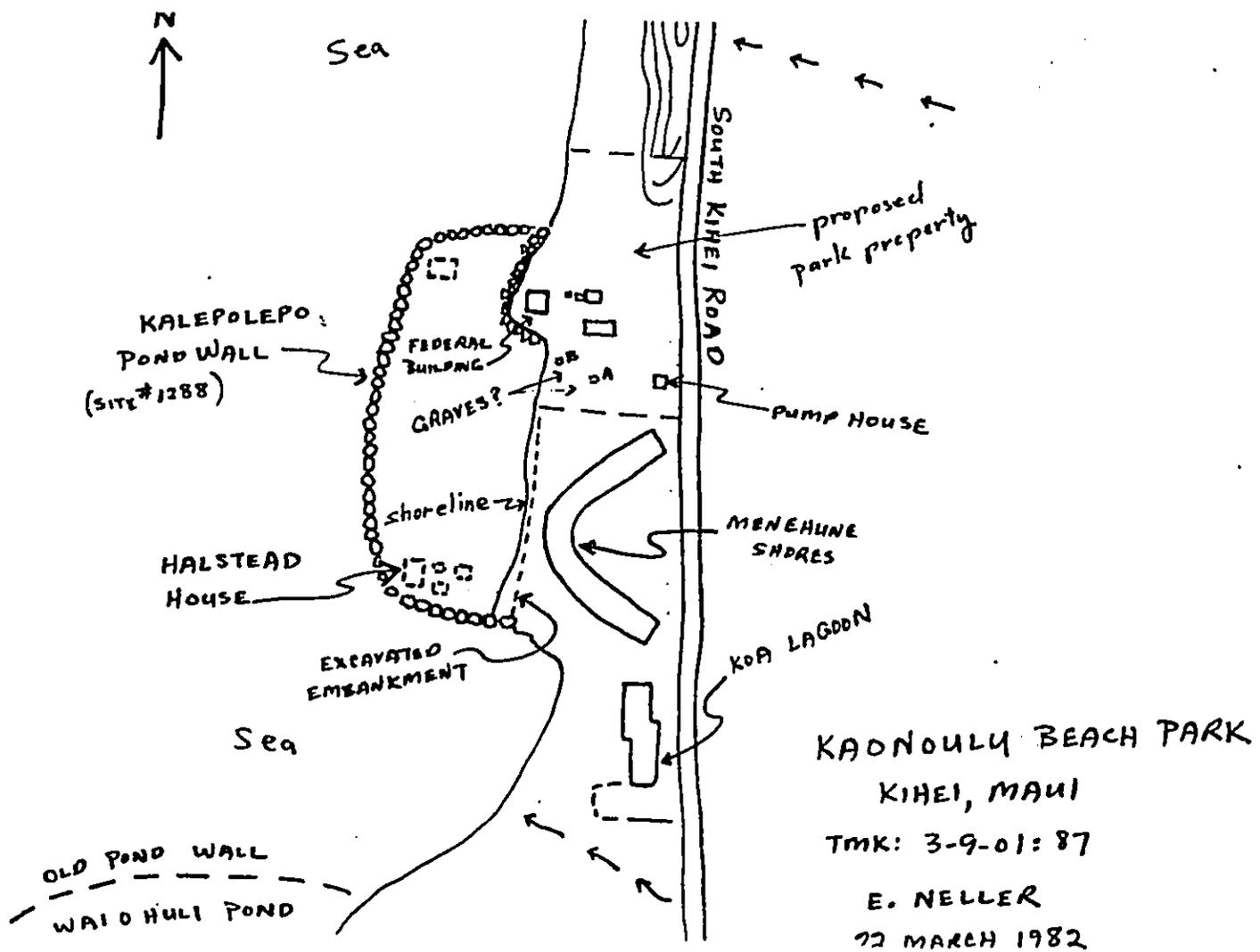


Figure 3. Map by Neller and Keau (1982) of the Surrounding Area of Kō'ie'ie Loko I'a.

VI. SUMMARY/RECOMMENDATIONS

1. As Keau and Neller suggested in their reconnaissance survey, special care should be taken during restoration of the area. Although no significant subsurface deposits were found in 1981, "historical information suggests that such deposits exist on the property." (Neller 1982: n.p.)
2. Neller also suggested that "construction activities should be monitored by an archaeologist, to collect artifacts, take photos, and write a report on the findings. If burials or especially significant features are encountered, work should be stopped and the bones and/or features carefully excavated using proper archaeological techniques." (Neller 1982: n.p.)
3. One of the predominant characteristics of the project site is its connection of being a fishing village for centuries. This is still the case today. The proposed project should continue to encourage these fishing and recreational practices and provide continued use of the shoreline and ocean areas to ocean users. At the same time, maintain a means of conservation as customarily and traditionally practiced by Hawaiians to avoid over consumption. The restoration of the fishpond's wall should not adversely affect the surrounding area including the shoreline and its offshore resources.
4. The project could, in fact, *revitalize* many of the cultural marine resources in the area. On Moloka'i, the island's fishpond restoration projects have experienced healthier reefs just beyond the restored fishpond walls. Monitoring of the reef just beyond the wall of Kalepolepo should be conducted to document the quality and impact on the reef. Similar results are expected.
5. According to the Hawaiian concept of the *ahupua'a*, the fishpond is just one small component. An effort should be made to educate the public as well as the surrounding organizations of their impact as a whole. The concept should be presented and encouraged with ocean users to ensure a healthier relationship between the land and sea.
6. The vegetation of the area currently is made of introduced plants and trees with the exception of the property of the Hawaiian Islands Humpback Whale National Marine Sanctuary. The properties surrounding the fishpond should be encouraged to also promote the growth of native plants. This will tie in the *ahupua'a* concept and provide additional cultural resources for the public. Native plants that are counterparts to marine species should be highly considered to uphold the *ahupua'a* connection of land and sea.
7. Also, this fishpond, being highly visible to the public, should be rebuilt to act as a demonstration fishpond for the community. This demonstration project will allow the community to learn more about the cultural uses and significance of fishponds, their functions and operation, the cultural beliefs of conservation, as well as their aquacultural benefits. It may also encourage the revitalization of other fishponds throughout Maui.

8. There is very minimal potential of the isolation of traditional cultural resources, practices and beliefs once this *revitalization* project is completed. Although human interaction cannot be constantly monitored because of the high impact of the growing community and its high accessibility, 'Ao'ao O Nā Loko I'a O Maui, should take a large role in educating the community about the responsible and respectful ways of maintaining these cultural resources, practices, and beliefs.
9. The concept of *revitalization* should continue to be adopted rather than *restoration* since the exact information about the area is not completely clear. Revitalization will allow the fishpond to be rebuilt as similar as possible to its original construction based upon information available. Traditional materials and construction methods should be used during the physical reconstruction process to maintain the integrity of the Hawaiian cultural resources, practices and beliefs.

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VIII. HAWAIIAN GLOSSARY

ahupua'a	Land division usually extending from the uplands to the sea
aku	Bonito, Skipjack (<i>Katsuwonus pelamis</i>)
ali'i	Chief, chiefess, officer, ruler, monarch
apae	"Shrimps" (Wilcox 1921: 67)
'aumākua	Plural form for family or personal gods
'ea	Hawksbill turtle (<i>Chelone imbricata</i>)
eepa	"Elves" (Wilcox 1921: 67)
ha-kalo	"Baby taro or taro shoots" (Wilcox 1921: 67)
halau	Meeting house
imu	Underground oven
kahili	Feather standard, symbolic of royalty
kauhau	May be Wilcox's version of the word "kahuna" meaning "priest, sorcerer"
kaumuku	Wind squall
kiawe	Algaroba tree (<i>Prosopis pallida</i>)
kilo	Reader of omens, seer
koa	The largest of native forest trees (<i>Acacia koa</i>)
koholā	Humpbacked whale
kōkō	A carrying net, usually made of sennit
konohiki	Headman of an ahupua'a land division under the chief
kukini	Runner, swift messenger
lamalama	Torch fishing
loko i'a	Fish pond, literal translation
loko kuapā	Fish pond made by building a wall on a reef
mākāhā	Sluice gate, as of a fish pond
mele	Song, anthem, or chant of any kind
menehune	Legendary race of small people who worked at night, building fish ponds
moku	District, island
mō'i	King, sovereign, monarch, majesty, ruler, queen
'ōlelo no'eau	Proverb, wise saying, traditional saying
opae	"Shrimp" (Wilcox 1921: 67)
paipai	To lobby, to rock
wana	A sea urchin, as <i>Diadema paucispinum</i> and <i>Echinothrix diadema</i>

Definitions taken from Pukui and Elbert (1986) unless otherwise noted.

A Note Regarding the Hawaiian Language Usage

Throughout this assessment, the grammatical markings of the Hawaiian language is included when appropriate. When quotes, bibliographical or oral history information was documented, the dialogue was recorded as it was written by the author or stated by the interviewee and the grammatical markings were recorded as such.

Special Mahalo to:

- Joseph Farber of Farber & Associates for completing the environmental impact assessment for the revitalization of Kō'ie'ie Loko I'a.
- Mr. Eugene Clark Sr., Mr. Aki Nakashima, Mr. Roy Suda and Mr. Clarence Tavares Sr. for providing invaluable recollections of the Kalepolepo area during their childhood days.
- The Hawaiian Islands Humpback Whale National Marine Sanctuary for providing the resources necessary to complete this cultural assessment.
- 'Ao'ao O Nā Loko I'a O Maui for perpetuating the efforts of Hawai'i's ancestors in revitalizing a living treasure, Kō'ie'ie Loko I'a.

Appendix 1

Oral History Interview Transcripts

**Oral History Interview with Eugene Clark Sr.
Regarding Kalepolepo Area and Kō'ie'ie Fishpond**

June 11, 2002

Interview held at his residence in Kīhei, Maui, Hawai'i

JO = Joylynn Oliveira, Interviewer EC = Eugene Clark Sr., Interviewee
Est.C = Ester Chang, Additional Interviewee UK = Unknown visitor

JO: This is an interview on Tuesday, June 11, at about quarter to five o'clock with Mr. Eugene Clark at his residence.

EC: Senior.

JO: Senior.

EC: Right.

JO: So you used to live in this area? Oh, you still live in this area.

EC: Well, we still live in this area here but we came here in 1935 when the mudflat was the airport, see. So we traveled all around with my father and at the time when 1941 broke out, the Koa House was still there, see. Ok that's where you folks are at, see. You know that area right there, where the fishpond is. Right there.

JO: Right.

EC: Ok, the Koa House was there. Then you have the, like the houses over here, like for the whalers come in and get couple small stores on this way here, see.

JO: I have some pictures here actually, that you're welcome to go through and if you can show me those places that you're talking about, it would be really helpful.

EC: If I can see that good.

JO: Oh, that's right. I'm sorry.

EC: You know this is the pond here.

JO: Yes and here, this is where our building is, the Whale Sanctuary is now, and then we have the park and then you have the Menehune Shores.

EC: Shore, right. Ok, where the Menehune Shores, that used to be a stream. Come down to there, see. At the end of this...

JO: The wall?

EC: The wall here.

JO: So the steam would come down and go out.

EC: The wall, actually had the wall right up to the, to the river there. Where the stream was.

JO: So the river would go into the fishpond?

EC: Not into the pond. Outside of the pond.

JO: Oh, so the south side of the pond.

EC: Pond, yes. That's where they had the railroad tracks, down here.

JO: Oh, I heard about that.

EC: The railroad tracks, see. And the stores are built right next to it, where they can buy. The railroad track, that's where they put the boat on it. You know, the whaler's boat and they winch it up, up here. To come, come up on the railroad track on the trailer. You know, on the railroad track, type, you know. And they winch it up. A big winch on the side where they crank it by hand.

JO: So all these stores and the winch that you're talking about was where Menehune Shores is down south?

EC: Shores is, but it's next to the, to the river there, see.

JO: Ok.

EC: And in the river there, the water don't run as much. Had a....I would say a piece of land on it. Had a house on it.

JO: I heard it was like a moat.

EC: And who used to be in this house? Was Harold Sharp and his wife.

JO: Harold Sharp.

EC: That's the Sharp family from Lahaina. Emma Sharp, that's all the family. But then he used to work for Hawaiian Airlines, you see. And I remember all the children. You see, I remember all the children. He had, I think about eight. Eight of them I think it was. And they lived right here on this. Where the, where the river was, see. But the water is not the kind, steady flow. Only when rain, then they get water. But the house was still there on top of that. Coming right over there. It was an old, old house. And on where the railroad track, that's where they had the stores like, you know, close by. And they, just like for put nets in. Old buildings, you know? That's where it was.

JO: How many stores would you say there were?

EC: I would say, I would say just one store was. But the rest was for nets and supplies or whatever.

JO: And this store wasn't the Koa House store?

EC: No. That's a separate store, that was. That was a separate store.

JO: Oh, wow!

EC: That's where it was, see. And then, how the whaler boats come in, into this stone wall here, on the south side, looking over to the, to....

JO: Wailea?

EC: Wailea side, Mākena area. I would say from here to maybe the fence. The distance of the fence, they had two railroad tracks sticking up. That's where I saw the channel came in. That's how it came in. Through that, through that area there from the opposite side of this wall. This is all reef out here was. So they had the channel. When they come in, they follow that.

JO: So the channel was as wide as from here to the fence?

EC: No. The distance where the poles was.

JO: And the poles would stick vertically up out of the water?

EC: Stick up! Stick up! Off the water right.

JO: Oh, so that was about 100 feet long?

EC: About that or less. You know, give or take. And that's always sometimes the shark come in there too, see. Because I dive all through there, that's why I know. And then the rest, the rest of that section there, you go farther down where the...now, it's a, I think the condominium of....

JO: Koa Lagoon?

EC: Yeah, that one there. But that there, that is where the house was in that area there, see.

JO: The Koa House?

EC: No. That old house where the Sharp's used to live in. The Koa House was built right where, just about this area here was. In this area here.

JO: Oh, just about the same area where...

EC: Where you folks at.

JO: Where our Sanctuary is.

EC: Right, right, right. At the end of this, you know.

JO: On the north side.

EC: Facing, yeah. Facing this side here, on the right.

JO: Oh, ok.

EC: That's where the old Koa House used to be. And this was just all open through here because we used to go in here and take our net and go surround in here and pull it up shore because the houses over here. Only the store was over here. That's how it was. And then, further down, near Maui Sunset, before Maui Sunset, used to be one fishing village in there. Old camp fishing village. I think had...I forget how many houses in there. Oh, had about six. Plantation type, you know. And that fishermens used to come in over there and pile up their net and when time to go out, they put it on the skip and they go out and only bottom fish. That is the old process that is on that there.

[Interruption from phone call]

EC: Ok, let me look at this other picture here. I wish my eyes was better. I can tell you, you know.

JO: Ok, I'll help you out.

EC: Ok, I'm looking at this background here.

JO: Yeah, that's the south side. That's a picture of the south side.

EC: The south side. Ok, this is the wall too?

JO: Yes.

EC: Right through here?

JO: Yes, that's the south wall and there's probably some other fishponds further down.

EC: Yeah, yeah. They had, they had fishponds further down too, but not as big as, you know, this ones here, see. And this is the shoreline?

JO: That is north side. Looking towards the north.

EC: The north. Ok so you looking at this side, that's the main one. It comes around, right? That's this one here.

JO: Yes.

EC: Ok. That is correct. The same as...

JO: No, that's just the background.

EC: Background.

JO: That's down Sugar Beach.

EC: Sugar Beach area. Let me look this other one here now. Ok this is...

JO: That is another picture of the north side where the sand dunes are and there's also a stream that comes out farther.

EC: Yeah, the small little stream there. Yes, I remember the small little stream. But that had nothing to with that, with that....where the track used to go.

JO: Right. Cause the track was on the south side.

EC: Yes. Yes, yes.

JO: And that's our building now. That building must've been built?

EC: They built that in the fourties because that was the radio station for the airplanes. That one there and one in Mākena, was together. Where the beam is. You know when the planes come in? Each the Mākena one, then the Mākena one reach this beam. That's how the pilots used to come in through. You know the beams. Yeah. That's what it is, see.

JO: And that's a picture of the park now.

EC: Yes. Yeah the park was mostly all kiawe trees and had one small little space where you could just walk to go the fishpond. Ok, this is what?

JO: That's Menehune Shores.

EC: K, Menehune Shores. They built right by the stream, there. Like I said, you know they...all these changes when they built. And had the stream, small little stream here and this was all mud dunes. Do you know what I mean? Where the stream was. And that's where the house was.

JO: Ok.

EC: See, and the stream wasn't like this here now. It was different. A little smaller. And when the water go in and out.

JO: With the tides?

EC: With the tide, yeah. And the railroad track was right next to that wall. Ok this was the old building. This the one they called the Koa House?

JO: Yes.

EC: Ok, you see the background? You see the background? See how the background? And everybody wonder how they got upstairs, yeah? Did you ever find out?

JO: No, I didn't.

EC: You didn't find out? They go from the back.

JO: Oh, on the back side of this picture?

EC: Yes on the backside.

JO: There was a staircase that went up.

EC: Right. And then you get up and then you go into it. That's how the second floor.

JO: Oh, so it wasn't an internal staircase?

EC: No, no, no. That's why everybody got fooled!

JO: But when you were growing up, the Koa House wasn't...

EC: Wasn't damaged.

JO: Oh, it wasn't damaged? It looked same as the picture then?

EC: As just here, right. It wasn't damaged until the war broke out. Then the service men went in there and did lot of damage. That's why they went burn it down. And had a lot of old books in there! Old Hawaiian books and piano and koa wood and chairs. All that! It was still in there. And I mean they really went broke up that building there.

JO: What a loss.

EC: This is the background of the...

JO: This is the aerial view. So this is where the fishpond that we're talking about is and here you can see the outlines of the other ponds but they're more destructed than ours.

EC: Right. Right. That's when they had the bigger waves was coming through there, see. The reef was different. It wasn't protecting...

JO: The larger fishponds.

EC: Right, right. That's what happened, see. And like, with this other fishpond, that one where you folks have there, but they had reef in the back of it. So that was protecting. The reef went out. Quite a bit. Quite a distance. Then when the waves break on the outside, the reef was actually holding back, protecting that wall.

JO: Right.

EC: So they had only one small little outlet on that wall there. Right about the south side of the wall. Cause I can not see that good. That's why.

JO: Oh, no problem. These are just larger pictures of that same area. And these were taken in the mid-fourties or fifties so you can definitely tell how there are no homes in the area and they're totally different.

EC: Yes, I'm trying to look. This one here and this one in this area here. I'm trying to figure out that stream before your folks building here. That stream always had water there.

EC: This is my neice, Ester, Ester Chang..

JO: Aloha.

Est.C: Hi.

EC: She is Joanna.

JO: Joylynn.

EC: Joylynn. This is Ester Chang. Ok, come over here because you used to be down there too. Where you used to camp. You know, you're familiar with this?

JO: We're talking about the fishpond.

Est.C: Me, I just as bad as you Uncle. I no can see.

EC: The fishpond.

Est.C: Oh yeah.

EC: Ok. When you look at this, can you see the fishpond right here?

[Battery ran low and tape paused to change battery.]

Est.C: Oh!

EC: You remember now?

Est.C: Yeah.

EC: Cause I know you was small when you and David was staying by the fishing village by Maui Sunset.

Est.C: By Maui Sunset. Yeah.

EC: Where all the net and the Filipinos come with their small boats and they launch their stuff from there, see. But they don't come all inside here, you know. They don't come in here.

JO: They don't go inside the fishpond?

EC: Inside the fishpond. They don't pass that two bars in that channel. They just launch the boat out where the camp site was and they go out on the

reef. That's why they used the pull stick. Push stick. Only flat bottom boats, you know. They not big, you know that.

Est.C: Oh, these are old pictures, yeah!

JO: Actually these are new pictures of the area now.

EC: So they want to restore it, see. So actually, you looking at this one here. Yeah, the wall was little higher than this.

Est.C: Yeah, little higher.

EC: Yeah little higher than that. And then where the opening, where that opening is, just a small little drop was in there. Where the tide come up and then goes right in through there, see.

Est.C: Was something like the one way over, by Kama'ole Street. You know how high they have the wall, where the boat harbor. That's how high that one was but then nobody took care after that, yeah. The waves come, pound them.

EC: Pound, yeah.

JO: Yeah.

Est.C: Little by little.

EC: See, like I told her. Where the railroad track was coming down, come down like this here, next to this rock pile, you know.

Est.C: Yeah.

EC: So the railroad track and the big winch way up here. Big, big two man winch, you know. And that thing was there years and years and years.

Est.C: Yeah.

JO: I wonder what happened to it now.

EC: I don't know.

Est.C: We don't know.

EC: After, after they start building, then you know, they just knock everything down. And like where Harold Sharp used to stay, right where this...where that hotel is now.

JO: Where the Menehune Shores is.

EC: Yeah, yeah. Ok.

JO: One more down, I think.

EC: See this the park, see.

Est.C: Yeah.

EC: Here the, the Menehune Shores. Cause Menehune Shores...

Est.C: You used to stay on the other side of the pond, yeah?

EC: Yeah, no this the Menehune Shores is facing the pond actually.

Est.C: Yeah, yeah.

EC: Ok, but then you have the Koa Lagoon.

JO: Right.

EC: Yeah.

JO: On the south side of the pond.

EC: Yeah, on the south side, see. Where the...ok, you, you remember this one here?

Est.C: Yeah, the old house.

EC: The old Koa House.

Est.C: Yeah the old Koa House.

EC: You remember? You was small little girl!

Est.C: I was small! Yeah, we used to go play over there before when we was small!

JO: Yeah.

EC: So you know how to get up on this one here? You remember?

Est.C: I no can remember. Long time ago!

EC: But I still remember. You have to go on the side.

Est.C: Yeah.

EC: And then you get up inside there. See, they never put porch. On this side there was the door entrance. That's where they had made it a little wider and that's how you got in.

Est.C: Yeah.

EC: Yeah, so now you know that.

JO: Yeah.

EC: So a lot of people get confused about. They think from the inside. No, no, no, no. That's from the outside. And then where the fish camp now, where I'm talking about.

Est.C: That was years ago!

EC: Ok, where your fish camp was, where you used to go, you and David, where you used to live was where these other ponds was. Right in this area here. Where was that hotel, now, Maui Sunset is? You can show me where?

JO: It is...I think around here.

EC: Yeah, someplace there. Well that's where, you know, you got the VFW Hall over here. Ok, and then the dead end road, see, used to come over here. Then on the road was from where the Maui Sunset, you come down. Then you turn, you turn left, left, right! Then the beach house was over here. Had about six yeah, was, Ester?

Est.C: Yeah.

EC: Six homes I remember.

Est.C: Yeah, six homes.

JO: So you grew up in that small fishing village?

Est.C: Yeah. Come.

[A new person walks in the room.]

EC: He no remember. He no remember!

UK: I older than you!

EC: I wish he was!

UK: Why, what is that? What is that?

JO: We talking story about the fishpond over here, by Kalepolepo.

EC: The Koa House and all that. Yes but you never come down there that young!

Est.C: I was young girl at that time, playing around!

JO: I was just trying to ask everybody who remembers about the area.

Est.C: He knows more than me. You know, young girl, we only play, yeah!

[Interview got side tracked as Mr. Clark answered a phone call at this time and Ester Chang and Joylynn Oliveira spoke briefly to the gentleman about Joylynn's family. Once the phone call was finished, Mr. Clark resumed the conversation.]

EC: See the Koa House used to be right over here, see. The Koa House used to be right over here, see. Just right where they at right now, that's where the Koa House used to be. Just a little off centered. You know what I mean?

JO: Just where our office is?

EC: Yeah.

JO: Gosh that's interesting.

EC: Cause this side here, it's the Harold Rice property where (? Name was not clearly stated.) used to stay and Eisenhart and all that. All the old shacks they owned by the beach. I still remember that!

Est.C: Yeah, you still remember. Me, I no can remember. That was a long time ago. I was small kid. Us guys, we no care, we only play, yeah!

JO: Yeah.

EC: But you know, with my glasses now.

Est.C: Yeah, my eye, I no can see good. I going for one operation down Honolulu. Cataract in my eye.

EC: In mine, I get busted blood vessels. So I went already for the two eyes but now they going operate, they going take my eye out.

Est.C: I think you can see better than me.

EC: Cannot. Cannot, still blurry. But these walls was little higher, you know what I mean?

JO: And so you would only fish by net or how?

EC: No, we'd just, as I grew older, we had the motor A truck. And then I drove the motor A truck practically on the beach there, you know.

JO: A what?

EC: Motor A truck.

JO: Motorhead truck?

EC: Motor A. Motor A, you get motor B. An old Ford truck.

JO: Oh motor A! Ok.

EC: And then we'd put the net on it. Then we'd just pull, pull the net, get the fish. Go to the next place, drive down to the beach. We'd always can find one road, you know, for squeeze the truck in.

JO: So you guys must've had caught plenty fish then.

Est.C: Excuse me Uncle, I going finish in the front.

EC: Yeah, ok.

JO: Mahalo.

EC: God bless. At least you remember some section yet. Yeah, that's where the, you know where the two new buildings coming up now?

JO: Yes the homes.

EC: The homes over there and the river is right there. Well that, that there used to be all kiawe trees in there see. Then you come back to the pond. That's how the pond was, like this here, and this was all no more water here but had water through here, you know what I mean? Where this end is.

JO: On the south side of the wall.

EC: Right, right and that's where the track was. Down through here and it comes out about this deep in this area here.

JO: Almost the whole length of the pond.

EC: Right, the railroad track in the water there. And then they is put the track, the wheel. You know the old sugar cane, when they throw them in the cane field? You know that type? That's the type they had, the old one. Then they put the boat on it. The Boston Whaler's boat or what you call that. Then they winch it up, and they get drunk. They come to the Koa House and buy their supplies or change their supplies and all that. But they had the big burner on the back side, you know, on this side here. Where they burn and make lard, yeah? From the whale fat or whatever.

JO: Oh, so they were still whaling?

EC: Yeah, they still had those things all over there when I remember all that. What happened to it? They just don't care. You know people build things and they just know down everything. Yeah.

JO: So you grew up in Kihei.

EC: Kihei.

JO: And you were born in?

EC: O'ahu.

JO: O'ahu.

EC: Yeah, Waikīkī.

JO: And that was, I think you said, nineteen thirty?

EC: We came here in 1935.

JO: Oh 1935.

EC: Right, right, right. But then even, how young I was, you know, four or five, I grew up and my father was always traveling and I was the one with him all the time, see. Cause he was the army instructor on checking all the navy and marines and soldiers in the Kīhei area.

JO: Oh, ok. And that's how you came to know all of this.

EC: Yes.

JO: And so when you were here on Maui, where did you live?

EC: When we first started, we lived in Wailuku and then from Wailuku, we went to Paukukalo. We lived in the army camp. But I still traveled, see.

JO: And you would still come to the Kīhei side.

EC: Yeah, Kīhei side. And then when the war broke down all with barb wires. All the whole beaches were all barb wire. All the whole beaches were barb wires.

JO: This whole beach on Kīhei?

EC: Yeah, on Kīhei. All the way up to Mākena. Not Mākena, just before you get into...

JO: Wailea?

EC: Wailea, right. Yeah. All barb wire.

JO: All barb wire all along the coastline.

EC: Coastline, yes. And they had the, what you call, cement bunkers here and there, all facing out towards the ocean. Have you got your story now?

JO: Yes, I do. So you used to come here with your father.

EC: Father, yes. And then after I hit 14 or 12, I was driving already. Oh yes, I was driving already.

JO: And where did you work?

EC: Me, clean yard!

JO: You made that you're living?

EC: And polish shoes.

JO: Polish shoes?

EC: Going into the army camp. And my brother, myself, and Baton, his name was. He was the one that died at Molokai on the plane. He was running for councilman or whatever. Only the three of us could go into the military camp and shine shoes through my father, yeah.

JO: So that's what you did for a living.

EC: Living for, until I grew up and grew up and grew up. Right.

JO: And so how long have you lived here?

EC: Since what, 1946, my father bought this place here.

JO: So you've been here quite a while.

EC: Quite awhile. Right. In and out. I go back Honolulu and work and then I come back and work here for a little while and go back and work.

JO: So what do you do now?

EC: I'm retired now. But I still do massages, do reflexology and set bones and all that. That's my...I help people out.

JO: That's right. That's what you were telling me on the phone.

EC: Yeah, I guess Dick will tell you too!

JO: Yup.

EC: And Bully knows me too.

JO: He does? Ok, I'll be sure to tell Uncle that I came and spoke with you. Well thank you.

EC: So in case you need any more or what, I think I'll let you know, I'll tell Dick on it. Contact you.

JO: Ok yes, that will be good. So what I'm going to do with this information is take it home and I'm going to type it all up. And see if you can review it and just take a look at it and just be sure that it's things that you would like to.

EC: Change or whatever.

JO: Yes, because we're going to use this information for a report, a cultural assessment report and submit everything together and at that time if I can get your consent to use the information, then it would be very helpful.

EC: Yeah, I give my consent. No worry about that!

JO: Ok.

EC: I'm trying to think who else you know I mean, that is still living, see. I know they younger than me where they're going to remember is the Sharp, the children see. And if I can get the phone number. They live up in Maui Meadows I know. Harold with the older sister, living there, Evon. But the other older sister, I don't know, see she worked in Honolulu. Momi, I don't know what happened to her, see. But I still remember where they was living.

JO: Well, all the information you gave me today was very helpful and it's nice to hear about the railroad tracks.

EC: Yes, that was very...I tell you, when I went there, I even saw the, you know, the car where they put, you know the railroad on the track there. Well had one that was left there and was tied up to the old winch. To the cable.

JO: And did the railroad come along that?

EC: Just along there.

JO: So it was just a short track then.

EC: Yeah, well I would say maybe, maybe 75, maybe 100 feet. Because the big whaler boats sometime it's heavy they got to get it to a little deeper to put it on.

JO: I got it.

EC: That's how they did that. And then the same type of winch that they had down at Mā'alaea, where Mā'alaea, they used to put their boats, the sanpan, down and bring them up through that type of winch.

JO: Ok.

EC: It's a big winch and I don't know if Mā'alaea still has that. That's where the coast guard pier is. Where the coast guard, in between there, as you make that turn, that was the dry dock area. I remember all of that.

JO: You remembered a lot. Well, thank you very much for your time we definitely appreciate it.

**Oral History Interview with Mr. Aki Nakashima
Regarding Kalepolepo Area and Kō'ie'ie Fishpond**

April 30, 2002

Interview held at his residence in Pukalani, Maui, Hawai'i

JO = Joylynn Oliveira, Interviewer

AN = Aki Nakashima, Interviewee

JO: This is an oral history interview with Mr. Nakashima, Aki Nakashima, around five o'clock on April 30, 2002 in regard to our fishpond. Is it o.k. if I leave the tape recorder here?

AN: Yeah, Menehune Shores that's the one, near, near the Bureau of Standards. Of course I think they're all pau now but...

JO: Yeah, well this is, I have some pictures here. This is, this is an aerial photograph of the area. So that's what the fishpond looks like and this is where I work at the Humpback Whale Sanctuary. You can flip through the pictures here.

AN: I think this was the Bureau of Standards, there?

JO: Yeah, it was always something.

AN: That building there.

JO: Yeah. So you lived in Kīhei all your life?

AN: Yeah all my life.

JO: And when did you move here?

AN: I moved up here around 1960 I think.

JO: 1960, wow.

AN: Oh, you folks got to build some more wall here.

JO: I know, the wall has fallen apart right now and we're trying to get the information together so we can rebuild it. Do you, do you remember going to this area and visiting it?

AN: Yeah.

JO: And you used to live around Kalepolepo.

AN: Oh, we used to go fishing around there all the time.

JO: Oh yeah?

AN: Yeah.

JO: What kind of fish did you used to catch?

AN: Ah, more like um, we used to catch lot of the smaller mullets. And then nehu.

JO: Nehu?

AN: Nehu yeah. That's illegal yeah?

JO: I don't know about now.

AN: Yeah, I don't know but was legal.

[Interruption by Mrs. Nakashima offering something to drink.]

JO: So, there's a picture in there of our... of our office. What it looks like now.

AN: In the what?

JO: Right there that blue building.

AN: In this one?

JO: Yeah.

AN: Yeah this one, that's the building I think. We called that the Bureau of Standards. Yeah, that's what the, that's what the...The Bureau of Standards is the kind eh, if you like know what time today, or something like that you just ask them yeah?

JO: Yeah, it actually had a lot of different things to do with the government in the past. And so how often would you guys go to the fishpond?

AN: Oh, I don't know I mean, ah, well, if you got to go if you have to catch small fish then you got to go only night time yeah?

JO: Yeah.

AN: Even day time used to get lot of, lot of lot of kind stuff in here you know? And we used to go...I don't know now days they don't do that I think. We used to call that torching yeah?

JO: Oh you used to go torching.

AN: Yeah. Hawaiians used to call that, uh, what you call that....lamalama I think.

JO: Lamalama.

AN: Yeah, that's what we used to do.

JO: And how would you guys do that type of fishing. What would you use?

AN: In night time we were gonna use spear and some guys used to use cave knife but we used to get a long iron, you know like a sword. Only about this wide. We used to catch, just like you going chop. Like white eels and stuff. That's the kind we used to catch night time. I think even now if you go, you going see that. You can catch white eel along the shoreline. Then you know the other one, that where the stone go out, past Menehune shores.

JO: The other fishpond?

AN: Yeah, yeah.

JO: Yeah, I don't think I have a picture of that one but when you look in this direction, this is from our office looking towards like VFW, out this side got another fishpond.

AN: Yeah, yeah.

[Interruption by Mrs. Nakashima bringing refreshments and talking about the house's termites.]

AN: That's where we used to go swim I think, in there all the time. Yeah, every day we used to swim down in here.

JO: And so where did you used to live in Kīhei?

AN: Now they got those big buildings over there now. Perreira used to own that property, you know where get all the kiawe trees now? That's the only one with the kiawe trees. If you go down toward Azeka, past the Bureau of Standard. The rest going get all buildings yeah? That last one there, it was the Wilcox property.

JO: Oh Wilcox.

AN: Yeah and then Menehune Shores you're talking about, had the old Koa House you know, over here.

JO: Yeah, where in the picture was it? Do you remember? You were alive when it was still standing?

AN: Yeah, yeah. I think they burned that down after, after the war, I think.

JO: And do you remember where it was located in Kīhei?

AN: Yeah, right over here.

JO: Right where the Menehune Shores is standing now.

AN: Yeah, yeah.

JO: And would you go to the store and visit the store?

AN: Oh yeah, we used to walk to Kīhei Store. You know the old Suda store now, yeah, used to get one....of course that's a new building but, in the olden days that had the building high, all olden building but high.

JO: But was the Koa House still operating when you were living there?

AN: No had the....I think Ms. Wilcox's marriage name but I don't know her. But the sister of Mrs. Wilcox was living with her. She was living over there.

JO: I see. So you lived really close to this area. You lived really close to this area.

AN: Yeah, yeah, just about.... well from here not too far. I think maybe just from here to maybe, I think, out to the road. That's about it.

JO: So if you moved out of Kīhei in 1960. How old were you then?

AN: Oh, I was born 1922 now.

JO: About 38?

AN: Yeah and we had one new house in Kīhei, near the school.

JO: And what do you remember about the area when you were growing up?

AN: Well, I don't know. Kīhei was ah...my father used to make charcoal and sell kiawe wood. You know really, but people used to buy kiawe wood cause those days never have, I think too much electric heaters yeah? They gotta make furo and all that yeah? That's what they did cause Kīhei, everybody was serving kiawe wood. The Akina's, I think three brothers I think were selling only their kiawe wood and somebody else too you know? And plantation, Wailuku plantation I think, sugar used to buy those kiawe wood for the workers, yeah? Yeah, that's what everybody was doing, selling kiawe wood down in Kīhei.

JO: And what would you do? You went to school in Kīhei?

AN: Yeah, Kīhei School.

JO: Kihei School?

AN: Yeah. You know, used to be a old school way up. You know where the Ting's live now?

JO: The Ting's? No.

AN: Ting's.... Kukahiko....well, up in that area.

JO: That's more towards Mākena yeah?

AN: No, just about there. And then they moved that school near the beach now. Yeah. Good enough, you know me and the olden days. We never had the...fresh water I think. It was what, 1920, I no remember, I was small about five years old so 1928, 27, 28 like that. And no more pipe you know. Everything gotta be well. You bathe in the well. You know, water like that. You gotta wash clothes. Only drink water used to, fresh water used to get the....well, some big Hawaiian guys used to. You give the barrel outside the road. They pick it up and they, they used to go up, maybe to, Kīhei near Suda store. They fill um up and they bring um back to put the water in one barrel. And they unload them by the road. Then my mother has to get the bucket and go get the water. Used to get one big barrel in the house.

JO: So there weren't any rivers in the area? There weren't any rivers or the wetlands there that you guys would play?

AN: Well, there had the river like that but, I don't know. But the fresh water was, I mean the well water was pretty good you know?

JO: Yeah?

AN: You get used to it. I think it was maybe a little salt, but on the sweet side, yeah? But not bad. They had more ponds but....you know....actually, you know where Menehune stay? That was on a mudflat you know?

JO: A mudflat?

AN: Yeah.

JO: This area right here yeah?

AN: Yeah.

JO: Yeah, they have a big wall that they put up in front of the, their building right now. Do you remember what other kind of fish you would find there or what kind of limu you would find in the area?

AN: Used to get the fine green one. What you call that?

JO: The sea lettuce? Pālahalaha? It's really fine and...

AN: The green one.

JO:kind of slimy and green. You can see through it.

AN: Yeah, that's the kind have over here.

JO: Was there a lot of it?

AN: No not much. You know how it is yeah? People find, they take everything! You know. And they used to get the sampan park outside here.

JO: The sampan would park outside of the wall?

AN: Yeah, over here was the Koa House and used to get the Hamashigi's was over here and had one more house over here. They was all fishermen, you know. They used to anchor the sampan out here some place.

JO: I see.

AN: Used to get one whole anchor you know. One big anchor outside there. That's what they used to tie them all to.

JO: Yeah?

AN: Yeah.

JO: What would they use the sampan for?

AN: Fish! Red fish and like the Koa House you know, I think that used to be one store before you know? Because in that there, had big barrels like this big. Big ones! Wooden barrels. Big ones like this. And they used to get lot of, just like coffee cup and stuff like that to sell you know. Yeah.

JO: So do you remember if you could see the wall during high tide cause I know now the wall is pretty low.

AN: The water cover the stones right now?

JO: Yeah, during high tide.

AN: Well it was something like the wave used to come over.

JO: Do you remember if anybody would go and repair it or take care of it?

AN: No. Only people was that, the Wilcox family. The Koa House owner used to be. I think they brought couple loads of rocks. They put along side the shore, you know. But that's about all. But it seems as though had one wall right through you know?

JO: Going right through?

AN: Yeah. You know over here. Used to get the Koa House and used to be...they have a wall over here.

JO: Oh, that's interesting.

AN: I don't know, I don't know now but used to get one wall the side. Stone wall right through.

JO: A stone wall that would go on the south side....

AN: Yeah, yeah.

JO: ...and run all the way, perpendicular to land? Did your parents used to go and fish over there a lot too? Did your parents go and fish?

AN: No. We used to go koko. What do you call, koko net. You know what is that?

JO: No.

AN: That's the kind of small pull net, you know, surround net. And then you pull them onto shore. Yeah, that's the kind used to get.

JO: And how much fish would you get?

AN: Well, I don't know. Some days you going catch, some place, no more *nothing*.

JO: Yeah. Well probably back then, you had a lot more fish than there is now. I know now a lot of people catch oama over there.

AN: You mean past the shoreline on this side?

JO: No all inside the fishpond wall and stuff. Plenty people still go there to fish for oama.

AN: But get the opening over here.

JO: Yeah, there is that opening.

AN: And used to get one on this side too you know.

JO: Oh really!

AN: Yeah.

JO: On the south side.

AN: Yeah on this side.

JO: I wonder what happened to that. Do you know?

AN: I don't know.

JO: And that was the south side, closer to shore.

AN: Huh?

JO: It would be closer to shore.

AN: Yeah, close to the shore. Used to get one opening on this side at the end. This one, it seems that it's the same one over here.

JO: Yeah, you can still see that one. Yeah. Did you ever see a gate there?

AN: What's that?

JO: A gate. Was there a gate there?

AN: No. Never had.

JO: Never had.

AN: Yeah, all open. Now who gonna, who gonna fix the fishpond now?

JO: Our Association.

AN: Huh?

JO: Our Association is trying to get together. It's just people from the community.

AN: Oh yeah, that's the Association you work for?

JO: I work for the Whale Sanctuary. We're working with the community to help restore this fishpond because it's right there on our property. And we have all the sand dunes in the area. Do you remember all the sand dunes?

AN: Yeah. When windy now over there, it's not dusty?

JO: Oh it's very dusty! Very dusty and still very very windy.

AN: Yeah, see when you get this tradewind, it seems as though...it's same like the olden days. It's the sand, it used to blow across the road, just before you hit this place. It would be all sand. All over. And what you folks do down there?

JO: Oh we help protect humpback whales.

AN: Oh, the whales! Sitting in that building?

JO: Yeah! We work hard over there you know? Yeah, we do education and research. We have this building right here is our Education Center and we teach the kids about the whales, and fishpond and the culture through our offices there and this right here is what the park looks like now. Kalepolepo Park. Must of had plenty kiawe in that area, yeah?

AN: Kiawe is alright if no more the thorn, yeah? Some kiawe tree no more the thorn, yeah.

JO: Oh the thorns.

AN: Oh they call that Kalepolepo Park now.

JO: And see, here's the wall that they put up at Menehune Shores. But you said all in this area was all wetlands yeah?

AN: Yeah was something like that.

JO: And what did you do for a living?

AN: Oh we used to cut...after graduating from Kihei School, I worked for my father cutting kiawe wood. For about three years, I think. Then I worked for...had the war, during the war. In 1941, I think, I was working for the airport constructors that can make all new airports in the Hawaiian Islands. Started at Pu`unēnē, so I worked for them, driving truck for seventy-five cents an hour.

JO: Seventy-five cents and hour! Big difference from now yeah?

AN: Well, you figure those days if you work plantation you only get dollar. But I was 18 or 19. Seventy-five cents an hour was big bucks for us!

JO: Yeah, that's true. So you was working there in Pu`unēnē but you was still living in Kīhei.

AN: Yeah.

JO: How did you...you had cars and trains or something?

AN: What that?

JO: How would you get to work?

AN: To where?

JO: To work, to Pu`unēnē?

AN: No they had the work down in Kīhei. Just about walking distance from where I used to live.

JO: What other things happened in Kīhei back then? What was the big industries?

AN: I think was...from 1941, 42, I think I was in Hilo, working on the airport. Finish over there in November of '42 then we went to Honolulu to work Hickam field. Then from 1945, then I had to go into the army. Then I got discharged about '47 or '48, I think. Came back to Maui. No more job, you know! Unless you like work plantation. Then we was cutting scrap iron for dollar and quarter an hour in those days. That's not every day steady job. In 1949, I think, I worked on an aku boat. Kīhei, I think, had about four or five aku boat, you know. Kīhei was the best place to catch bait, nehu.

JO: Nehu?

AN: Kīhei, had about four or five. Even had the Honolulu boats come too you know. Sometimes used to get two or three. Honolulu boats used to come catch bait.

JO: What do you use nehu for? What do you use nehu to catch?

AN: You catch the aku.

JO: The aku.

AN: Yeah, 1949, I think. One whole year, I think, I worked on the aku boat. But the way I understand now, no more nehu.

JO: I don't know about the nehu. I know still have some mullet around the area but I don't know about nehu.

AN: When no more nehu, that's when we used to come and catch the baby mullet for bait. Yeah.

JO: So you'd go by yourself or you'd go with your family to go fishing?

AN: Where on the aku boat?

JO: No, over here at the fishpond.

AN: Oh yeah, had my brothers and had some more people living around there. All the Waihe'e's I think.

JO: And did a lot of other families come over to the area?

AN: Yeah but fishing, this upside the road then downside the road had the Rose family.

JO: Rose?

AN: Rose, yeah. I don't know if you know them. The only one living now is Emma-Jean, I think. She's in Kihei. She live ma uka side of Kalama Park, I think. Yeah they had, I think, three sisters, I think she had and one brother. So we used to hang around that house all the time, too.

JO: Yeah.

AN: Yeah.

JO: And you would do this throughout the whole year? You'd go over here, play at the fishpond?

AN: yeah, afternoon, when one, two o'clock, we'd all go swimming till about three o'clock, 3:30. Every day like that!

JO: Do you remember if in this area there were any burial sites?

AN: No. No. I don't think so.

JO: Cause some people said that, we heard that there might be some.

AN: Well, I tell you, the olden days, Hawaiians, sometimes, they just bury them down the beach. Easier to dig the hole if they just bury 'um. But, in my time, they had regular grave yard. Now days, you gotta watch, yeah.

JO: yeah, that's why we want to be able to acknowledge if there is any burials in the area too, yeah.

AN: Before in Kīhei, I don't know, we never had big Kona storm like before. Man, it used to get all flooded you know.

JO: This area?

AN: yeah.

JO: From like the heavy rains?

AN: Yeah, when get big rain. Kona storm, we used to call it. We used to get that kind every year, you know. But today, I don't know. I can remember, four or five years, already, we never get nothing like that.

JO: And what would you guys do if everything was flooding out?

AN: You no can do nothing. I don't know, 1937 I think was, it had big rain. I think, washed out the road. I think, couple places in Kīhei, no can. Nobody can come to Kahului, like that for about one week until they fix the road, yeah!

JO: Wow, that's a long time. So you are Japanese? Are you just full Japanese?

AN: yeah.

JO: So would you guys have any special fishing traditions or any special way of doing things?

AN: No. No. You know, before the war, you know outside here, get the reef, yeah? Had plenty fish, you know. But I think during the war, I don't know, those guys went, somebody went clean 'um all up.

JO: Yeah, there wasn't as much fish as before, yeah? There wasn't as much fish as before, yeah?

AN: And now, you can not eat any kind fish, yeah? Poison, yeah?

JO: Yeah, some of them. You might get sick from some of the fish now.

AN: But this place out here is good for tako. Tako ground, you know, over here.

JO: Yeah. Do you know if there's other kinds of fish like uhu or, I don't know what kind of other fish people used to look for back then. Just mainly the mullet.

AN: What?

JO: You guys mainly would get the mullet and the nehu over there yeah?

AN: Outside here, you get plenty uhu. Used to get.

JO: Plenty of the reef fish?

AN: Yeah, like kala, palani....

JO: I know down this side, there's a, I think the Kūlanihāko`i Stream. There's a river that would come out that side. Every once in awhile, you can still see it.

AN: Yeah, whenever we get the day, like the Kula storm, they used to open that up.

JO: Open what up?

AN: Get one, just like one pond over here, used to get. The water used to come down.

JO: That's good.

AN: Yeah, we had good time before. We'd make beach party and go surfing night time, and all that. On this side, this area here.

JO: Behind VFW.

AN: You know where the big pond? Where the stone right around?

JO: I think that's the other fishpond that's there now.

AN: Yeah, the big one.

JO: Yeah, cause this is the small one right here. This is only about three acres. So do you remember how many more fishponds were along that area?

AN: No, no. Just like that. And I don't know if this the one, but get one big stone sticking up over here. When come low tide, you can see that. But when come high tide, maybe you used to see only that big one. You going see good from your guys' place. Going be this side, used to get one bigger one.

JO: And it would just be solid and straight up?

AN: Oh yeah. Big stone!

JO: Oh, that big! Like three feet across?

AN: Well, maybe, I don't know. But I know how, it's a kind of big high one over here.

JO: And it was right on the wall?

AN: Could be somewhere, more this side, maybe.

JO: But it was right next to the wall or on the side?

AN: Yeah, in line with this.

JO: Well, we'll have to look for that whenever we get a chance to.

AN: I don't know the story but I guess that was one fishpond way back, I don't. Not my time, but maybe way back.

JO: Yeah, cause we think it, at least in the 1500s or so, we think it might've been built. So it was hundreds of years.

AN: Sometime you wonder how all that stone get there, yeah? I guess they had to carry all that stone down from the mountain, yeah?

JO: Yeah, we're trying to figure out where exactly the stones came from. See this picture right here, it shows, right over here where the river would be. So our building is right here.

AN: This is what? Now you? Oh this one is connected to that small pond?

JO: Yeah, so this picture right here. I was standing right here and taking a picture looking out to the north side.

AN: You know, past this end, I think used to get one house, you know over here. One was in the water over here. Maybe if you walk through here, you still going see something. You think maybe had one house before but I remember, had one house out here.

JO: Right outside on the north side.

AN: Yeah, in that area there.

JO: Was that just somebody's house?

AN: Yeah, I think was somebody's house. Some people was living there, you know.

JO: And did they build the house on stilts?

AN: I don't know when the house was built but I know later on, they went broke them all down and they stacked it all over here.

JO: Right by our office then.

AN: Yeah.

JO: Yeah, the Maui Lu is right over here now, and then you have some beach and then now you have the river. I don't know if the river was there before or maybe cause of the construction, it got diverted.

AN: Well, you know the sand come up and bury that entrance over here yeah. So when get big rain, they used to bring the bulldozer and open 'um up. Otherwise going flood the rest of the place. The water get no chance of going down.

JO: The water must've turned really brown!

AN: Well, they figure the water going come down, they used to get the bulldozer to open 'um up. If you work over there, you going see. Wait till we get one big rain. I don't know what kind flood control get they get so, the water maybe not going come down, maybe, because, maybe they made one big ditch ma uka side. All the water go down to one side maybe.

JO: Do you remember? Our building was the place that you would set the standard. The Bureau of Standards was there.

AN: That thing was still there. They used to call that Bureau of Standards till about maybe ten years ago, yeah? You worked for them long time already?

JO: Five years now.

AN: Five years.

JO: But it has been part of the government for forty, fifty years.

AN: Well, you know olden days, I don't know how they did it but I think they had one big cable that went stretch 'um out to the ocean.

JO: Yes, yes, yes! A degaussing station for the submarines.

AN: Yeah.

JO: Oh you remember that!

AN: Yeah cause, I know they used the county for tractor, for pull the cable.

JO: I'm not quite sure what it was that they did with the cables there but that's what we heard.

AN: Yeah, for check if get submarine out there or not. Yeah right.

JO: Oh, good your memory.

AN: That was supposed to be something like one secret, yeah!

JO: Supposed to be but everybody knew, yeah! I don't know how they would have put the cables out if the fishpond was right there, where the cables went from. And now we take care of humpback whales there.

AN: You folks are under what?

JO: Under NOAA, the National Oceanic Atmospheric Administration.

AN: They give plenty money to these guys, NOAA?

JO: Well, we're the federal government and we're just trying to help revive the culture in the area.

AN: Yeah, I think if going get one fishpond, maybe I don't know... I don't know what kind of fish you going raise over there.

JO: Yeah, well we're just trying to...cause, cause Kihei has become such a tourist town now, we're just trying to let people remember the culture. So what you think, if we rebuilt the fishpond wall, what you think about that?

AN: Yeah, I think alright.

JO: Yeah, alright to you?

AN: Yeah.

JO: You think it's a good idea instead of waste away, yeah.

AN: But they got to dredge over there, yeah?

JO: No we can not dredge inside the fishpond.

AN: You going leave 'um just the way it is?

JO: And just put the walls back up and now, you know sometimes, with the seasons, the limu piles up, that green limu that you was talking about so we're trying to help figure out a way to control that situation. But that's interesting what you said about the wall, I mean the home on the fishpond wall, yeah. Because when you looking at this side of the fishpond, which is this picture, that would be somewhere around here, yeah, the south side. Yeah, so that's going to help us with knowing about where the breaks were in the wall.

AN: Well, I going tell you, interesting if you going find how the stone got there. I don't know how they, if you talking about over thousand years ago, I don't know, everybody used to carry one stone down I guess.

JO: I know that when they repaired it, King Kamehameha I repaired it and they had probably over ten thousand men help rebuild the wall.

AN: Yeah, I believe that! Had that many people.

JO: Oh yes, and this is a small fishpond. It's only about three acres or so. The other one out in this area is way bigger.

AN: And maybe some of that stone came from the whaling ship, yeah? Balast yeah? And maybe they come over here, if they load up, they gotta take out some stone or whatever. I think maybe some of that, not the cracked one but

maybe those round ones or what. They came out of those whaling ships I think.

JO: Yeah, could be. Do you remember when the whaling ships used to come over?

AN: No, I don't know. To me, that Koa House was one store, I think.

JO: And they used to trade potatoes and all kinds of things.

AN: Yeah, yeah, I believe that.

JO: Well ok. This is good information. This is good information for me you know and every little bit helps.

AN: All I know is I lived around there and that's about it.

JO: Do you happen to have old photographs of this area?

AN: No I don't think so. We was too poor we couldn't own one camera.

JO: I guess so, yeah. I mean, back in those days, cameras were a little harder to come by. Well I appreciate all the time that you have and thank you for letting me tape record this, our conversation. So what I'm going to do is go home and type up all this information and when we do our report about the area, I'm going to state that I spoke with you and kind of use some of the information from our conversation.

AN: Well, Kīhei, like I told you, it was the main industry of selling kiawe wood.

JO: And that was in the thirties, forties.

AN: Yeah, went up to, maybe up to the fifties I think. I was supplying the charcoal to the Maui Palms I think was, I think when Maui Palms got built. Well that was 1950 something, I think. But when I came back from the army, nobody was making charcoal so, you know why, because the fire, war time, you cannot yeah. So my father just stopped. He wasn't making. So when I came back, I see nobody making charcoal so I started at that time. I used to supply Kahului store, Maui Dry Goods. Yeah, Maui Palms, Kona, sell 'um to Kona. That was good for me because all the Kīhei, they subdivide. People buy the lot, they got to cut the kiawe tree and they had it all stacked. And we had to get rid of that. I used to buy it really cheap and I used to make charcoal with that so I hardly cut any kiawe wood.

JO: Well this was good. Thank you again for your time. I appreciate it.

AN: Then, 1949 I think, 50, I think, I quit the aku boat. Then I worked for Kahului railroad. Yeah, I retired from Kahului railroad. Yeah, I moved up here because the store, that's my wife's family yeah.

JO: Pukalani Superette.

AN: Yeah, my brother-in-law wanted to go be one engineer so nobody wanted to take care so my brother-in-law told my wife to take care of the store. That's how I ended up over here. That's how. Now my boys take care now.

JO: I heard they got good food up there!

AN: Huh?

JO: I heard they got good food up there! The chow fun I heard, is really good.

AN: Where you live? In the terrace?

JO: By the golf course.

AN: Oh, then you know my boy then, Miles. He live by the golf course too.

JO: Oh yeah, I live Liholani Street.

[Side A completed and tape flipped.]

AN: That's a dead end street there over there. He's in that street over there.

JO: Oh yeah, that's real close to me then.

AN: So his backyard, you can see the golf course.

JO: Just like mine. It's nice. Sometimes some people, you can watch the people play golf.

AN: Well, now you working Kihei, you gotta move down there then.

JO: I know, half hour drive one way!

AN: Where your husband work?

JO: Oh, I'm not married.

AN: You not married!

JO: No I'm not married but my family is from Ke'anae and Hāna and I have family right here in Pukalani. My boyfriend's out in Hāna.

AN: You from Hāna then?

JO: My family is from Ke'anae and Kahakuloa.

AN: You get the Ruth. I don't know her last name but she get her family from Ke'anae too.

JO: Oh yeah.

AN: So weekends she go over there. My daughter-in-law is one Smithe. They from Haiku, Smithe family.

JO: I think so. Well, very good and I don't want to keep you too long.

AN: Yeah, no problem.

JO: It was a pleasure meeting you and getting to talk with you.

AN: You work down there long time. Five years you said already.

JO: Five years yeah.

AN: You folks are the US government then. You work for the federal government. NOAA.

JO: Yeah, NOAA.

AN: You know when you take the test for the coast guard. All the weather report come from NOAA.

JO: Yup the National Weather Service. That's what the building used to do for awhile also, was the weather station.

AN: I think they used to let the navy guys take care over there before, yeah?

JO: Yup, the navy guys were there too. Yeah. A lot of federal people was over there. Do you anybody else who ... who used to, grow up over there during your days that maybe I could talk to.

AN: Well, you see, the Kenolio's, they all died already. The only guy I know, not in that area but, few people now I know in Kihei. All the Akina's died.

JO: Akina's yeah. What were the main families in the area in Kihei when you grew up? Had Akina.

AN: Yeah, had Frank, John and [?]. So their family. Then the guy who used to own that property, Maui Sunset. He was a Perreira.

JO: Perreira.

AN: But he died already.

JO: And there was the Kenolio family?

AN: Yeah, all the brothers died I think. Paul was living down by VFW but he died last year I think.

JO: And what other families were there? Had the Azeka's?

AN: Well, Azeka's, they came down there about, nineteen, maybe after the war.

JO: But Suda store was there. Suda store was there when you was younger.

AN: Yeah, but they lived way down by Foodland, then you go up.

JO: Oh, ok.

AN: Yeah, they all died! From that area, I think I'm the only guy living I think.

JO: Well, I have a few more names but I think they're still from your time. I know some Kūkahiko's still live over there.

AN: Yeah, but Kūkahiko, I think... I wonder. I think all of them died too. I think the only one left is Kuilei, I think. But she is, her marriage name is...so if you go Kīhei, you like talk to Kuilei, she's a Kūkahiko girl but her marriage name is different. Maybe you gotta go back Hāna. To that, big developer there. They going develop over there, no?

JO: Oh, I hope not. I no think so. I never hear nothing. I didn't hear anything yet.

AN: I heard on the t.v. what you call that, Oprah?

JO: Oprah.

AN: She bought couple of lots over there yeah?

JO: Hundred something acres, yeah.

AN: She bought? In Hāna?

JO: Hāna, yeah. Hāna Ranch property. That's what I heard too.

AN: She's loaded!

JO: I guess, yeah. I wish I could buy me one acre!

AN: And you see all that mainland people you take a look at all the typhoon and everything over there. Why live that kind place. Why not come to Hawai'i? Three four hundred thousand dollar and you can live here. You know, not like over there, you build one house and it broke down, then you build again. Lucky you no *make* you stay over there.

JO: Yeah.

AN: But that's why Maui good yeah. We no more volcano like Big Island.

JO: Yeah, hope it doesn't erupt one of these days.

AN: Yeah, no can tell.

JO: Yeah, that's true. But Maui is beautiful.

AN: And you, you went to college?

JO: Yup!

AN: You studied about the weather then, your job with NOAA.

JO: Kind of yeah, I got a marine science degree. So I studied the ocean.

AN: You know, I was talking to a marine biologist. You know, I think Big Island, get one guy, he advertise his fish. He used to advertise, I don't know now. And I seen that they had the trout. I went over there and said, "this trout smell mud". So I was asking "why like that?" And he told me, these guys go feed him, yeah. Some fish eat the kind only coming down like that. When that thing hit the ground they not going eat um so now, the thing going ferment in there. Stink yeah. Maybe catfish would eat that maybe, you know. But he was telling me, that's the reason. He was telling me. That's why the fish smell.

JO: Yeah, plenty different reasons now yeah? O.k. well, I shall...

AN: Sorry but I no can give you too much stories yeah.

JO: Well, I think you give me plenty information.

AN: You think so.

JO: I think so! This was very very good and I appreciate being able to meet you and your wife. I called maybe two months ago or so but I didn't have time to set up an appointment but this worked out really good. So good! Maybe one of these days you when come down to Kihei, you come look us.

AN: Yeah, I may do that.

JO: I hope so!

AN: You mean the first building?

JO: The first building, yeah. The blue building, that's where I work. Just ask for Joy.

An: Ok.

JO: Ok so, is it ok if I use this information in the report?

AN: Yeah, what ever you like!

JO: Whatever I like? Oh you easy, you real easy. That's good. I like that kind. Ok, so I'm going to turn this off right now. And thank you very much. I appreciate everything and hope you guys have a good day today.

AN: Yeah. Thank you.

**Oral History Interview with Roy Suda
Regarding Kalepolepo Area and Kō'ie'ie Fishpond**

May 20, 2002
Interview held at Suda Store, Kīhei, Maui, Hawai'i

JO = Joylynn Oliveira, Interviewer

RS = Roy Suda, Interviewee

JO: This is an interview with Roy Suda at Suda Store in Kīhei on May 20, Monday, at around 5 o'clock.

RS: Like I was saying Joy, I was trying to find some pictures of the pond there. That we're talking about. I'm trying to think of the name....

JO: Kalepolepo.

RS: Kalep..., oh what ever! Tongue twister! But those days, nobody thought about cameras and taking pictures, yeah. And most of the time that I passed there, where the Menehune Shores is and the other condo that is there right now, right next to that place, there was a big, so-called, ditch that used to go down to the ocean. And if you notice on the seawall on the south side where it goes out yeah, you see one seawall over there, maybe rock formation like a fishpond, used to be a house there. A white house with a shack on it. That's where the fishermen used to store their nets and fishing equipment in there. They had a little small boat over there. But all along there, while we used to go there, used to have those big 'opaelolo, if you know what is that. The big fish yeah, and we used to use that to go fishing. So that's why all the people who new about that, even from Wailuku or Pu'unēnue like that, they would come there to go. Of course NASCA had that shrimp too but over here was easier. And then, the big 'opae like I said, 'opaelolo, we used to use that to go fishing and also used to eat that too, you know. And so that used to be my playing grounds all over there. I remember the high sand dunes by Menehune Shores and Pacific Whale Foundation over there and we used to swim a lot in the pond there because it was shallow yeah, it was. And it was perfect because had a nice three to five feet sand dunes right in front the seawall where Menehune Shores is before. Those days they didn't have a seawall. That used to be part of the beach. So, so, that's how I can remember when we were kids, my father used to take us there and we used to go catch 'opae and do fishing. And another thing, in the pond there, we used to catch the baby oama.

JO: Oh yes.

RS: Lots of oama those days! Those days, no more such thing as bag limit, you catch as much as you like!

JO: Yeah, that's right.

RS: But you know, we just take enough to feed ourselves and go. You know got to give back. So much shallow water, you just go with the scoop net and get it all.

JO: Real easy back then yeah?

RS: Easy those days but now you know, it's not like that. Too many people go in and scare them.

JO: What, what year do you think that was?

RS: Oh that was in, well let's see, well that was, I was in grade school year. That was like fifty...fifty-seven. Fifty-six, fifty-seven.

JO: Oh, ok. Ok. Yeah, I have some pictures here of, well basically what it looks like now. But you know sometimes it helps people jog their memory about it. And you can just flip through it if you want.

RS: Oh this is a nice picture. Really nice, yeah.

JO: So you're talking all the 'opae.

RS: Right here. This is the south side of Men, this is the complex, yeah? Menehune?

JO: Yeah.

RS: So if you come over here, this Pacific Whale Foundation.

JO: The Whale Sanctuary.

RS: I mean the Whale Sanctuary right and this is the park here. So this is the seawall. I can see right here, you see this stone here?

JO: Yeah.

RS: We used to be scared to go outside here because the waves used to come crashing in, you know kids like this.

JO: Oh yeah.

RS: Yeah, so on this side, used to be shallow, yeah. Used to be. And that's where used to have all this, used to be like little sand here. The house used to be about here. About near the shack.

JO: Ok so, kind of right at the beginning of the south wall then.

RS: Yeah.

JO: Ok, I have other pictures for you. Yeah, this is looking out to the south. Down this side.

RS: I'm trying to think of the name of this plant.

JO: That's the beach morning glory.

RS: Beach morning glory.

JO: Pōhuehue. And these are more modern pictures.

RS: Yeah, this is the seawall that they built, yeah. Imagine before, no seawall, yeah. Used to see sand dunes all from here.

JO: All the sand dunes would be all where the wall is?

RS: All the sand dunes. Past the sand dunes used to be there. See this is the break yeah? And this is how it used to be. So imagine this place here, used to be the high sand dunes all the way to where the swimming pool is. And if you can just sit over here, image the shoreline that, that's from the south side. If you look at it, you go down to the beach the shoreline, you going imagine that it was straight. The ocean used to be, I mean you know, it used come like curve around.

JO: So on this aerial photo.

RS: On this aerial photo, yeah, you see the seawall that's, you see that? Ok now then stop over here and the ocean goes all the way back here. So actually you going to take back. The dune, the sand was all the way back here. Almost to the front door of where the kind is, Menehune Shores is.

JO: Ok, so where the beginning of the Menehune Shores building is that's where the shoreline was.

RS: That was the high dunes. What I'm talking about, yeah. And then this used to be just as it is, right here like this. The water line ends here but the dunes used to be up here. Because we had to walk to get here. Yeah, we just couldn't, you know, go because those days, you know, no more jeep, yeah? You got to four wheel to go there. So what we used to do, we used to park out, out in the park out, outside, had a small little car trail that you go in. And then you walk.

JO: Here's a picture of the old Koa House that was over there.

RS: Oh, the old Koa House, yeah. See, that's, that's part of the old Koa that was, half of the building was gone. No top.

JO: Oh, when you were growing up?

RS: Yeah, when we were growing up. Didn't have this, it was all down. As far as I can remember.

JO: Do you remember where it was located on the property?

RS: You know where, you know where, they doing that dredging, they have a little a, they making a little pond there. You see the little a...between...I trying to think of the condominium right next to that. The side from Menehune Shores.

JO: Koa Lagoon?

RS: Koa Lagoon. In fact, that's what we used to call the lagoon there that we used to go down to get to the beach. Cause when had heavy rain like that, that used to be one of the outlet that went out to the ocean. Next to Koa Lagoon, right next to that, used to be a pond. A continuation of the drainage ditch that they put in right there. You see the drainage ditch there? Ok between that drainage ditch there and Koa Lagoon used to be a house. Used to be a house. And the people that lived there before was the Kenolio family. Yeah, Kenolio family that lived there. This old Hawaiian couple that used to live inside there. And it was just like a moat. The house would be right like this and the water used to be all around. You know around that. And eventually when they built the condo in what, seventy-eight, or what ever it is. I can't. About seventy-eight, they filled it all up, yeah. That's why the house is no longer there.

JO: Yeah, so the house probably would've been around this area.

RS: Yeah that's where you're talking about. Yeah, inside here used to be right in here. This the road, yeah? The house used to be right off the road.

JO: Right off the road right by Koa Lagoon.

RS: Yeah, yeah.

JO: And that was the Kenolio's. I heard some Filipinos lived in that area. Do you remember?

RS: No, I only remember the Kenolio family and the Nakashima family across, across the street. I know that time they didn't have no condos or what not. That used to be the old, old Japanese family that lived there that I remember.

JO: And what other kind of fish would you guys get over there?

RS: Oh over there, used to beside 'opae and all that, we used to go crabbing. The white Hawaiian crab. What's the name of that crab? The white swimming crab. The white swimming crab.

JO: The sand crab. I don't know that one.

RS: The white crab with the big thorn in the back and the big pinchers look like, almost look like the American Blue crab but this is white. We used to go over there and catch. In no time you get so much. We used to just put a little around over there but we go there for, when we're catching 'opae, we used to put that over there. Even sometimes in 'opae net we used to catch them. You know, the crab. Basically that's what it is. Oh that and mullet too. Used to have a lot of mullet. Mullet that's what the pond was in there.

JO: How big was the mullet?

RS: Mullet, oh was maybe the legal size is six so I'd say those were about ten, ten, maybe a foot long! Big mullets! Big ones.

JO: That would be nice to see nowadays.

RS: Oh yeah it's hard to get them now. Because of the fishpond the mullet would come inside, yeah. Would put inside while all the local fishermen, Hawaiian fishermen, I know they'd all go there. They wait till the pond, when high tide and the water start going out. They would be in the back over there with the net waiting. They'd chase all the fish out! You know when the net hit the water, bang! I mean with the rice bag, they would pound the water. They call that paipai net and they would bang them and the fish would get scared. Naturally they know, when the tide is going out, the fish is going out.

JO: And so, do you remember there's this one opening there. Do you remember if there were any other openings or gates?

RS: You know that's the only opening that I know of. You know, we used to go through but other than that, we used to just climb over the rocks but that's the only opening that I know. Had only one opening that I really knew about it.

JO: And what about the limu in that area?

RS: Oh the limu used to have, well, regular, the ogo. Yeah, that's one of them and what you call that, the opihi limu we call. The crown, it has a crown, yeah. It has a three crown. Look like a crown. I don't know what the name of that too. We used to just call that opihi limu. We used to pick them around here, around the south and also over here too. And at one time it used to have, you know, the regular, you see the seaweed over here. It looks like....

JO: The green one?

RS: No it looks like centipedes. Black. Chop-chop.

JO: Chop-chop. That's what you guys call them.

RS: Chop-chop. That's the name. We call them chop-chop. There used to be a lot over there. In fact you find them all along the over here. Chop-chops.

JO: Was there a lot of the green limu that you find now?

RS: Yeah, but not as much like today. Those days, those times, the green, the common limu that we used to call it. Green with the brown and all that. It used to be quite a bit would accumulate on the south side. On this side. Yeah I guess because of the natural current, yeah. It would come inside and

swirl around so most of the limu would be found on that side. Over here not too much because the wind would push away.

JO: Yeah, less on the north side, yeah? So you grew up here in Kihei?

RS: All my life in Kihei.

JO: Yeah?

RS: Yeah. We lived here like I said, I lived here for what, fifty, fifty-five years.

JO: Fifty-five years.

RS: Fifty-five years now.

JO: So you definitely have seen how it has changed.

RS: Yeah, it has changed a lot. Yes. I wouldn't have even imagined that you know, they would build a condo at that time right over here.

JO: Yeah. Do you remember how the, how these buildings along the fishpond area impacted the shoreline? Like changed?

RS: I guess when they, when they put up the seawall here, they had. The only time it really come into effect is like when we have Kona storm like that, yeah. It would be bad because the thing would come up all the way. At very high tide the thing would be right up to the wall right there. But I guess any time you do something and change the shoreline, you know the tow, the tow back and everything with occurring changes, it's going to have little effect not right here but the downside is going to have the effect. Towards, what you call that, Halama Street side or towards where...

JO: VFW?

RS: VFW, yeah. It's going to have a effect. You know when we were growing up, yeah, growing up, we used to walk from here to all the way Kalama Park where my parents live. And, and we didn't have to worry about, what you call, getting seawalls, where that, you know. You could walk right on the shoreline.

JO: You could walk the shoreline from the fishpond all the way down to Kalama Park?

RS: All the way down to Kalama Park. But like I said, change yeah, Now going to a different subject when the Corps of Engineers put that seawall in at Kalama Park. You know because of the erosion control? Yeah that, that, that did a lot to change all the tow back.

JO: Yeah.

RS: Yeah. So I see, you know with this, with the fishpond thing here, I'm glad that, you know, people are making a study to keep this fishpond cause this

RS: Let's see who would I think about earlier? The Kenolio family is no longer there that used to live right over there. Back here? I can't, I can't even think already. I go back and I'll sit down tonight and I'll write some names down.

JO: Well, anything that you can do, I'll appreciate that greatly.

RS: I'll talk to my brothers too, they may know someone. I'm trying to think of some other names but it's not registering right.

JO: And if they're interested in sitting down and talking story with me then I'd be happy to talk to them too. So thank you very much!

**Oral History Interview with Clarence Tavares Sr.
Regarding Kalepolepo Area and Kō'ie'ie Fishpond**

May 16, 2002

Interview held at his residence in Mākena, Maui, Hawai'i

JO = Joylynn Oliveira, Interviewer

CT = Clarence Tavares Sr., Interviewee

JO: This is an interview on May 16 at 5 p.m. with Mr. Clarence Tavares Sr. Is that correct?

CT: Right.

JO: Yes. And we're at his home in Mākena. O.k. So, like I was telling you earlier, we're trying to rebuild the fishpond over at Kalepolepo Park and we have to interview people from the public about this. And so, I just, I guess I just was wondering what your background is with this area.

CT: Well, I wasn't born here. I was born in Kula. See, I was born in Kula but working and knowing the area, cause as a small kid, we used to come down during the weekends and during the summer and going down to the Mākena village. We spent couple vacations, couple years in Mākena and also in La Perouse and my mother and father was well-known with the Hawaiians down there before. We'd kind of follow up, yeah. But, some parts like I said that you're looking at, there was a fishpond. You say it was a church, yeah, you mentioned. Yeah, yeah, that far back, I don't remember.

JO: O.k.

CT: See, I don't remember. I remember where the old Kenolio's house is still there across from Maui Lu and then the Koa house was back. I, we used to come down when I was working for the ranch. I started working for the ranch in the late forties.

JO: And which ranch was this?

CT: Haleakalā Ranch.

JO: Haleakalā.

CT: But we'd belong to the Kama'ole section. Kama'ole section, where the Thompson's ranch is, you know. And so we used to take care all of the fence work and the water and checking the cattle. So that's how we used to go out on our lunch break and go down the beach. So we met this Filipino man that used to stay there all the time. So when we come down from upcountry, we used to bring some, you know, vegetables like that, for him and then he used to go and cook. And he'd get everything ready by the time we reached there, you know. Maybe like it was, Monday, Monday and Friday mostly was the days that we'd come down, see. And we'd stop by and have lunch with him,

talk story. He goes out sometime fishing there. He used to set lots of traps. But now you talking about the Koa house? That's where the fishpond was?

JO: Yes it is. I have a picture of what it looks like now. This is an aerial photograph of the area. There's other photos in here too, that you're welcome to look through.

CT: Yeah, yeah. I kind of remember now. Now I kind of remember. Yeah. We're looking at....

JO: This is where Menehune Shores is.

CT: Where's the little park?

JO: This is the little park right over here.

CT: Right here, right here.

JO: And this is the whale sanctuary.

CT: Ok, the little house was right around this corner here. The little house here, we used to come and the park was back here. It was all kiawe's at that time. There was a small little shack here, where this Filipino guy used to stay. Right in here. I know it was right out this point.

JO: Oh, ok. Over there is where the showers are now in the park.

CT: Yeah, yeah, yeah, yeah. Yeah, I wanted to get a hold of a guy. Yeah, I can see now, right, the outline.

JO: Yup, so this is looking towards Mākena. And this is looking towards Kahului, Wailuku side.

CT: Right, right, right. I never been there for long time.

JO: Well you got to come down then.

CT: When I was working and paving. We did the park there. We did the park. We had that job. So I kind of told the boys what was there before.

JO: And this is where Maui Lu is now.

CT: Yeah.

JO: And there's a river that comes out around this area.

CT: O.k., o.k. And the house must be right in here somewhere. Kenolio house, yeah?

JO: You know, I'm not quite sure.

CT: You know where the Maui Lu? Not the main entrance, the second entrance going to the back.

JO: O.k. Kenolio road?

CT: Yeah, I think so that's what. The olden days, Rice, Harold Rice used to have a lot of pig pens behind there. They used to raise pigs.

JO: And this is our office right now, the whale sanctuary.

CT: Right, right there? Yeah, yeah, right right.

JO: Some people remember this house because it was always used by the federal government for some reason or another.

CT: Yeah, right. Sort of like, you know like a station was there before. Coast guard or something.

JO: And that's the park.

CT: Yeah, that's the park now.

JO: So if the, the house, since we're standing in the park and looking out, the house would be kind of here on the right side.

CT: Right. Yeah, on the right side of the bay. Cause it was real close, real close to the water. What make you guys think about restoring this?

JO: Well, we just feel that it's about time that somebody restore it.

CT: I know it's been a long time, same like La Perouse too but then nobody done nothing, yeah.

JO: That's true. But it's right there in front of our offices and there's been a lot of people from the community that have been trying to do it for many years but right now we're trying to get the permits to rebuild it. So these arial views give you a better idea of the other fishponds in the area, yeah. So ours is right here, the small one and there's the larger one there.

CT: Everything is there still yet?

JO: It, you can see...

CT: the outline?

JO: Yes, you can see this part of the wall of the larger fishpond during low tide. You can see how shallow it is.

CT: Sand would be covering it.

JO: Yeah.

CT: Yeah, I was hoping I could get a hold of Boogie Lu'uwai.

JO: Oh yes!

CT: You know him?

JO: He's my 'ohana actually.

CT: Yeah, you ask him about that. That's where I seen the pictures. He brought them to the Mākena Home Association and I went to his house today. Tried to see if I could see him and talk to him. Maybe he could've come but well, they're working and doing some construction at his place and kind of well, stirred up and I don't know.

JO: Yeah, I've been trying to get in touch with him for a couple of weeks now.

CT: Yeah, he's been pretty busy because, they got a hell of a mess right there now, hell of a mess. How the land has changed and how the owners really claimed. But yeah, I kind of go back and think. I was just talking to my friend up Kula today. I was up visiting him. He's one of the Shim's, the Shim boys. And he started, yeah. And he was telling me yeah, yeah, yeah. And he's older than me. See, he's older than me.

JO: So he used to visit the area also?

CT: Well, he used to be upcountry and then most of his working was up in the national park. He used to work mostly in the national park, yeah. So at that time, I don't think he know, but, you know, from knowing the place and passing 'um, from passing through, he know, he know the location. In fact, he was telling me something about today, besides this. He was telling me something about some land was in La Perouse before and was five acres and belongs to somebody and I couldn't make out who the property was and he said he kind of forgotten and he remembered that there was five acres there. I don't know if it was the Kimohewa's or....cause I remember that the, what's his name? Kimo, James, James had a little piece of property there in La Perouse, see. But very good that you guys are going at it!

JO: Yes, because we're thinking that once the wall is rebuilt, then people will be able to learn more about the culture more and I think there's a huge need for that in Kīhei, yeah.

CT: That's right! You know, today, all the old Hawaiians are gone. The generation, you know, I don't know what happened. I don't know what happened, everybody stopped one time. You know everything stops and all of a sudden, this, this moving, moving and building start coming in and, you know, everything is all money, money, money, money! Everything!

JO: Yeah, well we're trying not to focus our efforts on money, just on the long term.

CT: Yeah, because you know us, you know I, I went through a hell of a lot too. And I work hard and I really worked hard in my lifetime. Young. I went to

Lahainaluna school for one year, 1946. I boarded at Malo dorm, room 5! Never forget that and the old, the old friends and who ever went there after that. You had to work your way through school, boy. You had to work your way through school. Not like today.

JO: What do you think about us rebuilding the fishpond wall?

CT: Well, I think that's a good idea. Because where was it now, somewhere in Honolulu someplace they restored one or where ever's, it was Kaua'i or what, they was restoring one. I was watching the movies and they, when they was working on them. That's a lot of work though. That's a lot of work. That type of work is equipment. Equipment. You got to get the equipment because nobody got the power like before, like the old Hawaiians who carried the rocks out there, you know. And they tell, "oh this is too hard, this is too hard!" Yeah, amazing how some of the walls I see out here, that they built it. They built those walls! And how the heck they got those big rocks out here?

JO: Exactly. That's the same question that we ask about these rocks that are there because some of the rocks that we find are easily 300 pounds.

CT: Easy.

JO: Yeah, so they're really big.

CT: Well maybe, the waters those days, wasn't too far in like today. You know as the years, everything erode, erode, erode and the further go in and the further go in. See, some of the places here, I remember. Guy came here, one surveyor, and told me, "oh you know the rocks was way over here and we got to throw one mark on it." He told me but yeah, you know gradually, the ocean takes over and get eroded and eroded. The same like down Ahihi Bay over there and my dad, you know, the old folks, and they used to look at the road. When you come there, you got to come around like this. But the road was right across before! Look at how much, look at how much it ate! See, so every time it come out, the higher you go.

JO: Yeah.

CT: Yeah, so that's why I think, that's what happened. The ocean was further back before. And they made the pond, they could get in there themselves. Today, everything is moved in and the rocks are out there, see.

JO: Yup, yup.

CT: But that's a good idea! You know, coming back with the culture and let's hope! Let's hope that the younger generation follow up! That's the main thing! That's the main thing. I... I don't know, I, you know, I was a guy and then when I left school and my dad told me, "you don't know why you don't want to go school, huh? Ok, I put you to work." He never give me, two weeks I was home! Boom, I was out, out in the pastures, digging land. And yeah, for about sixty, sixty something, sixty-four dollars, sixty-seven dollars a month. Boy and those were hard times. Those were hard times. I used to

bring my check home and I, all I see every month is fifty cents. Fifty cents out of that envelope. Until I was 21 then I had to hold my whole check.

JO: When you said that you would go down to this area, do you know about what year, what years it was that you would go down?

CT: That's the early fifties, in the early fifties. '53, fifty...yeah, '52, '53.

JO: And do you remember what the wall looked like back then? Like were there any gates?

CT: Yeah, when I seen part of this. Yeah, I can think cause my brother-in-law used to walk around looking for squid with the spear everytime.

JO: Yeah, yeah.

CT: Yeah, yeah, yeah. But I never been there for many years. I don't know how that, how that is. Maybe I think, like you say, with the sand must've covered all the rock but you can see the outline, yeah.

JO: Do you know what other kinds of things, that they used to catch over there?

CT: Nothing. All I know the old folks, the folks over there, had some Filipinos, was further down by Maui Sunset. They used to go out there trap fishing.

JO: Crab fishing?

CT: Trap.

JO: Oh, trap.

CT: Trap, yeah. Traps out there and they go pick 'um up. That area there, yeah.

JO: Cause with this fishpond, right now, there's a, kind of like a break in the wall right in this area.

CT: A break?

JO: So that's probably where the gate was before.

CT: Well, either that or from the surf. You know, the surf breaks right there, you know just knocks the rocks open and then gives the opening.

JO: Here you go, you can see it.

CT: Yeah, yeah, yeah, I see, I see. It could be. Yeah, a little open for the fish come in. Yeah, maybe the gates, yeah. You're right. But at that time, you couldn't see something like this. This is all flat, you know. The stones was all scattered around and the old Filipino guy used to tell us about the, the fishpond.

JO: Do you remember the name of the guy?

CT: Oh man, I don't know if was Shiano or something. I forget his name already. I wonder if my brother-in-law knows his name. We were the only guys that mostly used to stop there all the time take some food for him, yeah.

JO: Yeah, that would be interesting to speak with him or his family. Maybe they have old pictures.

CT: Yeah, I doubt it though. I doubt it. You know these Filipinos, they come from the Philipines. They come on their own and come here to work. And as long as they got some place to stay, they'll work for somebody. I don't know how he got there though. Yeah.

JO: So you would mainly just come to this area, just too..

CT: Well, we used to have our lunch hour, lunch break and we'd come there all the time. Not to say the weekends, or what, we'd go out there special, yeah? No. Just on our lunch breaks, we used to stop by.

JO: And you said the Koa House was still there?

CT: Again, the Koa House, the Koa House was still there, yet.

JO: Do you remember where on this picture it would've been?

CT: It got to be on this, got to be on this side here. Got to be on this side here.

JO: On the left side by our building?

CT: Well if you're looking, if you're looking at this. If this is the road, yeah.

JO: Then if you're standing here looking out there.

CT: Yeah, yeah, yeah.

JO: On the right side by our office. Yeah cause, we were trying to look at the pictures of the Koa House and figure out where it was standing but we're not quite sure.

CT: Yeah, yeah, yeah. I think the one Boogie got is a little bit more updated. I think. This is an older one. I forget how the thing was with the trees. Yeah, you try ask him. Try ask him. Call him, tell him that Sonny said, just tell him that Sunny Vick said that he remembers that you brought the pictures to the meeting. I think he got 'um. I think he got them all because what he did, he had them, you know, blown up, yeah. He had them blown up and so he brought them.

JO: O.k.

CT: When you were talking about that, I thought was ma uka the road. We did, we did make a parking lot for a church. I think it's kind of a stone church, I think. It's a stone church. Rock church in the kiawes way up. They all, they,

what you call, today, I think they all working in there and everything probably got demolished I think.

JO: Yeah.

CT: But there was a, there was a parking lot, I mean a church in there before when we put the parking lot for them. I had this guy by the name of Rudy Kamali'i. And he was my estimator and he was a PR and he belonged to lot of Hawaiian organizations and that's how we got to help the church. See, that's how we got to help the church.

JO: I know that the David Malo church was back in that area.

CT: Well, could be. Could be.

JO: And now, I think the church's name is Trinity by the Sea or Holy Trinity Church.

CT: Something now, yeah, yeah. But that's a, I think that's a new one, yeah? Yeah, yeah, cause the old one was back. The one that Trinity by the Sea, we also did that parking lot but it's further down, it's further down, across that condos on the right hand side now. Yeah. So you live in the area?

JO: I live up Pukalani now.

CT: Oh you live in Pukalani but you born and raised in Kihei?

JO: No, O'ahu and my family's from Ke'anae and Kahakuloa.

CT: And the last name is what?

JO: Oliveira and my 'ohana's Nākoa. Nākoa 'ohana.

CT: What's his name is Nākoa, used to work for Budweiser before? No?

JO: Oh, yeah. My cousin Nohea's husband.

CT: Dan, yeah?

JO: No. He is a young guy though.

CT: Yeah, he's kind of chubby, yeah, yeah. I think so Dan Nākoa yeah? And he has one daughter, working in the airlines.

JO: Oh maybe this is somebody different.

CT: He was raised Market Street.

JO: Well, our family is very big!

CT: Oh yeah, just like our family. My parents side was nine brothers and two sisters.

JO: Oh boy!

CT: Yeah but see, it was the Moniz, Tavares. Was the Moniz, Tavares. I got my grandparents pictures upstairs and oh boy. Great time. My mother was Hawaiian/Chinese. He was hanaied by the Kauluwehi's in Happy Valley, yeah. That's the hippy place. By finding out, we tried to claim for Hawaiian Homes but we didn't have 50%.

JO: You didn't have?

CT: Yeah, we don't have. We have 1/4. But for the years, all the years back, way back, we applied, we applied. I remember the folks came and signed me up. Rubin Goodness. They all was from Kanaio before. He was one of the Senators. Then came along Chick Labadore, passed away. Then came Danny Kehau. He passed away. Then Abe Aiona. Don't worry! Don't worry! No, no, no, no, no. No can. You got to get, you got to get half Hawaiian. But there's not too many. There's not too many!

JO: That's what I'm finding out!

CT: Yeah, not too many because I tell you. Everything is all chop suey now!

JO: I know my sister and I have about 48% Hawaiian or something like that and we don't qualify!

CT: Oh yeah, I talked to, what's his name, Charlie Ota. One time I read his article in the paper and it said well, there was some parts besides, well you know what we're talking about here. This is out of line. But there was something that I didn't like about the Hawaiian Homes that you can sell. If you didn't want. If you were picked for your lot and later on you didn't want 'um, they can sell it. I don't agree with that. I don't agree with that. I think if you don't want your lot, the thing is supposed to go back and give the next man a chance, you know, who's on the list. Not to sell it. No because I was, the guy was right here and told me, "yeah", they offered him 21,000. I said, "that's not right". He was right here and he told me. I said, "nah this was wrong" so it was bothering me. So I called up Charlie Ota and I told him. But you can sell it for the cost of what you've been doing to the lot. Maybe you had to hire bulldozer and clean and the cost was 10,000 or whatever for get the lot clean and all that. You can sell it for that amount to get your money back but not to say that, you know. You got the lot and now that you no want 'um because you got your house or what and then you turn around and sell the lot. So the guy was right here sitting down and he told me "no". I no beleive that. So when I told Charlie Ota he said, "you got to sell to somebody with half Hawaiian". That kind of, oh man for all the years. I was young. I was I think, I was only 16 years old when I applied. Yeah, I was only 16 years old.

JO: Yup, you got to get your papers in early.

CT: Yeah, you got to get 50%.

JO: Then when you retire, then maybe you get your land!

CT: Yeah, boy. Yeah, so I hope everything go well with you guys on this and try. Because you know us, our age is up there already. So by the time we wait to see something like this, we all gone already.

JO: Well I hope you have a chance to come and visit us down there one of these days.

CT: Yeah, I'll stop by. I'll stop by.

JO: Yeah it's right down the road!

CT: Yeah, I pass there all the time. Yeah, I pass there all the time.

JO: So what I'm going to do with the tape that I recorded is...I'm going to type up everything that we talked about, and then using the information from our conversation, then I'm going to put it in our report. And then if I can get permission from you to say whether or not that's ok that I use the information that I gathered.

CT: Yeah, after you get everything.

JO: Yeah, I'll show you it all typed up and make sure it's ok with you.

CT: Yeah, yeah that's ok with me.

JO: Ok, that sounds good. Thank you so much for your time.

Appendix 2

Oral History Interview Photos

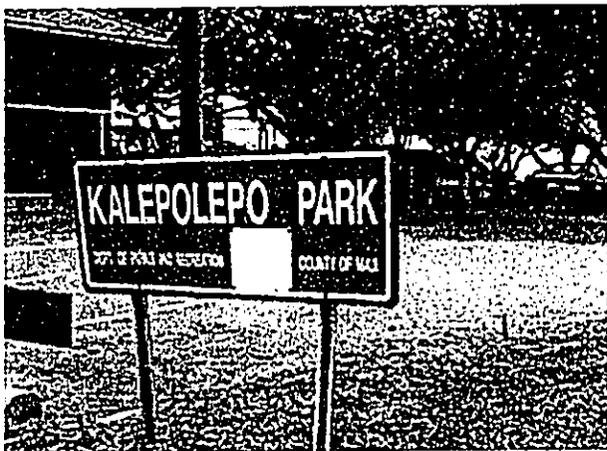
RECEIVED AS FOLLOWS



Headquarters of the Hawaiian Islands Humpback Whale National Marine Sanctuary.



Headquarters driveway of the Hawaiian Islands Humpback Whale National Marine Sanctuary.



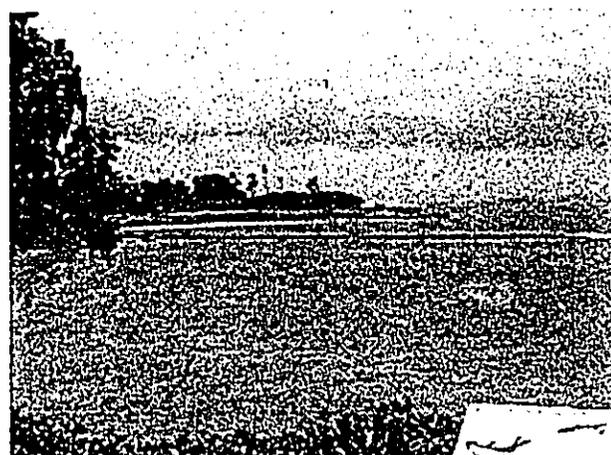
Entrance to Kalepolepo Park.



Kalepolepo Park grounds.



Menehune Shores Condominium .



Southern view of Kō'ie'ie Loko I'a.

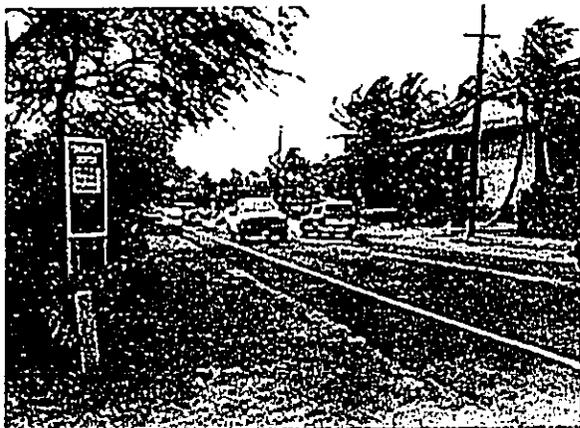
RECEIVED AS FOLLOWS



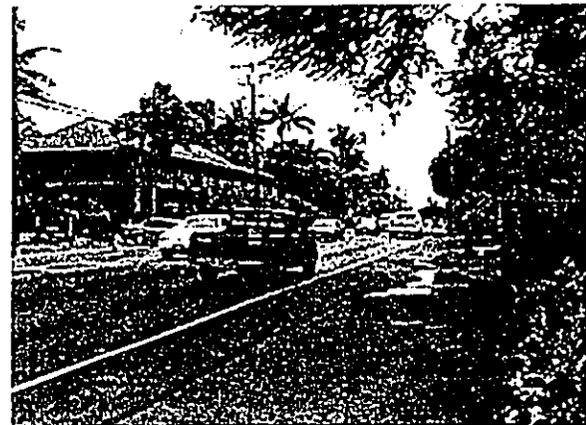
North view of Kō'ie'ie Loko l'a.



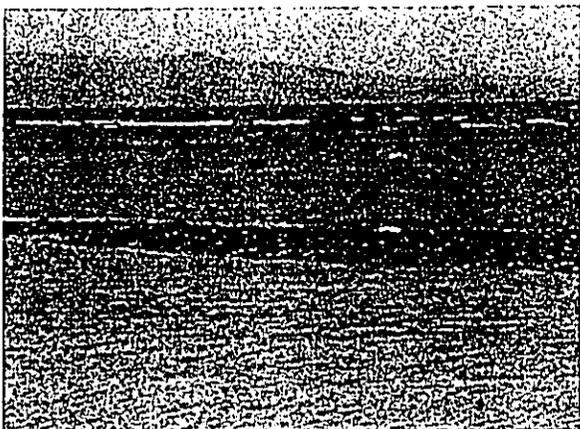
Northern end of Kō'ie'ie Loko l'a's wall.



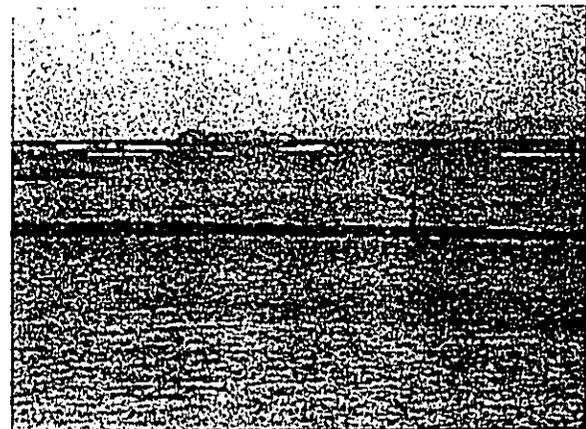
South Kīhei Road's northern view.



South Kīhei Road's southern view.

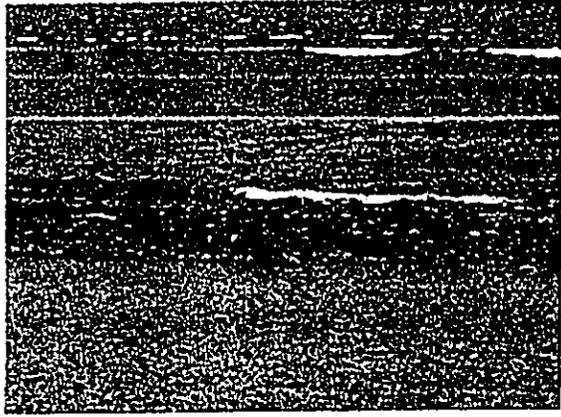


Southwest end of fishpond wall.



Southern end of fishpond wall.

RECEIVED AS FOLLOWS

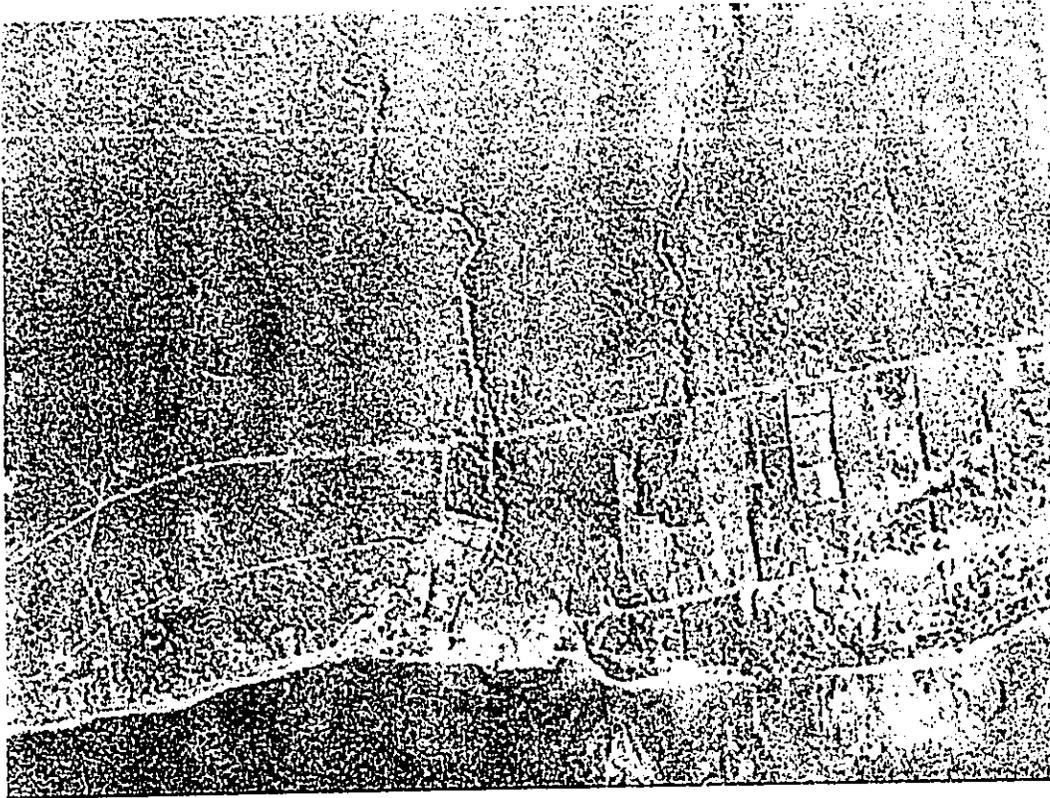


Kō'ie'ie Loko I'a's wall.

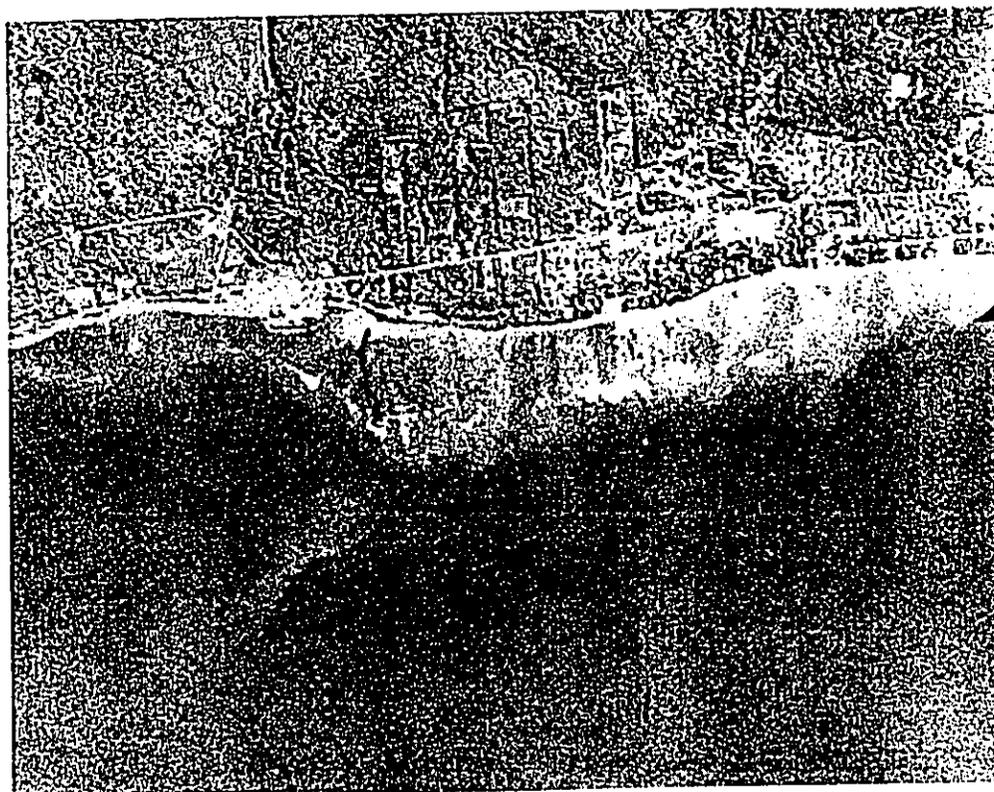


Kō'ie'ie Loko I'a's north wall.

RECEIVED AS FOLLOWS

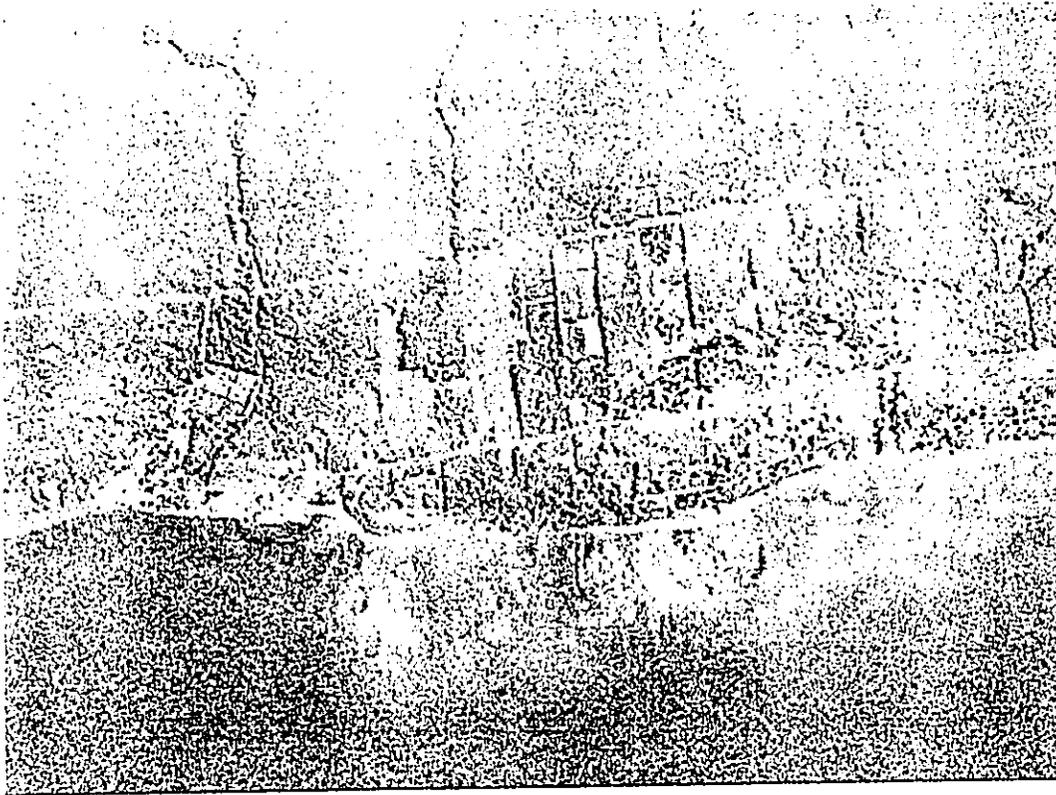


Aerial map closeup from University of Hawai'i at Mānoa
Library's Map Collection (EKN.1CC.11)



Aerial map from University of Hawai'i at Mānoa
Library's Map Collection (EKN.1CC.11)

RECEIVED AS FOLLOWS



Aerial map from University of Hawai'i at Mānoa
Library's Map Collection (GSMF 1.28.51)



Koa House

Appendix D

Agency and Pre-consultation Letters



October 11, 2002

Sheila Ople
'Ao'ao O Na Loko l'a O Maui
PMB 110
P.O. Box 959
Kihei, HI 96753

Dear Sheila,

Thank you for your interest in my campaign for Governor.

I read with great interest about your efforts to revitalize and preserve the Ko'ie'ie Loko l'a Fish Pond located in South Maui. I applaud your efforts, and the efforts of others to revitalize and maintain this uniquely Hawaiian form of aquaculture. Your efforts are benefiting the environment and the Hawaiian Culture and I commend you for such efforts.

Best wishes for continued success.

Sincerely,

A handwritten signature in black ink, appearing to read "Linda Lingle". The signature is fluid and cursive, with the first name "Linda" and last name "Lingle" clearly distinguishable.

Linda Lingle

DANIEL K. AKAKA
HAWAII

WASHINGTON OFFICE
141 HART SENATE OFFICE BUILDING
WASHINGTON, DC 20510
TELEPHONE: (202) 724-6361

HONOLULU OFFICE
3106 PRINCE JONAH KUMIO
KALANIANADLE FEDERAL BUILDING
P.O. Box 50144
HONOLULU, HI 96850
TELEPHONE: (808) 522-8970

United States Senate
WASHINGTON, DC 20510-1103

November 6, 2001

MEMBER
COMMITTEES
ARMED SERVICES
ENERGY AND NATURAL RESOURCES
GOVERNMENTAL AFFAIRS
INDIAN AFFAIRS
VETERANS' AFFAIRS
SELECT COMMITTEE ON ETHICS

Ms. Sheila Ople
Secretary
'Ao'ao O Na Loko I'a O Maui
PMB 110, P.O. Box 959
Kihei, HI 96753

Dear Ms. Ople:

Thank you for your newsletter providing an update on your organization's accomplishments and plans.

Please keep me informed on your group's activities. I hope my earlier efforts in bringing your group's requests to the attention of the Department of Land and Natural Resources were of help to you.

Please let me know whenever I may be of service to you.

Aloha pumehana,



DANIEL K. AKAKA
U.S. Senator

MINORITY WHIP-AT LARGE

DEMOCRATIC CAUCUS
EDUCATION TASK FORCE
Co-CHAIR

COMMITTEES
EDUCATION AND THE
WORKFORCE

SUBCOMMITTEES
21st CENTURY COMPETITIVENESS
RANKING MEMBER

WORKFORCE PROTECTION

GOVERNMENT REFORM

SUBCOMMITTEES
ENERGY POLICY, NATURAL RESOURCES
AND REGULATORY AFFAIRS

TECHNOLOGY AND PROCUREMENT POLICY



Patsy T. Mink
Congress of the United States
2nd District, Hawaii

WASHINGTON, DC OFFICE
2210 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-1102
PHONE: (202) 225-4906
FAX: (202) 225-4987
<http://www.house.gov/wrltmsp/>
WEB: <http://www.house.gov/mink>

HAWAII OFFICE:
5104 PRINCE KUHIO FEDERAL BUILDING
HONOLULU, HI 96850-4977
PHONE: (808) 541-1985
FAX: (808) 538-0233

BIG ISLAND: 935-3756
MAUI: 242-1818
KAUAI: 245-1951

Message from Congresswoman Patsy T. Mink
in Support of the Efforts of
'Ao'ao O Nā Loko I'a O Maui
to Restore and Preserve Kō'ie'ie Loko I'a

May 2002

I take this opportunity to express my strong support for the mission of 'Ao'ao O Nā Loko I'a O Maui (Association of the Fishponds of Maui) to restore and preserve Kō'ie'ie Loko I'a, one of only seven traditional Hawaiian fishponds listed on both the State and National Register of Historic Places and the only one on the island of Maui.

Through the commitment of the Members of 'Ao'ao O Nā Loko I'a O Maui, Kō'ie'ie Loko I'a will be restored to its traditional form and preserved for future generations to experience its historical, cultural, archaeological significance. Kō'ie'ie Loko I'a is a great educational and recreational resource. It speaks to us from the past of the ancient Hawaiians whose ingenuity and skill created this marvel.

I salute the Board of Directors and all the Members of 'Ao'ao O Nā Loko I'a O Maui for dedicating yourselves to preserving this cultural treasure of ancient Hawaii. By giving of your time and talents so generously, you exemplify the true spirit of aloha.

PATSY T. MINK
Member of Congress

Tuesday, January 21, 2003

Aloha mai,

On behalf of the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS), I would like to acknowledge our support for 'Ao'ao O Nā Loko I'a O Maui (Association of the Fishponds of Maui). We wholeheartedly endorse their mission statement and the revitalization of the fishpond for Hawaiian cultural practices and educational purposes.

Since 1999, the sanctuary has worked closely with the Association and has awarded them over \$6,500 in contractual works for their educational programs and outreach activities. All activities were conducted at the headquarters site of the HIHWNMS in Kihei, Maui. On July 11, 2002, the sanctuary and the association signed a Memorandum of Understanding, which solidified this cooperative and beneficial partnership between our two organizations.

It is impossible for me to detail the numerous benefits that the Association has bestowed on the sanctuary and the Kihei community. They have increasingly raised the level of their knowledge, expertise and professionalism. Their collaboration with the sanctuary has increased as they participate in our school visits by taking the lead on a learning segment devoted to the fishpond and Native Hawaiian cultural. In addition, they continue to support the community through their outreach efforts at various events such as the East Maui Taro Festival. There is not an organization on Maui that I hold in higher esteem.

Furthermore, the sanctuary has worked cooperatively with Mr. Kimokeo Kapahulehua, president of the association, on a variety of other projects including a Native Hawaiian plants project that resulted in the removal of alien species and vegetation of native plants on our Kihei site. As a result of this cooperative program and other community activities, Mr. Kapahulehua was nominated by the sanctuary and received the 1999 Walter B. Jones Memorial and NOAA Excellence Awards for Coastal and Ocean Resources Management, excellence in Promoting Diversity in Coastal or Ocean Resource Management.

If I can be of any assistance, please feel free to call me at 1-800-831-4888.

'O au me ke aloha,


Claire Cappelle
Maui County Liaison

Headquarters
Maui Office
726 South Kihei Road
Kihei, Hawaii 96753
Toll Free (800) 831-4888
Voice (808) 879-2818
Fax (808) 874-3815
humpbackwhale@noaa.gov

O'ahu Office
6700 Kalaniana'ole Highway
Suite 104
Honolulu, Hawaii 96825
Voice (808) 397-2651
Fax (808) 397-2650

Kauai Office
Kukui Grove Executive Center
4370 Kukui Grove Street
Suite 206
Lihue, Hawaii 96766
Voice (808) 246-2860
Fax (808) 246-2862

State of Hawaii
Department of Land and
Natural Resources
1151 Punchbowl Street
Suite 330
Honolulu, Hawaii 96813
Voice (808) 587-0106
Fax (808) 587-0115



NATIONAL MARINE
SANCTUARIES



Hawaiian
Islands
Humpback
Whale
National
Marine
Sanctuary



UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary of Commerce
for Oceans and Atmosphere
Washington, D.C. 20230

Mr. Kimokeo Kapahulehua
c/o 726 S. Kihei Road
Kihei, HI 96753

Dear Kimokeo:

Thank you for the great welcome I received during my recent visit to the Hawaiian Islands Humpback Whale National Marine Sanctuary and the Kalepolepo fish pond. I was honored to be welcomed with the traditional song and greeting. I appreciated hearing about the cultural importance of fish ponds in Hawaii and your efforts to restore many of these ponds. I am always pleased to learn of good examples of where NOAA employees are working in partnership with other organizations in the community. Partnerships are important to NOAA, and it is rewarding to see that the Hawaiian Islands Humpback Whale National Marine Sanctuary and the Kalepolepo fish pond restoration benefit each organizations mission. Again, thank you for taking the time to meet with me and providing me with an informative briefing.

Sincerely,

A handwritten signature in black ink, reading "Conrad C. Lautenbacher, Jr." with a stylized flourish at the end.

Conrad C. Lautenbacher, Jr.
Vice Admiral, U.S. Navy (Ret.)
Under Secretary of Commerce for
Oceans and Atmosphere



LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
801 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

PETER T. YOUNG, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTY
ERNEST Y. W. LAU

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

March 3, 2003

Theresa Donham
Akahele Archaeology
30 Laumacwa Street
Kihei, Hawai'i, 96753

LOG NO: 31794
DOC NO: 0302MK15

Dear Ms. Donham,

SUBJECT: Historic Preservation Review - 6E-42 - Archaeological Inventory Survey
Ko'ie'ie Fishpond, prepared for 'Ao' Ao O Na Loko I'a O Maui
Ka'ono'ulu Ahupua'a, Makawao District, Maui
TMK: (2) 3-9-01

Thank you for the opportunity to review this report which our staff received on January 9, 2003 (Donham 2003, *Underwater Archaeological Inventory Survey of Ko'ie'ie Fishpond [State and National Register Site No. 50-50-09-1288] Ka'ono'ulu Ahupua'a, Kula District, Kihei, Maui [TMK (2)-3-9-01]... Akahele Archaeology ms*). The inventory survey has been conducted as a preliminary step to restoration efforts for the fishpond to fulfill requirements of SIIPD.

The background section acceptably establishes the ahupua'a settlement pattern and predicts the likely site pattern in the project area. The background research conducted as part of this project presents an extensive and detailed examination of the project area and its environs. In addition, the incorporation of a section on "Research Problems and Approach" is especially useful given the nature of the project, and that the data has not been examined in this light previously.

The survey has adequately covered the project area documenting this known historic property. Systematic underwater transects were conducted intensively (5.0 m intervals) within the fishpond, and within a 50 m radius outside the pond walls. Additional reconnaissance level transects were executed to a distance of between 100 to 150 meters beyond the systematically covered area. Limited subsurface probing was conducted in the beach area adjacent and inland of the north wall of the pond to identify if buried portions of the pond wall existed.

Submerged structural features identified included both the existing fishpond wall, and a discontinuous alignment of boulders that appears to represent an earlier episode of construction. The alignment is visible on the aerial photo (*Figure 14*) and suggests a much larger, previous configuration. It also suggests that much of the beach and property immediately inland of both the current and previous configurations has resulted from infilling and siltation episodes. Artifacts were observed under the present wall (identified as metal but not examined) and within and outside of the present wall (steel drums, cart wheels, trailer,

concrete posts etc.). One artifact of note (Acc. # 5) appears to be a large kedge type anchor with chain still attached. While precise age has not been determined, comparisons with existing anchors exhibiting similar attributes date to the whaling era.

continue 002

Theresa Donham
Page 2

We concur with the significance assessment that Site 50-50-09-1288 is significant under multiple criteria "A", "B", "C", and "D", and that, with the current level of inventory work, controlled restoration of the fishpond will both enhance the pond integrity and provide a remarkable educational opportunity.

We also concur with mitigation recommendations as stated on page 51 and summarized here:

1. Restoration of the walls should, when possible, make use of stones from the existing wall and rubble, and that all imported materials should resemble these original stones.
2. No stones shall be collected from adjacent Waiohuli fishpond or from the boulder alignment to the north identified during this survey.
3. Portable artifacts may be removed with adequate documentation prior to removal.
4. All nineteenth and twentieth century artifacts may be left in place, awaiting "coordinated conservation" efforts.
5. On-call and periodic monitoring should be conducted during all phases of reconstruction, to facilitate the work, document newly discovered finds, provide additional interpretation, and assure that the previous four conditions are met.
6. Further inventory level work is appropriate for the general area of the Ko'ie'ie fishpond, and areas immediately north of the existing pond. Identification of siltation events and examination of the possible platform on County property is included in these recommendations. The inland portions of the project area warrant subsurface testing.

We find this report to be acceptable. The next steps in the process will be the submission of an acceptable, detailed restoration plan and an acceptable monitoring plan. We await (1) a restoration plan that contains detailed information on the materials and methods of restoration, in accordance with applicable county, state and federal laws, and (2) a monitoring plan outlining the procedures to be followed for on-call and periodic monitoring, as well as procedures for documentation of new finds. As soon as the restoration and monitoring plans are accepted, the long-awaited restoration of the Ko'ie'ie Fishpond may commence. As always, if you disagree with our comments or have questions, please contact Dr. Melissa Kirkendall (Maui/Lana'i SHPD 243-5169) as soon as possible to resolve these concerns.

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

MK:jen

c: Michael Folcy, Director, Department of Planning, County of Maui, FAX 270-7634
Bert Ratte, County of Maui, Land Use and Codes, FAX 270-7972
Glen Ueno, County of Maui, Land Use and Codes, FAX 270-7972

CONTRIBUTORS



Kihei Canoe Club



Office of Hawaiian Affairs



United States Fish and Wildlife Service



Queen Lili'uokalani Children's Center



County of Maui Planning Division



United States Geological Survey



Alexander & Baldwin Properties, Inc.



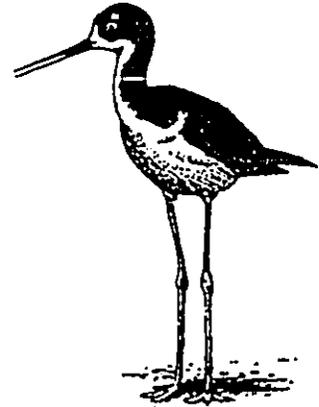
University of Hawaii



Tri-Isle Resource Conservation and Development Council

KOKUA KEALIA

PO Box 1131, Kihei HI 96753
(808) 879-5505



March 30, 2001

To whom it may concern,

We are writing to vouch for the superb leadership abilities of Leonard "Bully" Kapahulehua. Bully was the driving force behind the coastal restoration project "Kokua Kealia" and single-handedly raised a small volunteer effort into a full scale island wide effort that planted thousands of plants and exposed over 1000 youth and adults to the cultural and biological heritage of our islands. Today, Kokua Kealia stands as the standard by which other restoration efforts are gauged, and provides a model for others to follow.

Kokua Kealia would not have experienced the success it had without Bully. He was especially good at bringing a broad base of the community together to work towards a common goal. We are certain that Bully could lead the restoration effort of the fishpond at Kalepolepo as he did at Kealia.

Aloha,

Forest Starr

Project Director

Kim Martz

Restoration Ecologist

PHONE (808) 594-1888

FAX (808) 594-1865



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

September 3, 2002

Ms. Sheila Ople
'Ao'ao O Na Loko I'a O Maui
P O Box 959
Kihei, HI 96753

Dear Ms. Ople

RE: LETTER OF SUPPORT

In response to your letter asking support of the Office of Hawaiian Affairs (OHA), we welcome every opportunity to encourage the restoration, revitalization and sound management of Hawaiian fishponds.

OHA has and continues to advocate for a comprehensive, coordinated commitment from both the public and private sectors to assist fishpond owners and caretakers to rejuvenate historic Hawaiian fishponds and fishpond-management technology as a cultural, educational and economic opportunity for contemporary Hawaii.

OHA relies on your assurances that all required permits and laws will be adhered to. We reserve the right to withdraw our support at any time.

Respectfully,

A handwritten signature in cursive script, appearing to read "Jalna S. Keala".

Jalna S. Keala
Acting Director
Hawaiian Rights Division



STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
HOUSING AND COMMUNITY DEVELOPMENT CORPORATION OF HAWAII

P.O. BOX 885
WAILUKU, HI 96793
PH (808) 243-5001 • FAX (808) 243-5147

SHARYN MIYASHIRO
EXECUTIVE DIRECTOR

ROBERT J. HALL
EXECUTIVE ASSISTANT

July 31, 2002

Mr. Kimokeo Kapahulehua
Palekikena
'Ao`ao O Na Loki I`a O Maui
PMB 110
P.O. Box 959
Kihei, Maui, Hawaii 96753

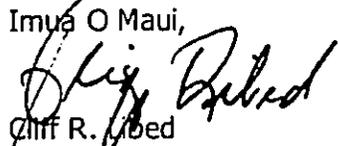
Aloha Kimokeo,

This letter will serve as an endorsement to your efforts to revitalize the ancient fishponds here on Maui. As discussed, our residents here would be interested in learning more about your project. As you know over sixty five percent of our population living in our public housing projects have aboriginal native ancestry.

We need to continue to educate our communities about the history of Hawaiian and its culture. Your project will continue the legacy for future generations.

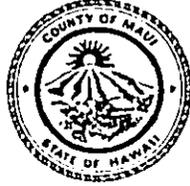
We are in support of your efforts and rest assure that we will provide assistance to you in continuing the work you have started. Please call me should you need for us to help testify on your behalf.

Imua O Maui,


Cliff R. Bed
PHM

CRL/jf

ALAN M. ARAKAWA
Mayor



GLENN T. CORREA
Director

JOHN L. BUCK III
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

1580-C Kaahumanu Avenue, Wailuku, Hawaii 96793

January 23, 2003

Sheryl Sterling
% Hawaii Tourism Authority

Re: 'Ao'ao O Na Loki I' a O Maui
Maui Fish Pond Project

Aloha Sheryl;

I am writing on behalf of the Maui Fish Pond Project. Until recently, I was the South District Parks Supervisor. We have a park which fronts the Fish Pond Project. I have played an active role with this project because of the location of the project.

The project has established an excellent working relationship, between the County Parks Department, U. S. Humpback Marine Sanctuary and the community. Because of the fish pond project and the Sanctuary park usage is up. The park has seen an increase in school groups also.

Tourism on Maui will benefit with the project. The project will provide a historical background of the region and highlight some of the cultural aspects of the project. When the pond is completed and fully operational, visitors after their visit to the park and project, come away with a new sense and understanding of the old ways in Hawaii.

I hope you will consider 'Ao'ao O Na Loki I' O Maui application for their grant request, to assist with the continuation and completion of the project.

If you have any additional questions or seek additional information, please feel free to contact me at 808-270-7386.

Respectfully,

A handwritten signature in black ink, appearing to read "John L. Buck III", is written over the typed name.

John L. Buck III

OFFICE OF THE MAYOR
CITY AND COUNTY OF HONOLULU

530 SOUTH KING STREET, ROOM 300 • HONOLULU, HAWAII 96813
TELEPHONE (808) 523-4141 • FAX (808) 527-5552 • INTERNET www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR



November 27, 2001

Ms. Sheila Ople, Secretary
`Ao`ao O Na Loko I`a O Maui
PMB 110
P.O. Box 959
Kihei, Hawaii 96813

Aloha Ms. Ople:

I applaud and support your group's dedication and accomplishments in restoring and revitalizing the Ko`ie`ie Loko I`a in Kihei, Maui. With over 450 fishponds in the islands, your group's efforts are a step in the right direction.

Restoration of these ancient and historically significant structures are important cultural links to a past, which embodies the precepts of the Ahupua`a and sustainability in a community. These fishponds can become teaching tools for our young people, as well as provide subsistence and meaningful employment for others.

Thank you for taking the time to tell me of your work. It is a labor-intensive and time-consuming task; but, one which can reap many rewards.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeremy Harris".

JEREMY HARRIS
Mayor

JH:lc
[9001]



KIHEI COMMUNITY ASSOCIATION

P.O. Box 662, Kihei, HI 96758

Phone/Fax: (808) 879-6390

E-Mail: kca@southmaui.org

Kimokeo Kapahulehua, President
Association of the Fishponds of Maui
PMB 110, PO Box 959
Kihei, HI 96753
June 05, 2003

Dear Kimokeo Kapahulehua,

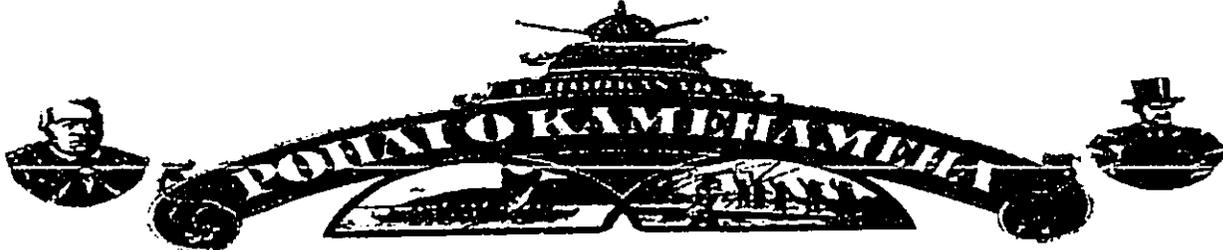
The Board of Directors of the Kihei Community Association fully endorses and supports the Association of the Fishponds of Maui in their endeavor to revitalize Ko'le'le Loko l'a located adjacent to Kalepolepo Park. This revitalization effort will provide a major contribution to the community by preserving this cultural monument.

Sincerely,

A handwritten signature in cursive script, appearing to read 'George A. Rixey'.

George A. Rixey, President

Working together to shape our community's future



Royal Order of Kamehameha I
Heiau O Kahekili IV
Moku O Maui, Kingdom of Hawai'i

'Ao'ao O Na Loko I'a O Maui
PMB 110
PO Box 959
Kihei, HI 96753

E aloha kakou

The Kahekili Chapter of the Royal Order of Kamehameha I is pleased and honored to forward this *Letter of Support* in your effort to obtain the necessary permits towards the revitalization of the fishponds.

As an organization of Hawaiian men, the Kahekili Chapter of the Royal Order of Kamehameha I is devoted to supporting enterprises that preserve and perpetuate the Hawaiian culture. Therefore:

To all who shall see these presents, Greetings
Be it known by this letter that the Kahekili Chapter
Of The Royal Order of Kamehameha I, Moku O Maui
on this date, July 20, 2002, do hereby support the efforts
of 'Ao'ao O Na Loko I'a O Maui to revitalize the fishponds
situated in Kihei, Moku O Maui.

Ho'omaika'i ana 'Ao'ao O Na Loko I'a O Maui!

O wau iho no me kealoha

By direction


Ali'i Sir Clarence Solomon CK
Kaka'olelo, Kahekili Chapter IV
Royal Order of Kamehameha I



October 31, 2002

Mr. Kimokeo Kapahulehua
President
'Ao'ao O Nā Loko I'a O Maui
PMB 110
P.O. Box 959
Kīhei, Hawai'i 96753

Dear Mr. Kapahulehua:

The Oceanic Institute appreciates the opportunity we had to recently host you and your staff at Makapu'u. We enjoyed discussing your vision for revitalizing Kō'ie'ie Loko I'a, the ancient royal Hawaiian fishpond located in Kalepolepo, Kīhei, Maui.

You and your team have defined a great vision with impressive objectives. We agree that revitalizing the pond will result in an important education asset for the community. We believe that fishponds such as yours can be restored and placed into operation in an environmentally responsible and sustainable manner. In our brief discussions, it was evident to us that you genuinely care and have a sincere interest in serving as stewards for your culturally important project.

We wish you the greatest success as you proceed with this project.

Sincerely,

A handwritten signature in cursive script that reads "Thomas E. Farewell".

Thomas E. Farewell, Ph.D.
President and Chief Executive Officer

Protect
Ocean and You
Protect Yourself

JEAN-MICHEL COUSTEAU'S

OCEAN
FUTURES
SOCIETY

February 18, 2003

Kimokeo Kapahulehua
Pelekikena
'Ao'ao O Na Loko I'a O Maui
PMB 110
PO Box 959
Kihei, Hawai'i 96753

Dear Mr. Kapahulehua:

On behalf of Ocean Futures, Nan and I are happy to take this opportunity to express our strong support for the mission of 'Ao'ao O Na Loko I'a O Maui (Association of the Fishponds of Maui). Through the commitment of the members of the Association the fishpond Ko'ie'ie Loko I'a will be restored to its traditional form and preserved for future generations to experience its cultural, historical and archaeological significance. Ko'ie'ie Loko I'a is a great educational and recreational resource, it speaks to us from the past of the ancient Hawaiians whose ingenuity, skill and great aquaculture and agricultural skills created this ancient marvel of engineering.

I would like to repeat a statement I made when visiting the site of this ancient fishpond:

"Hawaiian fishponds symbolize one of the richest cultures on the planet and one most linked to the sea. Historically fishponds allowed ancient Hawaiians to survive. Now, at a time when we see a renaissance of appreciation for such traditions, it is of the utmost importance to do everything to preserve and honor these fishponds as a reflection of Hawaiian, and human, culture."

Best regards,



Jean-Michel Cousteau
President

b1

OCEAN FUTURES SOCIETY

325 Chapala Street
Santa Barbara,
California 93101 USA

TEL 805.899.8899
WEB www.oceanfutures.org

OCEAN FUTURES EUROPE

13 Rue Tocqueville
75017 Paris FRANCE

EMAIL ofeurope@aol.com

Kihei Beach Condominium

Association of Apartment Owners

36 SOUTH KIHEI ROAD • KIHEI, MAUI, HAWAII 96753
(808) 879-6660

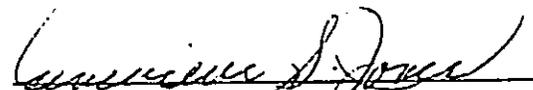


'Ao'Ao O Nā Loko I'a O Maui
(Association of the Fishponds of Maui)
PMB 110, Post Office Box 959
Kihei, Hawai'i 96753

Aloha,

On behalf of the Board of Directors and the Home Owners of Kihei Beach Condominium, I would like to acknowledge our support for 'Ao'Ao O Nā Loko I'a O Maui (Association of the Fishponds of Maui). We wholeheartedly endorse their mission statement and the revitalization of Kō'ie'ie Loko I'a for Hawaiian cultural practices and educational Purposes.

Sincerely,


Genevieve S. Jones, Secretary



Kauhale Makai

Village by the Sea

938 S. KIHEI ROAD
KIHEI, MAUI, HAWAII 96753
(808) 879-8888

January 18, 2002

'Ao 'Ao O Na Loko I'a O Maui
P. O. Box 959
Kihei Hawaii 96753

Aloha,

We at Kauhale Makai wish to support 'Ao' Ao O Na Loko I'a O Maui in the restoration of the fishponds.

We think this would be an excellent opportunity to bring the community together along with the children and give them first hand knowledge about Native Hawaiian culture along with ocean stewardship.

We also know this will have a positive effect on the seaweed that is now washing ashore. This barrier will calm wave action and place less seaweed on the beach making it more valuable for recreation use. We also think with the adding of fish that feed on seaweed will control the growth of seaweed and feed the fish.

In summing up this is a win wish situation.

Lots of Aloha

LeRoy Scharber



December 20, 2002

1000 AAA Drive
Heathrow, FL 32746-5063
407/444-7000
Fax 407/444-7380

Mr. Kimokeo Kapahulehua
PO Box 959 PMB 110
Kihei, HI 96753

Re: Koieie Loko I'a , Kihei, Hawaii
Case No: 2002-27793

Dear Mr. Kapahulehua:

We received your comments about the royal fishpond Koieie Loko I'a and we appreciate your making us aware of your findings. Your comments have been referred to the Editorial Department for their information and review.

Mr. Kapahulehua, thank you for writing.

Sincerely,

A handwritten signature in black ink, appearing to read 'Pat Tichonoff', written in a cursive style.

Pat Tichonoff, Coordinator
AAA National Member Relations
(407) 444-8397 Phone
(407) 444-8416 FAX
ptichonoff@national.aaa.com

WAILEA 670 ASSOCIATES

SUBJECT: 'Ao 'ao O Na Loko I'a O Maui (Association of the Fish Ponds of Maui)

To Whom It May Concern:

The Association of the Fish Ponds of Maui is playing a very important role in the preservation of traditional Hawaiian culture and life style in Maui County. The ongoing work the association is doing to preserve and improve the fish ponds will help preserve the cultural identity of Maui as well as create lessons from which western culture can learn and benefit.

The Wailea 670 project has supported financially the association and will continue to do so in order to assist this dedicated group of individuals in preserving and improving the legacy of Hawaiian culture for the world to see and appreciate. I urge you to support this dedicated group of individuals and facilitate whenever possible the approval of plans and permits to make the preservation of the fish ponds in Maui County and possibly the state of Hawaii a reality for past current and all generations to come.

Sincerely,



Charles Jencks
Owners' Representative
Wailea 670 Associates

89 Ohukai Road
Kihei, HI 96753
December 11, 2001

'Ao' Ao O Na Loko I'a O Maui
726 S. Kihei Road
Kihei, HI 96753

Dear 'Ao' Ao O Na Loko I'a O Maui:

I have lived continuously in Kihei for the past 48 years, about a mile from Kalepolepo Beach Park and Ko'ie'ie Fishpond. I am writing this letter of support for your organization's efforts to restore the fishpond and preserve the cultural heritage for future generations to learn and enjoy the bounties of the fishpond.

My family, grandchildren and great-grand children use the area for recreation, limu, fish and octopus gathering. The Humpback Whale Sanctuary serves the educational needs about the marine environment.

Aloha,


Isaac B. Feig



The National Foundation for Pacific Island Americans

THE PACIFIC AMERICAN FOUNDATION

David E. K. Cooper
President/CEO

August 2, 2001

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Ms. Karen Masaki
Culture & Arts Officer
Hawaii Community foundation
Special Initiatives Cultural Grant Making program
900 Fort Street Mall, Suite 1300
Honolulu, Hawaii 96813

Dear Ms. Masaki:

I am writing to extend our support for the proposed grant submitted by the "Ao' Ao O Na Loko I'a O Maui" for the restoration of Ko'ie'ie Loko I'a in Kihei, Maui.

As you may know, we are conducting a project, Kahea Loko, by a grant from the U.S. Department of Education to develop curriculum in Hawaii's schools utilizing the Hawaiian Loko I'a as a learning resource. We are beginning our second year of work and have entered into collaborative working agreements with various fishpond sites on each of the major Hawaiian Islands to field test and implement the developed curriculum units. The units have been developed to specifically meet Hawaii Department of Education performance and content standards in the area of science, social studies and language arts.

A key component in the success of the project will be to combine both an in-class and out-of-classroom experience for students to learn, participate and become young contributing community partners in this effort. Kahea Loko has identified Ko'ie'ie fishpond as one of the prime sites on the island of Maui to implement the developed curriculum for both the students of Maui and statewide.

Our own experience in Kahea Loko and our work with Hawaii's Department of Education and its teachers have given us a true appreciation for the "hands-on" learning component.

Your support of the restoration efforts at Ko'ie'ie Loko I'a on Maui will be an important cornerstone in the effort to advance the accumulation and perpetuation of an almost forgotten but critical piece of knowledge into the 21st century.

Sincerely,

David E. K. Cooper
President and CEO

March 30, 2001

To Whom It May Concern:

Bully Kapahulehua is passionate about Hawaii. His love for this land motivates him to work for the preservation of the environment, the enrichment of her peoples, and the resurgence of her cultural heritage.

For the past five years, it has been my privilege to witness Bully's caring heart in action. His tireless efforts and honorable intentions have led to results benefiting children and adults alike.

The ancient fishpond at south Kihei is yet another project destined for re-newed life under Bully's nurturing guidance. I wholeheartedly recommend Bully Kapahulehua as recipient of the important grants to make the fishpond restoration/preservation fait accompli.

Sincerely,



Bonney Esbensen,
Vice President
Suzi and Mitch Katz
Jewish Library of Maui

ASSOCIATION OF APARTMENT OWNERS OF KOA LAGOON
800 South Kihei Rd.
Kihei, HI 96753

February 16, 2002

Mr. Kimokeo Kapahulehua
Association of the Fishponds of Maui
Box 959
Kihei, HI 96753

Dear Mr. Kapahulehua,

We understand that you are requesting our support for the restoration of the fishpond Ko'ie'ie Loko I'a. We have some issues we would want incorporated into the plans & would want to see the plans before we can give our full support.

Our major concern is the seaweed problem affecting this particular area & the role the fishpond plays at this time. The fishpond was developed for certain reasons before the seaweed came to our beautiful island. We respect the historical cultural value of these fishponds & the importance to the Hawaiian people & visitors as well.

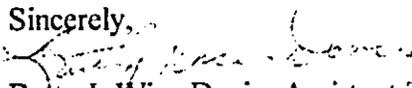
In your planning you will need to make sure there are openings at the north and southeast corners to allow for the flow of seaweed. Until recently, when an opening was created in the southeast wall, the seaweed would become trapped, decay & create such foul odors that people would leave the condominiums because they would become ill. People have had to build special rakes & physically remove the decomposing seaweed. After it washes up on shore, the owners along the Waipuilani Beach Reserve have been bearing the financial burden to remove it since 1984 spending approximately \$50,000 per year.

Beaches & Hawaiian culture are the focus of our visitor industry & a revered legacy to the people of Hawaii. Vacation condominiums which abut this park & beach, currently contribute over 3 million dollars a year to the county & the state in real estate & room taxes.

Waipuilani Beach & Kalepolepo fishpond are part of the South Maui Coastal Heritage Corridor. The motto of the corridor is "A gift from the past - A legacy for the future." By working together to insure the seaweed does not get trapped in the newly restored fishpond which is in the future, we feel the restoration plans need to consider today's problems to create a gift from the past.

If properly restored, this fishpond can become an object of pride for this community & a wonderful example of our historic past.

Sincerely,


Betty J. Wise-Davis, Assistant Treasurer, AOA Koa Lagoon
100 E. CdA Ave. #930, Coeur d' Alene, ID 83814/208-664-2253

cc: Floyd Miyazono, Director, Dept. of Parks & Recreation, County of Maui

Zoe Norcross, Wea Grant Extension Service, MCC

Skippy Hau, DLNR - Aquatic Division

Louis Wada, Dept. of Land & Natural Resources

Joseph Farber, Farber & Assoc.

Hon. James Apana, Mayor, County of Maui

US Army Corps of Engineers, Honolulu District, Regulatory Branch

Dave Mackwell & Linda Barron, Waipuilani Beach Association

Pat Steele, Penny Seiling, Robert Carson, Darrell Pierson, Koa Lagoon Board of Directors

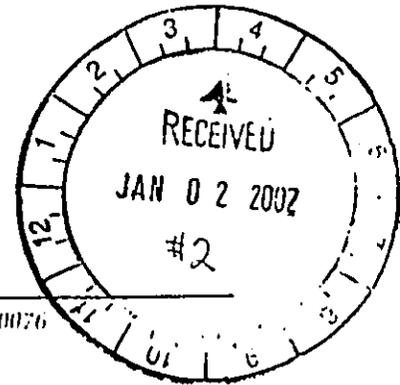


260 S. Kihei Road

Kihei, Maui, Hawaii 96753

Fax (808) 874 2580

Telephone (808) 879 0076



Mr. Kimokeo Kapahulehua
Association of the Fishponds of Maui
PMB 100
Box 959
Kihei, HI. 96753

Dear Mr. Kapahulehua

We understand that you are now developing design plans for the reconstruction of the Ko'ie'ie fishpond. We believe that the reconstruction of this pond will be a wonderful addition to the cultural heritage of the area and provide a source of pride for our community. This will only happen if the pond is rebuilt in the manner, which is environmentally sound. There are large amounts of seaweed drifting southward with the littoral flow that currently accumulate in the fishpond and ultimately pass through. In some cases the passing through only happens with the assistance of workers using rakes to push the seaweed through the recently made opening in the south wall of the pond adjacent to the seawall.

The area has been periodically plagued by rotting seaweed trapped in and around the pond making life very unpleasant for those in the neighborhood and causing visitors to cancel reservations and vacate their rooms.

It is our understanding that the current reconstruction plan has only one opening. Our concerns are that the north wall will become an entrapment area for seaweed, potentially fouling the beach and air with rotting seaweed and offensive odors. Inevitably, some seaweed will find its way into the pond. If no opening in the southeast corner is provided seaweed will become trapped in the pond, decompose and cause degradation of water quality. The very small opening in the southeast corner has been very effective in helping the seaweed to flush out of the pond. The current opening in the west wall does not allow any significant flushing of seaweed. We recommend that any reconstruction plan take into account the potential advantages of utilizing multiple gates that can be used to control the flushing and cleansing of the pond utilizing tidal currents. Research on this has been done at UH.

In reading about historic use of fishponds, there are numerous references to the need for cleaning. The kahuna of the pond was responsible for this and had the resources of the entire village when necessary. When the pond is filled with rotting seaweed, it has been our experience that there are not a lot of volunteers for this unpleasant task.

It is our belief that with proper design, the pond can be largely self-cleaning by the management of two or three gates to control flow. We do not think a single gate will achieve these results and historic evidence suggests that Hawaiian fishponds traditionally had several openings. In any event, provisions should be made for cleaning of the pond should it become necessary because of seaweed accumulation; it should not fall to the condominium associations to underwrite these possible costs if the alterations lead to seaweed problems.

Recent history of Ko'ie ie'o pond indicates that Chinese immigrants reconstructed the original pond and used it for raising fish. After that, the pond went into disuse but was most likely altered by US Navy activities during WWII. Also, there is a large concrete seawall bordering the eastern shore of the pond. These facts lead us to believe that the rebuilding of the pond with one makua cannot necessarily be assumed to be the only historically correct option.

Consideration must also be given to the recreational use of the pond, which has been going on for many years. There is a county park and beach within the pond and also a beach in front of the seawall. It would be very desirable to maintain these beaches and protect them from erosion in the redesign. Access to the pond should be restricted to the adjoining beach parks; public pedestrian traffic across condominium grounds to gain fishpond access should be prevented by whatever means are necessary. The condominiums have frequent problems with security due to uncontrolled foot traffic from the fishpond area and the bordering park areas.

There is a natural littoral flow of sand from north to south, through the fishpond, which nourishes the beach within the fishpond and also nourishes the beaches to the south of the fishpond. The reconstruction of the fishpond should not interfere with the natural littoral flow of sand along the Kihei shoreline.

These points are made not for the purpose of stopping or making this restoration project any more difficult but to insure that the reconstruction have a positive impact on the environment. If these concerns are addressed in the reconstruction of the pond you will have our support.

On behalf of the Menhune Shores AOA,


Bill Sechafer, President


Tom Bell, Secty.

Appendix E

Maui Community Telephone Survey

350 M= 170 =48% F= 180=52%

Hello, my name is _____, and I'm calling from J & D Research. I would like to ask you a few questions and I promise I won't try and sell you anything. All your answers are strictly confidential.

1. Do you agree or disagree Hawaiian Culture should be preserved?

a Strongly Agree = 197=56% b Agree = 97=27% c Neutral = 41=11% d Disagree = 10=1%
e Strongly Disagree = 5=1% f DK/RF = 0

2. Do you agree or disagree that fishponds on Maui should be preserved for Hawaiian Culture and Education purposes?

a Strongly Agree = 195=55% b Agree = 95=27% c Neutral = 45=12% d Disagree = 9=1%
e Strongly Disagree = 6=1% f DK/RF = 0

3. Are you aware of the Maui Fishponds Restoration Project?

a YES = 160=45% b NO = 190=55% c DK/RF = 0 (if YES, ask Q4)

4. Do you have a favorable or unfavorable impression of the Maui Fishponds Restoration Project?

a favorable = 100=62% b unfavorable = 13=2% c Neutral = 47=29% d DK/RF = 0

5. Have you heard of AoAo O Na Loko I'a O Maui?

a Yes = 100=28% b No = 250=72% c DK/RF = 0

6. Would you like more information on the Maui Fishponds Restoration Project? (if YES, get info)

1 Yes = 126 =36% 2 No = 259=74% DK/RF = 0

Name _____

Address _____ City _____ Zip _____

Phone _____ Pg _____

Appendix F

**Work Plan - Control of Nuisance Seaweed on the
Beaches of Kihei**

Control of Nuisance Seaweed on the Beaches of Kihei, Maui County

WORKPLAN (DRAFT)

PROJECT ABSTRACT

Maui County is conducting an experimental study for the removal of the heavy accumulations of seaweed on the beaches of north Kihei. The study has three foci: efficient removal and disposal of the seaweed from the beach area, identification of the factors that contribute to enhanced seaweed growth in north Kihei and possible means by which this growth may be reduced, and restoration of the damaged beach and dune system. The purpose of the study is to 1) establish a method of seaweed collection that will minimize the amount of beach sand removed, 2) contain and remove the seaweed from the beach system so that nutrients from the decaying seaweed do not return to the nearshore water, 3) find a beneficial use for the disposed seaweed, 4) determine the type and source of nutrients contributing to seaweed growth in north Kihei, 5) determine if there are any actions that could be taken to reduce the growth of seaweed, and 6) reestablish an attractive, usable waterfront environment. This study will be the first of its kind in the State of Hawaii, thus a certain degree of modification to the project outline will most likely be necessary.

BACKGROUND

For several years, beaches in the north Kihei, Waipuilani area have been affected with unusually heavy accumulations of seaweed, which periodically leave the beaches unusable. The impact on the affected area is quite severe, as the beachfront is lined with condominiums that formerly boasted beautiful sandy beaches as a primary point of attraction. This area now sees greatly decreased recreational use due to the unpleasant odor of decaying seaweed and the poor sand quality. In 2001, Mayor Apana and residents of the Waipuilani area formed a Seaweed Task Force to develop a plan for removal and disposal of the nuisance seaweed. Currently, the seaweed is scraped off the beach daily with a small front-end loader, and is either pushed up against the berm or taken to a stockpile at the end of the beach. During peak episodes, over 300 cubic yards of seaweed are either moved or removed from the 1-mile stretch on a daily basis.

While this method has been relatively effective in keeping the beaches seaweed-free, it has not been ideal for the beach. Inevitably, sand is being removed along with the seaweed, leading to beach loss. Additionally, the berming and stockpiling of the seaweed adjacent to the beach allows the nutrients from the decomposing seaweed to be returned to the nearshore waters, contributing to continued growth of the seaweed. Further, the offensive smell of the decaying seaweed in the stockpiles is at times perceptible from several blocks away.

The County of Maui is in the process of purchasing a machine for removing seaweed from the beach at Kihei, while minimizing the amount of sand picked up. However,

several issues still remain in terms of the logistics of collecting, removing, and disposing of the seaweed from the beach in an efficient and environmentally-friendly manner, gaining an understanding of why seaweed growth occurs in such high density at this location, and restoring the beach to its natural state.

PROJECT OBJECTIVES

- 1) To minimize the amount of sand removed from the beach while maximizing the efficiency of seaweed removal
- 2) To contain the seaweed that is picked up off the beach in such a way that nutrients from the decomposing seaweed can not return to the ocean
- 3) To remove and dispose of the collected seaweed from the site
- 4) To establish a sustainable and beneficial use for the disposed seaweed, such as recycling of the seaweed to form compost or fertilizer
- 5) To perform studies to determine the sources of nutrients contributing to the seaweed growth, which ideally will lead to a method for decreasing growth, and
- 6) To restore the beach and dune system in the affected area
- 7) To maintain and further develop the partnership between the Waipuilani Beach association, the Kihei Community Association, and the County of Maui

PROJECT TASKS

- 1) Site preparation: In order to accommodate the equipment for this project, minor modifications will be necessary. This may include improving site access in order for a truck to be brought in to remove the seaweed, and the placement of pads on which disposal containers for the seaweed can be located.
- 2) Equipment purchase: Up to four disposal containers will be purchased, into which the seaweed collected from the beach will be placed until it is removed from the site. A loader will be purchased to transfer the seaweed from the container to the truck. A truck may be purchased to haul the seaweed to a disposal facility.
- 3) Seaweed collection: Seaweed will be removed from the beach on an as-needed basis. On days of heavy accumulation, the beach may need to be cleaned more than once. On days of light accumulation, the beach may not need to be cleaned at all. The seaweed will be placed in the disposal containers.
- 4) Seaweed removal: Seaweed will be transferred from the disposal containers to the truck with a loader, and transported to a disposal facility. During periods of heavy accumulation, it is likely that several truck loads will need to be removed per day.
- 5) Seaweed disposal: Determine the most beneficial use for the disposed seaweed, such as use for compost or fertilizer. Preliminary discussions are currently underway to determine the feasibility of transporting the seaweed to a nearby composting facility, and other options will also be considered.

- 6) Seaweed research: A contractor will be hired to conduct a study to attempt to determine the cause by which seaweed growth occurs in such high density in this area. It is hoped that this will lead to a method by which seaweed growth can be reduced.
- 7) Beach monitoring: Periodic beach profiles will be conducted to record the evolution of the beach as the project progresses.
- 8) Restoration of the beach and dune system: The beach and dune in the affected area have been greatly transformed by the beach cleaning activities. An unnatural berm has been created, and much sand has been removed. Options for restoring the beach and dune system will be evaluated, and will range from bringing in sand to replenish the beach and dune, to landscaping of the dune with native coastal vegetation to establish a more natural and aesthetically pleasing appearance.
- 9) Community involvement: The project will be greatly reliant upon a partnership between Maui County and the Waipuilani Beach Association. This association, along with the Kihei Community Association, has provided Maui County with feedback and input on proposed plans for dealing with the seaweed problem, and will continue to be involved in this respect. In addition, the Waipuilani Beach Association contributes \$50,000.00 per year towards operational expenses associated with the seaweed removal.

PROJECT TIMELINE:

October-December 2002:

- Site preparation by Department of Public Works
- Purchase disposal containers, loader, and truck
- Begin placing collected seaweed in containers
- Explore methods for beneficial use/recycling of seaweed. In the interim, transport seaweed to composting facility
- Modify equipment and procedure to maximize efficiency/success
- Select subcontractor to study the cause of dense seaweed growth

January-December 2003:

- Continue collection and removal of seaweed
- Continue disposal/recycling of seaweed to beneficial use (ex. composting)
- Continue modification of equipment and procedure
- Continue seaweed study
- Evaluate options for restoration of beach and dune system
- Quarterly monitoring of beach profile
- Submit annual progress report to Kihei Community Association
- Obtain and incorporate community feedback into project

January-December 2004:

- Continue collection and removal of seaweed

- Continue disposal/recycling of seaweed to beneficial use (ex. composting)
- Continue modification of equipment and procedure if necessary
- Continue/Conclude seaweed study
- Continue to evaluate options for restoration of beach and dune system
- Obtain and incorporate community feedback into project
- Quarterly monitoring of beach profile

PROJECT DELIVERABLES:

- A. Quarterly progress reports to EPA
- B. Contractors reports on causes of seaweed problem
 - September 2004: Draft final report from contractor to include abstract, methods, results, and recommendations for controlling seaweed problem.
 - December 2004: Final report from contractor
- C. County report on work accomplished
 - September 2004: Draft final report from County to include description of work completed, public outreach conducted, measures of success, benefits received, and recommendations for further improving control of nuisance seaweed.
 - December 2004: Final report from County

COST BREAKDOWN:

- 1) Equipment:
 - Truck for hauling seaweed to disposal facility: \$100,000.00
 - Small loader for transferring seaweed from disposal containers to truck: \$30,000.00
 - Four disposal containers @ \$5,000 each for storage of seaweed collected from the beach: \$20,000.00

EQUIPMENT TOTAL: \$150,000.00

- 2) Contracting:
 - Contractor will be hired to perform a study to determine the cause of the unusually dense growth of seaweed in this area, at a cost of \$50,000

CONTRACTING TOTAL: \$50,000.00

- 3) Other:
 - Site preparation by the Maui County Department of Public Works, including improvement of site access for seaweed removal trucks and placement of pads on which disposal containers can be sited, and other

costs associated with beach and dune restoration and monitoring, to be evaluated and determined once the project is underway: \$50,000.00

OTHER TOTAL: \$50,000.00

COMPLETE TOTAL: \$250,000.00

MEASURES USED TO EVALUATE SUCCESS:

Success will be measured directly by maintaining a log of the amount of seaweed removed from the beach to determine if seaweed accumulation changes over the study period. Beach profiles will be surveyed quarterly, and will indicate whether the profile shape returns from that of a heavily modified profile with a steep, artificial berm, to that of a more naturally sloping beach profile.

ANTICIPATED BENEFITS:

Over 1500 apartments and private homes are located within the project area, which usually sees more than 100,000 visitors per year. Residents and visitors renting these homes, as well as residents and visitors from other locations, will benefit recreationally from an improvement in beach quality and a reduction in the offensive smell that currently lingers in the area.

With an improvement in beach quality, tourists will not leave the area disappointed, and will be more likely to return. Occupancy rates, room prices, sales and accommodation taxes will increase if visitors have a higher quality experience.

A reduction in the nutrients leaching back into the ocean from decomposing seaweed will potentially lead to a decrease in seaweed growth in the area. This may improve the water quality and allow shallow-water species, that have been smothered and driven out by the seaweed, to return

Included in the affected area is the historic Hawaiian Ko'ie'ie fishpond, which is scheduled for restoration, and the Hawaiian Islands Humpback Whale National Marine Sanctuary. These environmental landmarks will benefit greatly from a decrease in seaweed growth and accumulation, and improved water quality.

Local merchants, such as those at Azeka Plaza, will benefit from a return of the public to Waipuilani beach.

Property values may improve with the return of a useable beach and odor-free air.