US Army Corps
of Engineers
Honolulu District

Public Notice of Application for Permit

Regulatory Branch (1145b)
Building 230
Fort Shafter, Hawaii 96858-5440

Public Notice Date: May 11, 2012
Expiration Date: June 11, 2012
Permit File Number: POH-2011-00204

Interested parties are hereby notified that an application has been received for a Department of the Army permit for certain work in waters of the United States as described below and shown on the attached drawings.

APPLICANT: **Hiilei Kawelo**, Paepae O Heeia

AGENT: **Joseph Farber**, Farber & Associates

LOCATION: **Heeia Fishpond**, Kaneohe Bay, Koolaupoko, Island of Oahu, Hawaii; TMK (1) 4-5-005:001; 21.43570N, -157.80529W

WORK: The applicant is proposing to restore an 80-foot breach in the Makai Wall of the historic Heeia Fishpond using a combination of locally sourced materials and existing, refurbished materials. In addition, the applicant proposes a 10-year maintenance plan for repairs and restoration activities necessary to the continued operation of the fishpond.

PURPOSE: To restore the functional capacity and historical integrity of the Heeia fishpond for traditional aquaculture production, cultural practices and educational opportunities.

ADDITIONAL INFORMATION: The Keapuka flood of 1965 destroyed over 1,000-feet of the 3,500-foot long fishpond wall, including the most severe damage, an 80-foot break of the Makai Wall and associated makaha (sluice gate). Ocean currents at this location have naturally scoured the seafloor up to 6-feet below grade where the wall previously stood. In 1992, rehabilitation efforts resulted in the construction of a temporary wall just mauka of the break, where the scour was shallowest at 3-feet deep. The existing 253-foot long temporary, angular wall is composed of approximately 70-cubic yards of concrete test cylinders. Over 16 years later, the temporary wall is failing; the 88-acre fishpond is no longer usable for aquaculture as cultivated species are able to escape and predators are allowed access into the pond at high tide. As such, the first and most crucial step towards restoration of the aquacultural capacity of the Heeia fishpond is the repairing of the break in the Makai Wall.

The repair will require dismantling of the temporary wall, filling of the scour and restoration of the Makai Wall and makaha. Approximately 110-cubic yards of fill are required to fill the scour, raising it to the surrounding seafloor elevation and existing, original alignment of the Makai Wall. 70-cubic yards of fill will be obtained from the dismantled temporary wall, with the concrete test cylinders being re-used as the inner core of the scour fill. The remaining 40-cubic yards of fill will be sourced from local quarries; rocks, ranging from 100-pounds ("One-Man" rocks) in size to 2-pounds in size (hakahaka). This will allow for continuity with the size and composition of rocks used for the existing Makai Wall. Existing, 100-200lb stone (niho), found scattered around the fishpond will be repositioned into the scour using handheld tools (spades, cargo nets, etc.) and in some cases, floating pontoon flat beds, to form the foundation of the wall. Dismantling of the temporary wall and transport of the individual concrete test cylinders to fill the void atop the niho stone foundation will also be conducted by hand, chain-gang style. Filling of the scour will not require grouting. The scour will be built up by hand, in successive layers; the Niho stones serve as a base, with an inner core of the concrete test cylinders placed lengthwise, end-to-end, in layers with supporting hakahaka and One-Man rock used for the exterior face of the scour.

Once the scour is built up along the existing footprint to a uniform height and width as determined by the seafloor elevation and base width of the remnant Makai wall, the fishpond wall will be repaired along the break, including incorporation of a new makaha. The repaired Makai wall will be contiguous to the existing Makai wall segments, following the existing fishpond wall alignment, footprint, design and dimensions. Approximately 145-cubic yards of fill is required to repair the Makai Wall in two 35-foot long segments adjoined at the center by a 10-foot wide gap for the Makaha. Majority of the fill will be collected on-site from rocks that were dislodged during the 1965 flood and the constant wave action the fishpond sustains. Large pieces of dead coral (approximately 62-cubic yards) will be imported from the local quarry and used for the inner fill of the repaired wall. Additionally, 3-cubic yards of crushed coral, also from the local quarry, will be used for a 1-inch thick top layer for the wall and makaha. These materials will be placed in the traditional, mortar-less, interlocking fashion known as hooniho with one-man rocks as the facing and base and an inner fill of smaller rocks and large pieces of dead coral, topped with crushed coral. The finished wall is specified at two 35-foot long rock wall segments that stand 3.5-foot high with a 15.5-foot wide base that tapers to a width of 12.5-feet at the top. The southernmost segment will be constructed first, followed by the northern segment, as access to the latter requires use of the pontoon.

The final 10-foot gap between the two wall segments will accommodate the construction of the double-gated makaha. The wall will continue in this gap, allowing for two 6-foot deep lanes that are each 18-feet long and 3-feet wide. An 8-foot wide wooden, clear-span bridge constructed over the 10-foot wide makaha will allow for foot traffic over the gap.

Maintenance of the wall is required to assure the successful rearing of fish within the pond. As constant wave action dislodges wall stones naturally, the applicant is proposing a 10-year maintenance plan that reflects the need for this work. The proposed wall maintenance will involve the following actions, manual replacement of dislodged stones onto the wall and removal (by hand with hand tools and without pesticides) of mangrove and other invasive plant species from the fishpond walls. The proposed maintenance activities will not change the original, permitted, footprint, design, size, scope and/or purpose of the existing wall. All maintenance activities will be conducted by hand and using no more than the methods and equipment described above.

(Reference Appendix A, DA Permit Application and Supplement for further information, specifications, photographs and design schematics.)

MITIGATION: The action proposed by the applicant has avoided and minimized impacts to the surrounding aquatic environment to the maximum extent practicable. The proposed work is limited to

the original alignment and footprint of the fishpond wall where the breach occurred. Re-use of existing stone from the original fishpond wall and dismantled temporary wall components to fill the scour and build up the wall will reduce the amount of imported fill material required for the project. Sourcing clean, imported fill material from local quarries reduces risk of introduced pollutants/foreign materials to the Kaneohe Bay. The use of traditional, manual construction methods and hand tools minimizes impacts to the aquatic environment typical of modern, heavy machinery and power tools i.e., petroleum leaks, substrate disturbance, etc. Repair of the wall and subsequent maintenance of the fishpond conductivity are expected to improve the overall productivity and function of the aquatic environment at this location. In addition to maintaining the structural integrity of the wall, the applicant has proposed to remove (by hand with hand tools and without pesticides) invasive, non-native vegetation and algal species i.e., mangrove, *Gracilaria salicornia*, etc., to improve the overall quality and productivity of the fishpond. The applicant has proposed Best Management Practices specific to the Heeia Fishpond to govern activities before, during and after construction and maintenance to avoid and minimize impacts to the aquatic environment and its inhabitants (See Pages 19-23 of Appendix A).

WATER QUALITY CERTIFICATION: The **proposed action will result in a discharge of fill material into a water of the U.S.** and will require authorization from the Corps in accordance to Section 404 of the Clean Water Act of 1972 (CWA). Under Section 401 of the CWA (Public Law 95-217), the Corps may not issue a permit for the described work until the applicant obtains a certification, or waiver of certification, from the State of Hawaii, Department of Health – Clean Water Branch.

COASTAL ZONE MANAGEMENT ACT CERTIFICATION: **The proposed activity will affect land or water uses in the Coastal Zone**. Under Section 307(c)(3) of the Coastal Zone Management Act of 1972, as amended by 16 U.S.C. 1456(c)(3), the Corps may not issue a permit for the described work until the applicant obtains a Federal Consistency Concurrence from the State of Hawaii, Department of Business, Economic Development, and Tourism – Office of Planning.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state clearly and concisely, the reasons and rationale for holding a public hearing.

CULTURAL RESOURCES: The latest published version of the National Register of Historic Places (NRHP) has been consulted for the presence or absence of historic properties, including those listed in or eligible for inclusion in the National Register of Historic Places. The Heeia Fishpond was listed on the National Register of Historic Places (50-80-10-327) in 1973. The area of potential effect (APE) includes the registered Heeia Fishpond. An inventory of historically and culturally significant areas within the APE was conducted in February 2012 by Cultural Surveys Hawaii, Inc. (CSH) under CSH's annual archaeological permit #12-04 issued by the Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR); findings attached (Appendix B). CSH concluded that "Other than the constituent components of the existing wall structure, including basalt and coral materials, no other historically-significant cultural materials were observed in or near the immediate vicinity of the project area". Because the wall will be repaired to the same dimensions of the original wall and will be constructed by hand using traditional methods (hooniho), tools (oo) and (with the exception of the re-used concrete test cylinders for the inner core of the wall) materials (basalt rock, coral), the Corps has preliminarily determined that the proposed fishpond wall repair and associated maintenance activities **will not adversely impact the historical, structural or cultural integrity of the historic Heeia fishpond**. In accordance with the requirements set forth in Section 106 of the National Historic Preservation Act (NHPA), the Corps requests written concurrence from the Hawaii SHPD on this determination.

ENDANGERED SPECIES: Pursuant to Section 7 of the Endangered Species Act (ESA), federal agencies must consult with the National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS) on any action that may affect a species listed (or proposed for listing) under the ESA as threatened or endangered or any designated critical habitat. Based on the project location, the following protected species have the potential to occur near the project location: Hawksbill sea turtle (*Eretmochelys imbricate*), endangered, Green sea turtle (*Chelonia mydas*), threatened, and Hawaiian monk seal (*Monachus schauinslandi*), endangered. The applicant has proposed a traditional construction method that does not require the use of heavy machinery and/or equipment typical of structural repairs and therefore, the Corps does not anticipate any direct or indirect physical impacts, risks for entanglement or endangerment, exposure to elevated noise levels, turbidity or pollutants or loss of habitat. The Corps has preliminarily determined that the fishpond wall repair **may affect but, is not likely to adversely affect federally listed species**, species proposed for listing under ESA or their critical habitat due to the low-impact nature of the proposed action combined with the preventative measures proposed in the attached BMP Plan (Appendix A). In accordance with the requirements set forth in Section 7 of the ESA, the Corps requests written concurrence from the National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Protected Resources Division (NOAA, NMFS – PRD) on this determination.

ESSENTIAL FISH HABITAT: The proposed work is being evaluated for possible effects to Essential Fish Habitat (EFH) pursuant to the Magnuson Stevens Fishery Conservation and Management Act of 1996 (Magnuson-Stevens Act), 16 U.S.C. et seq and associated federal regulations found at 50 CFR 600 Subpart K. The Honolulu District includes areas of EFH as Fishery Management Plans. We have reviewed the January 20, 1999, Western Pacific Fishery Management Council's Environmental Assessment to locate EFH area as identified by the National Marine Fisheries Service (NMFS). The benthic habitat in and around the project area is characterized as an inshore reef flat covered in a mixture of mud, sand, coral rubble and rock; the interior, estuarine area of the pond is characterized by fine sediments, up to 20-inches deep, over coral substrate. No live coral heads or coral reefs are known to exist within the project footprint. The low-impact nature of the construction activities associated with the fishpond wall repair and maintenance and proposed BMPs (See Appendix A) eliminate the risk for any direct or indirect impacts that may reduce the quality and/or quantity of EFH such as elevated turbidity levels or benthic disturbance. Additionally, the proposed action will not require the use of heavy machinery and/or equipment and will be conducted by hand with hand tools. Therefore, we have preliminarily determined that the proposed fishpond wall repair and associated maintenance activities **will not adversely affect EFH**, including anadromous fish and federally managed fishery resources rather, facilitate management of aquatic habitat for native fish species. In accordance with the requirements set forth in Section 305(b)(1-4) of the Magnuson-Stevens Act, the Corps requests written concurrence from the NOAA, NMFS – Habitat Conservation Division (HCD) for the above finding.

AUTHORITY: This permit application will be reviewed under the following authorities:

(**X**) Perform work in or affecting navigable waters of the United States – **Section 10** Rivers and Harbors Act 1899 (33 U.S.C. 403).

(**X**) Discharge dredged or fill material into waters of the United States – **Section 404** Clean Water Act (33 U.S.C. 1344). The Corps' public interest review will consider the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

( ) Transport dredged material for the purpose of dumping it into ocean waters - Section 103 Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413). The Corps' public interest review will consider the criteria established under authority of Section 102(a) of the Marine

Protection, Research and Sanctuaries Act of 1972, as amended (40 CFR Parts 220 to 229), as appropriate.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

The U.S. Army Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; and other interested parties in order to consider and evaluate the impacts of this activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for the work. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the activity.

COMMENT AND REVIEW PERIOD: Conventional mail or e-mail comments on this public notice will be accepted and made part of the record and will be considered in determining whether it would be in the public interest to authorize this proposal. In order to be accepted, e-mail comments must originate from the author's e-mail account. All e-mail comments should be sent to *Jessie.K.Paahana@usace.army.mil*. Conventional mail comments should be sent to the U.S. Army Corps of Engineers, Regulatory Branch, Building 230, Ft. Shafter, HI 96848. Both conventional mail and e-mail comments must include the permit applicant's name and reference number, as shown below, and the commentor's name, address, and phone number. **All comments whether conventional mail or e-mail must reach this office, no later than the expiration date of this public notice to ensure consideration**. Please include the following name and reference number: **POH-2011-00204.**

Comments on the described work, with the reference number, should reach this office no later than the expiration date of this Public Notice to become part of the record and be considered in the decision. Please contact Ms. Jessie K. Paahana at (808) 438-0391 if further information is desired concerning this notice.

George P. Young, P.E.
Chief, Regulatory Branch

Attachments

1. Appendix A: DA Permit Application and Supplement
2. Appendix B: "Archaeological Literature Review and Field Inspection for the Heeia Fishpond Wall Repair Project" and "Cultural Impact Assessment for the Heeia Fishpond Wall Repair Project"

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 Expires December 31, 2004

The public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

RECEIVED
AUG 2 2011

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
POH-2011-00204	CEPOH-EC-R	2-AUG-11	9-MAY-11

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE *(an agent is not required)*
Paepae O He'eia (501c3)	Joseph Farber, Environmental Planning Consultant
6. APPLICANT'S ADDRESS	**9. AGENT'S ADDRESS**
P.O. Box 6355 Kāne'ohe, HI 96744 email: admin@paepaeoheeia.org	2722 Ferdinand Ave. Honolulu, HI 96822 email: joefarber@hotmail.com
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE	**10. AGENT'S PHONE NUMBERS WITH AREA CODE**
a. Residence	a. Residence
b. Business Phone (808) 236-6178	b. Business 808-551-8671

11. STATEMENT OF AUTHORIZATION

I hereby authorize Joseph Farber to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE — DATE: 8/1/11

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE *(see instructions)*

He'eia Fishpond Makai Wall Break Repair, Restoration, and Maintenance.

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*	14. PROJECT STREET ADDRESS *(if applicable)*
Heeia Fishpond, Kāneohe Bay, Oahu	46-077 'Īpuka Street Kaneohe, Oahu, Hawai'i 96744
15. LOCATION OF PROJECT	
Oahu (COUNTY) — Hawaii (STATE)	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

TMK# : 4-6-05: 01. 98.495 acres. 21.43589, -157.80528

17. DIRECTIONS TO THE SITE

46-077 'Īpuka Street
Kaneohe, Oahu, Hawai'i 96744

18. Nature of Activity *(Description of project, include all features)*

The proposed action involves repairing the historic He'eia Fishpond wall at the destroyed 80-foot wide "Makai Wall Break" with a historically accurate rock wall and mākāhā or, sluice gate, replacing the deteriorated 20-year old "Temporary Wall," which will be dismantled and reused as inner fill in the repaired wall Fill and stabilize the seafloor Scour at the fishpond wall footprint. Dismantle the Temporary Wall and reuse the 70 cu. yd. to fill the scour, import approximately 40 cu. yd. of rock from local quarries Repair the fishpond wall using pre-existing rocks and large dead coral pieces. Periodic post-construction maintenance of project activity.
CONTINUED ON ATTACHMENT 1.

19. Project Purpose *(Describe the reason or purpose of the project, see instructions)*

To restore the functional and historic integrity of He'eia Fishpond for traditional aquaculture production, cultural practices, and educational opportunities. The Temporary Wall was intended to last about 5 years; it is now over 16 years old, and showing signs or failure—portions of the wall are sinking, and at every high tide episode the wall is easily breached by more than a foot of water, which diminishes the effectiveness and control of the fishpond as a aquaculture facility CONTINUED ON ATTACHMENT 1.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Due to the movement and placement of rock, dead coral and concrete test cylinders in ocean waters to repair and restore the historic He'eia Fishpond wall at the destroyed 80-foot wide Makai Wall Break with a historically accurate rock wall and mākāhā and replacE the deteriorated 15-year old Temporary Wall, CONTINUED ON ATTACHMENT 1.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

SEE ATTACHMENT, TABLE 1.

22. Surface Area in Acres of Wetlands or Other Waters Filled *(see instructions)*

Total surface area to be filled 1,473 sq. ft. SEE ATTACHMENT 1, TABLE 2.

23. Is Any Portion of the Work Already Complete? Yes _____ No __X__ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

SEE ATTACHMENT 1, SUPPLIMENTAL LIST

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
DLNR	CDUP	OA-2530		ORIGINAL, 3/27/92. EXTENSION, 3/9/04.	

*Would include but is not restricted to zoning, building and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT — DATE 8/1/11

SIGNATURE OF AGENT — DATE 8/1/11

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States, knowingly and willfully falsifies, conceals, or covers up any trick scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

SUPPLIMENT 1 : APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

BLOCK 5. APPLICANT'S NAME.

Paepae O He'eia (501c3), Hi'ilei Kawelo, Executive Director

BLOCK 6. APPLICANT'S ADDRESS

Paepae O He'eia
P.O. Box 6355
Kāneʻohe, HI 96744

BLOCK 7. APPLICANT'S PHONE NUMBER

Phone (808) 236-6178
Fax (808) 234-1999
Email: admin@paepaeoheeia.org

BLOCK 8. AUTHORIZED AGENT'S NAME AND TITLE

Farber & Associates, Joseph Farber, Environmental Planning Consultant

BLOCK 9. AGENT'S ADDRESS

Farber & Associates
Joseph Farber
2722 Ferdinand Ave.
Honolulu, HI 96822

BLOCK 10. AGENT'S PHONE NUMBER

(808) 988-3486
email: joefarber@hotmail.com

BLOCK 12. PROJECT NAME AND TITLE

He'eia Fishpond Makai Wall Break Repair, Restoration, and Maintenance.

BLOCK 13. NAME OF WATERBODY

He'eia Fishpond, Kāneʻohe Bay, Oahu

BLOCK 14. PROJECT STREET ADDRESS

46-077 ʻĪpuka Street

Kaneohe, Oahu, Hawai'i 96744

BLOCK 15. LOCATION OF PROJECT

He'eia Fishpond, Kāneʻohe Bay, He'eia, Koʻolaupoko, O'ahu

BLOCK 16. OTHER LOCATION DESCRIPTIONS

TMK# : 4-6-05: 01. 98.495 acres.

The historic Loko I'a o Heʻeia, or Heʻeia Fishpond, is located along the northeast, windward shoreline on the island of Oʻahu in the moku of Koʻolaupoko, ahupuaʻa of Heʻeia, along the northwest portion of Kāneʻohe Bay, and bounded by Heʻeia State Park, Heʻeia Stream, Kamehameha Highway and the Aliʻi Bluffs residential subdivision (See Vicinity map, Figure 1).

He'eia Fishpond encloses 88 acres of water. Shoreline fast land adjacent to the fishpond totals an additional 10 acres and comprises the mouth of the Heʻeia stream, a paved and gated access road from ʻĪpuka Street, and aquaculture support facilities including a new (July 2010) 3,550 square-foot, two-story, multi-purpose building that houses office space, a caretakers dwelling, storage, and bathroom/shower facilities under a single roof.

Fishponds are not entities in and of themselves, but a part of the interconnected surrounding environment. POH is committed to doing its part to restore not only the health and productivity of the fishpond, but also the land and the water resources that surround it. These considerations are directly tied to restoring the ecological balance of fishpond, and include maintaining a cleared and flowing Heʻeia Stream, and keeping in check invasive mangrove, alien fish and limu (*G. salicornia*).

Long-term goals include ahupuaʻa watershed management and enhancement, including reintegration of cultivated taro loʻi fields to better control the discharge of Heʻeia stream waters into the fishpond, which will result in the added bonus of nutrient-rich fresh water input into the fishpond from the upland loʻi. A productive and balanced fishpond ecosystem will also help replenish fish stocks within Kāneʻohe Bay.

PROJECT PROPOSAL

The repair of the He'eia Fishpond wall at the Makai Break will involve the following actions:

1. Fill and stabilize the Scour

An estimated 110 cubic yards of material will be required to raise and level the Scour to the surrounding seafloor elevation along the original alignment (footprint) of the 80 ft. long and 18 ft. wide Makai Break. The material will come from three sources: the existing niho stones, concrete test cylinders from the dismantled Temporary Wall, and new rock brought to the project site from local quarries. These materials will be gathered, and placed by hand, i.e., ʻoʻo, spade, cargo nets, non-motorized floating flatbed pontoon, and the Scour will be built-up in successive layers (see images of the proposed plan, Figure 10-12). These materials will be placed in the traditional, mortarless, interlocking fashion known as hoʻoniho.

a. Reuse existing niho stone.

The existing Niho stone, 100-200+ pounds, found within and near the existing wall footprint will be repositioned by hand and laid as a foundation.

b. Dismantle the Temporary Wall and reuse the concrete cylinders as Scour fill material. It is estimated the Temporary Wall contains approximately 9,600 or, 70 cu. yd. of the concrete test cylinders. The Temporary Wall will be dismantled, and the test cylinders moved to the Makai Break by hand, chain-gang style, where they will serve as the inner core of the Scour fill.

c. Import approximately 40 cu. yd. of rock from local quarries for Scour fill.
The additional 40 cu. yd. will be sourced from local (Kailua) quarries, and will be the same general size and type of the existing Makai Wall facing rock (generally, "One-Man" rocks, 20 lb. to 100 lb. in size, and lesser amounts of hakahaka or, smaller rock, that is tennis ball (2 lb.) to volleyball size (10 lb.).

d. Build-up the Scour at the Makai Wall alignment (footprint). The Scour will be built up at the 80 ft. long footprint to a uniform height and width, matching both the seafloor level, and the Makai Wall base width at where the south and north ends of the existing fishpond wall terminate. The width of Scour fill at its base will vary depending on the seafloor depth—the shallower areas of the Scour, near the existing walls, will be approximately 16 ft. wide, and at the deepest point, at the center of the Break, approximately 20 ft. wide. The Scour will be built up by hand in successive layers; the Niho stones serve as a base, with an inner core of the concrete test cylinders placed lengthwise end-to-end in layers with hakahaka. The facing of the Scour will be comprised of One-Man rock.

2. Repair the fishpond wall along the Makai Break incorporating a new mākāhā.

a. Repair Wall.
The repaired wall will tie into the southern and northern portions of the existing makai fishpond wall at the 80-foot wide Makai Break, and follow the existing fishpond wall alignment (footprint), design, and dimensions. The wall repair will be in two segments (the northern and southern legs, with a 10 foot wide gap for the mākāhā), each 35 ft. long, 3.5 ft. high, base width 15.5 ft., and top width 12.5 ft.. The wall will be constructed with One-Man rocks, 20 lb. to 100 lb., as facing and base, with an inner filler of smaller rocks and large (12-24 inches in diameter) pieces of dead coral. The wall will be topped with one inch of crushed coral.

b. Build new mākāhā.
The double-gated mākāhā will be located at the center point of the Makai Break. The mākāhā opening will be 10 ft. wide, 6 ft. deep, with two ʻauwai, or lanes, that are each 18 ft. long and 3 ft. wide. An 8-foot wide bridge constructed of wood will span the 10 ft. wide mākāhā (note Mākāhā #1 as an example of a similar design, Figures 25 and 34).

3. Maintenance.

Periodic post-construction maintenance activities include the manual replacement of wall stones dislodged as a result of heavy surf action, the maintenance of the mākāhā opening, the manual

removal of mangrove and other invasive non-native species from within the fishpond basin and wall and, maintaining a clear and flowing He‘eia Stream.

BLOCK 19. PROJECT PURPOSE

The project purpose is to restore the functional and historic integrity of He’eia Fishpond for traditional aquaculture production, cultural practices, and educational opportunities by replacing the deteriorating, 15 years old “temporary” repair to the He'eia Fishpond rock wall with a permanent solution—a repaired fishpond wall and new mākāhā, restoring and reconnecting the ancient fishpond wall along the original wall alignment (footprint) at the 80 ft. wide Makai Break.

The Temporary Wall was intended to last about 5 years; it is now over 16 years old, and showing signs or failure—portions of the wall are sinking, and at every high tide episode the wall is easily breached by more than a foot of water, which diminishes the effectiveness and control of the fishpond as a aquaculture facility by allowing predator species to get into the fishpond and valued cultivated species to escape, while compromising water depth and the fresh water-sea water mixture in the pond. Note photos, Figures 17–19, of Temporary Wall damage from the June 6, 2011 heavy rains and flood.

He'eia Fishpond is a priceless historic, cultural and aquacultural resource. It is one of the largest intact and operating fishponds in Hawai‘i. It was listed on the National Register of Historic Places in 1973. The date of construction is unknown, however, it is most likely that the fishpond was constructed in the range of AD 1400 to 1600 (Kelly 1975). Photos document He'eia as early as 1878. On O‘ahu, more than four-fifths, or 80% of the island’s known fishponds (144 ponds) have been destroyed, and only 2% of the fishponds (4 ponds) are in excellent working condition (DHM Planners 1989). This is a tragic loss of an important source of food in Hawai‘i. The populous island’s few remaining fishponds stand as cultural and historic treasures, symbolic of the Native Hawaiian people’s cultural past and their complex understanding and management of ecological systems that should be revitalized, maintained, and preserved for future generations.

Upon completion of the proposed project, the He‘eia fishpond wall will once again be a contiguous, uniform and solid wall that will only be breached by the highest of tides and storm activity, thus allowing for consistent management of the fishpond for aquaculture production.

The proposal will strengthen the historic and cultural integrity of the fishpond as the proposed repair work will match the dimensions, alignment, materials and construction techniques of the original fishpond wall, and allow for the reintroduction of traditional Hawaiian fishpond aquaculture utilizing the entire 88 acres of water.

Fishponds are an efficient source of protein. Aquaculture production using ocean tides and available freshwater resources, employing a thoroughgoing knowledge of fish behavior, and managing these natural resources sustainably, with relatively low labor inputs, was a unique Hawaiian invention, one that has importance today given the rising demand for seafood, the expense of cage culture production, and an already fully exploited fishery. Once the project is completed and the waters are a more attractive habitat for fish, He‘eia will resume its contribution to local food production, as well as fishery management through natural fry stock recruitment, enhancement and grow-out.

As the ponds productivity depends ultimately upon the amount of available algae, which in turn directly depends on the total environment, repairing the health of the fishpond is tied to restoring the ecological balance of not only the fishpond, but also the land and the water resources that surround it. This is the embodiment of Mālama ‘Āina, underlies important basic values of Native Hawaiian culture, and is synonymous with good environmental practices. As Marion Kelly noted, “A fishpond is productivity through conservation rather than resource depletion,” (Kelly 1976).

The project proposal, is part of Paepae O He'eia’s, long-term commitment to make continuous improvements to the fishpond to increase the efficiency and productivity of the aquaculture program while concurrently providing cultural and environmental based educational activities to perpetuate traditional native Hawaiian cultural practices for current, and future generations.

Give the approximate dates you plan to both begin and complete all work

Complete work within12 months from authorization date.

BLOCK 20. REASON(S) FOR DISCHARGE

Reasons for the discharge(s) are due to the movement and placement of rock, dead cora,l and concrete test cylinders in ocean waters to repair and restore the historic He‘eia Fishpond wall at the destroyed 80-foot wide Makai Wall Break with a historically accurate rock wall and mākāhā or, sluice gate, and replacing the deteriorated 15-year old Temporary Wall, which will be dismantled and reused as inner fill in the repaired wall. These actions will result in a uniform and solid wall, which in turn will provide the necessary control and optimization of the fishpond waters to reestablish traditional aquaculture production in He‘eia, and the cultural practices associated with that.

BLOCK 21. TYPES OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

Table 1
He‘eia Fishpond Makai Break Repair - Material Requirements

Types of Material Being Discharged	Amount of Each Type (Cubic Yards)
Est. material existing in the fishpond or adjacent to the original He‘eia Fishpond wall alignment	
"Temporary Wall" concrete test cylinders	70
Available rock from original wall	83
Total volume - existing material	153
Est. material to import to repair wall	
Rock for Scour fill	40
Large dead coral pieces (wall fill)	62
Crushed coral (to top wall)	3
Total volume - material to import	105

BLOCK 22. SURFACE AREAS OF WETLANDS OR OTHER WATERS FILLED.

Table 2
He‘eia Fishpond Makai Break Repair - Surface Area of Fill Material

Total surface area to be filled	1,473 sq. ft
Scour & repaired wall (80 ft. lg. x 18 ft. wd.)	1,440 sq. ft
Mākāhā (2.75 ft. x 3 ft. x 4)	33 sq. ft

The location of the area to be filled is along the original alignment (footprint) of the He‘eia Fishpond wall at the Makai Break, located in the waters of Kāne‘ohe Bay. The seafloor at this location consist of a inshore reef flat of hard coral that has been scoured with uneven depths ranging from one foot, on both sides of the Break where the existing fishpond walls end, to 5.71 ft. (1.74 meters) near the center point of the 80 ft. wide break (see aerial photo, Figure 7 and, bathymetric survey maps, Figures 13, 14).

The following are the means by which the discharge is to be conducted:

Scour Fill (est. 110 cu. yd.) over an area of approximately 1,440 sq ft. :

- Niho stones, submerged in the water and located in and around the wall footprint will be repositioned by hand, i.e., ʻoʻo, spade, cargo nets, non-motorized floating flatbed pontoon, and used as the Scour fill base rocks.
- The Temporary Wall will be dismantled by hand, which is comprised of approximately 9,600 or, 70 cu. yd. of concrete test cylinders, and moved, chain gang style no more than 100 ft., and used as the inner-fill of the Scour.
- Approximately 40 cu. yd. of rock will be imported to the project site from local quarries and placed by hand to complete the Scour fill—The smaller rocks will be used in conjunction with the concrete test cylinders as inner fill, the larger Two-Man rocks, as wall facing.

Repair wall with new mākāhā (est. 145 cu. yd.):

- Existing rocks located on site, which were formerly part of the fishpond wall but were dislodged and strewn makai when the wall was damaged in the 1965 Keapuka Flood will be collected, moved by hand, and reused as base rock, fill and facing in the repaired wall and new mākāhā.
- Approximately 62 cu. yd. of large pieces of dead coral will be imported to the project site, and placed by hand for the inner wall fill of the repaired wall and new mākāhā.
- Approximately 3 cu. yd. of crushed coral, sourced from local quarries, will be imported for a one-inch finishing top layer on the repaired wall and new mākāhā.

BEST MANAGEMENT PRACTICES (BMPS)

Best Management Practices have been developed to mitigate any possible adverse impacts from the proposed action, and in particular, the discharge and fill activities associated with this proposal.

About 2,000 ft., or 1/3 of the Makai Wall has been repaired and restored by POH (see map, Figure 6). This ongoing effort, which began in 2001, and will continue until the entire fishpond wall is restored, addresses the deterioration and destabilization of the wall due to years of neglect.

The wall restoration effort involves mangrove removal, resetting facing stones, and adding a fresh finishing top-layer of crushed coral. This work has served to help develop expert fishpond wall building skills among the POH employees, and their team of regular volunteers. It has also helped POH to refine a set of Best Management Practices, building procedures, and identify appropriate and economic use of existing and new materials for the wall. The following Best

Management Practices are reflection and outgrowth of these painstaking efforts to restore the fishpond over the past 10 years.

The restoration work at Heʻeia Fishpond is the embodiment of Mālama ʻĀina. It underlies important basic values of Native Hawaiian culture that is synonymous with good environmental practices—as it is here with traditional Hawaiian fishpond aquaculture, which is achieved by enhanced productivity through conservation, rather than resource depletion.

Heʻeia will resume its contribution to local food production, as well as fishery management through natural fry stock recruitment, enhancement and grow-out in an extensive manner (sustainably, with relatively low labor inputs, and no augmented fish feeding).

The ahupuaʻa is a guide, value system, and a means to identify, plan, and effectively manage the fishpond, and the intimate connections it holds between land and water resources, and the community, under principles such as aloha ʻāina, laulima, and kuleana.

1. Schedule

a. Construction work will be limited whenever possible to "good weather", i.e., low tides, low winds, and sunny.

b. No work will take place during flood conditions, or abnormally high seas, or storm conditions.

2. Material

a. The materials for the proposed project will adhere to the types and amounts as noted on Table 1.

b. No silty material will be used in the Scour fill, and for fishpond wall restoration, repair or maintenance.

c. No concrete, no mortar, no grouting, and no gravel material will be used in the project proposal.

d. The interior wall fill shall consist of material of sufficient size so that it will not pass through the outer fishpond walls. This fill must be free from sediments, and if it comes from an outside source, it must be washed prior to use.

e. On-site rocks shall be collected only by hand from within the fishpond basin and areas immediately adjacent to the original fishpond wall.

f. Stockpiling of rocks will be restricted to areas along the completed fishpond wall near the wall repair site.

g. All additional rocks and coral to be used, will be washed and cleaned.

h. Washed rocks and coral may be transported by a small "gator" mini truck to the staging area above the high-water mark.

i. Effluent from the stone washing activity will be properly contained and treated on land and not be discharged into State waters.

3. Equipment

a. "By hand," under this proposal is defined as limited to the use of ʻoʻo (spade), cargo net, plastic buckets, and non-motorized floating flatbed pontoon.

b. Heavy equipment may only be used to transport rock and coral out to the staging area, and not allowed to be used below the ordinary high water mark, all construction work shall be done at low tide.

c. No construction material or construction-related materials will be stockpiled, stored or placed in the ocean water or in ways that will disturb the ocean water.

d. No debris, petroleum products, hazardous waste, or other harmful materials are not allowed to fall, flow, leach or otherwise enter the ocean waters.

e. No fuel or lubrication products shall be allowed to be stored at the staging area.

f. Any equipment or vehicles used for the restoration project should be routinely inspected to ensure they are not leaking oil or fluids when operating near the water or on the fishpond wall.

4. Construction

a. The gathering, movement, and placement of rock, concrete cylinders, and coral below the ordinary high water mark will be conducted only by hand.

b. The original wall alignment will be followed and existing niho or , foundation rocks will be used. Where foundation rocks are missing, other large boulders, found within the immediate vicinity will be used, and the foundation footprint will be followed as closely as possible.

c. These materials will be placed following the traditional, mortarless, interlocking fashion known as hoʻoniho. To interlock the rocks, shape, weight, angle, and slope of the facings are all considered.

d. The interior wall fill, hakahaka/ʻiliʻili, shall consist of material of sufficient size so that it will not pass through the outer fishpond walls. This fill must be free from sediments, and if it comes from an outside source, it must be washed prior to use.

e. Removing sediment from within the fishpond is not permitted.

f. All reasonable precautions should be taken to prevent any contaminations from leaking into the water.

g. Construction debris must be contained on land and be prevented from entering the water.

h. No material that is placed in the water must be free of any pollutants that could be hazardous to aquatic life.

i. Work on the project must cease immediately if there are indications that damage to live coral will occur or is occurring. The construction activity may not resume until suitable measures and appropriate corrective actions are approved by the DLNR.

5. Historic Preservation

a. POH will use traditional materials and techniques wherever conditions allow. All repaired wall sections will use similar exterior (facing) materials, match the appearance of the intact portions of the wall, and follow the alignment, size, and dimensions of the existing walls.

b. The new mākāhā will be designed and configured to replicate the existing makai wall mākāhā.

c. The restoration, reconstruction, repair and maintenance of fishpond walls and mākāhā shall be in accordance with the description set forth any and all approved project proposals.

d. If any previously unknown historic or archeological remains are discovered, the State Historic Preservation Division must be immediately notified as to what was found.

e. The restoration work shall be coordinated with an SHPD staff archaeologist and be recorded by before and after with photographs of the walls' architecture and the mākāhā.

6. Endangered Species

a. To mitigate the adverse effects of human activities on protected species related to the proposed project, the project foreman will contact the appropriate authorities within NOAA Fisheries Services, Protected Resources Division, if any endangered species such as the Hawaii monk seal (Monarchs schauinslandi), Humpback whale (Megaptera novaeangliae), Hawksbill sea turtle (Eretmochelys imbricata); or threatened species, such as the Green sea turtle (Chelonia mydas) are within immediate proximity of the project site**.** To report stranded / entangled sea turtles on Oahu**,** weekdays 7AM-4PM (808) 983-5730; weekends, holidays, after hours: (808)

288-5685 or 288-0023. To report monk seal sightings on Oahu: (808) 220-7802. To report stranded / entangled marine mammals: 1-888-256-9840.

7. Monitoring

a. Before work begins, benchmarks will be established. Pictures shall be taken, daily weather conditions noted (weather, tides, and surf conditions), and baseline water quality data will be collected.

b. During repair work, there will be a daily visual inspection and recording of the project site for weather, tides, and water conditions.

c. During repair work, there will be monthly baseline water quality data sampling, sampled 3 ft. from the project activity.

d. Water quality monitoring data includes the following parameters: weather conditions, temperature, salinity, turbidity, dissolved oxygen, and pH.

8. Maintenance

a. Post-construction maintenance activities will include daily visual inspection of the fishpond, particularly after major weather evens, and high seas and, include the following actions:

b. The replacement by hand of wall stones dislodged as a result of heavy surf action,

c. The maintenance of the mākāhā opening,

d. The removal by hand of mangrove, limu (G. salicornia), and other invasive non-native vegetation from within the fishpond basin

e. Maintaining a cleared and flowing Heʻeia Stream

BLOCK 23. IS ANY PORTION OF THE WORK ALREADY COMPLETE?

No.

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SUPPLIMENT 2 : Plans, , Maps, Photos, and Appendix A

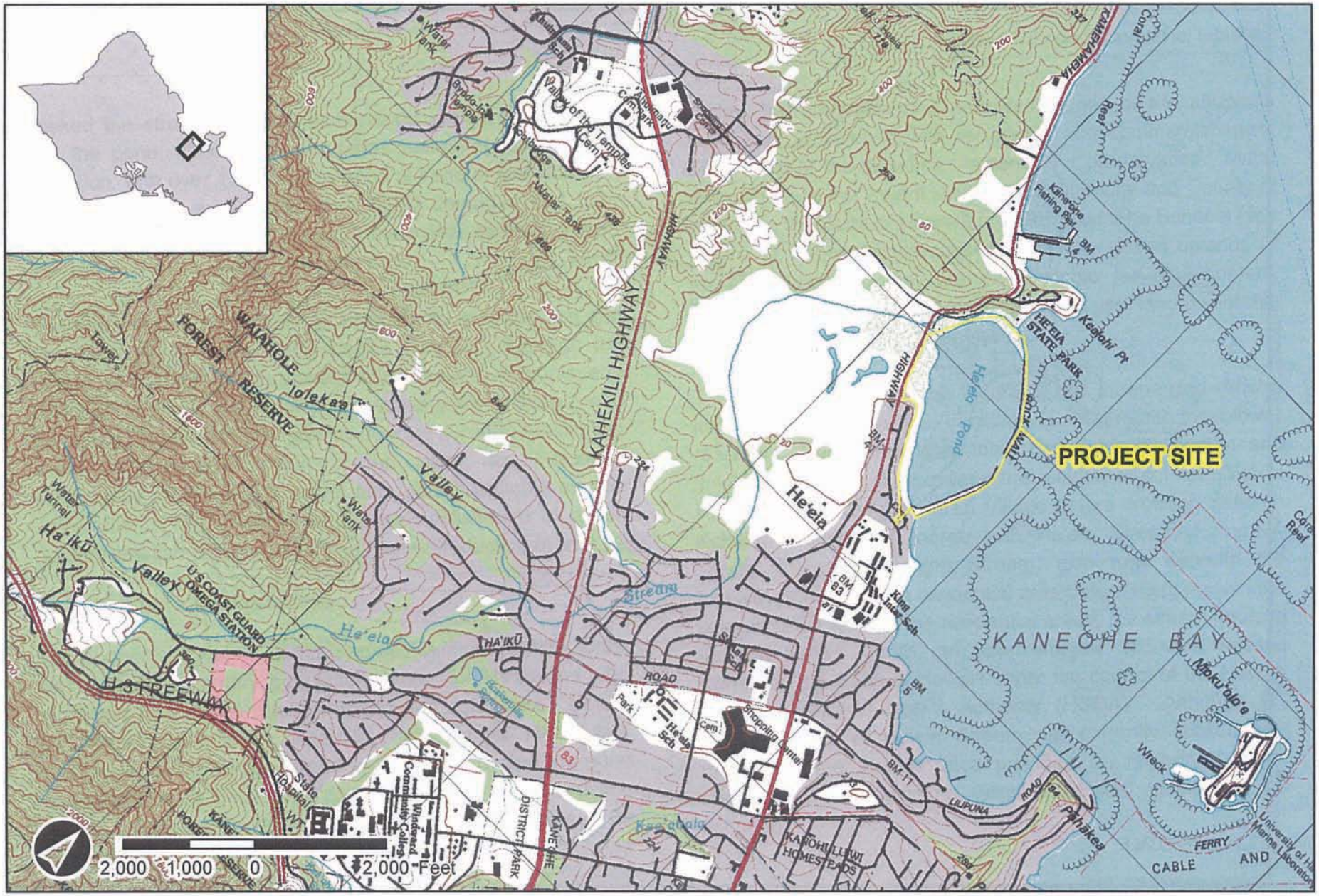

Figure 1 - Project Location

He'eia Fishpond, Kāne'ohe Bay, He'eia, Ko'olauloko, O'ahu
(U.S. Geological Survey (USGS) 1998).

Wilson Okamoto 2007

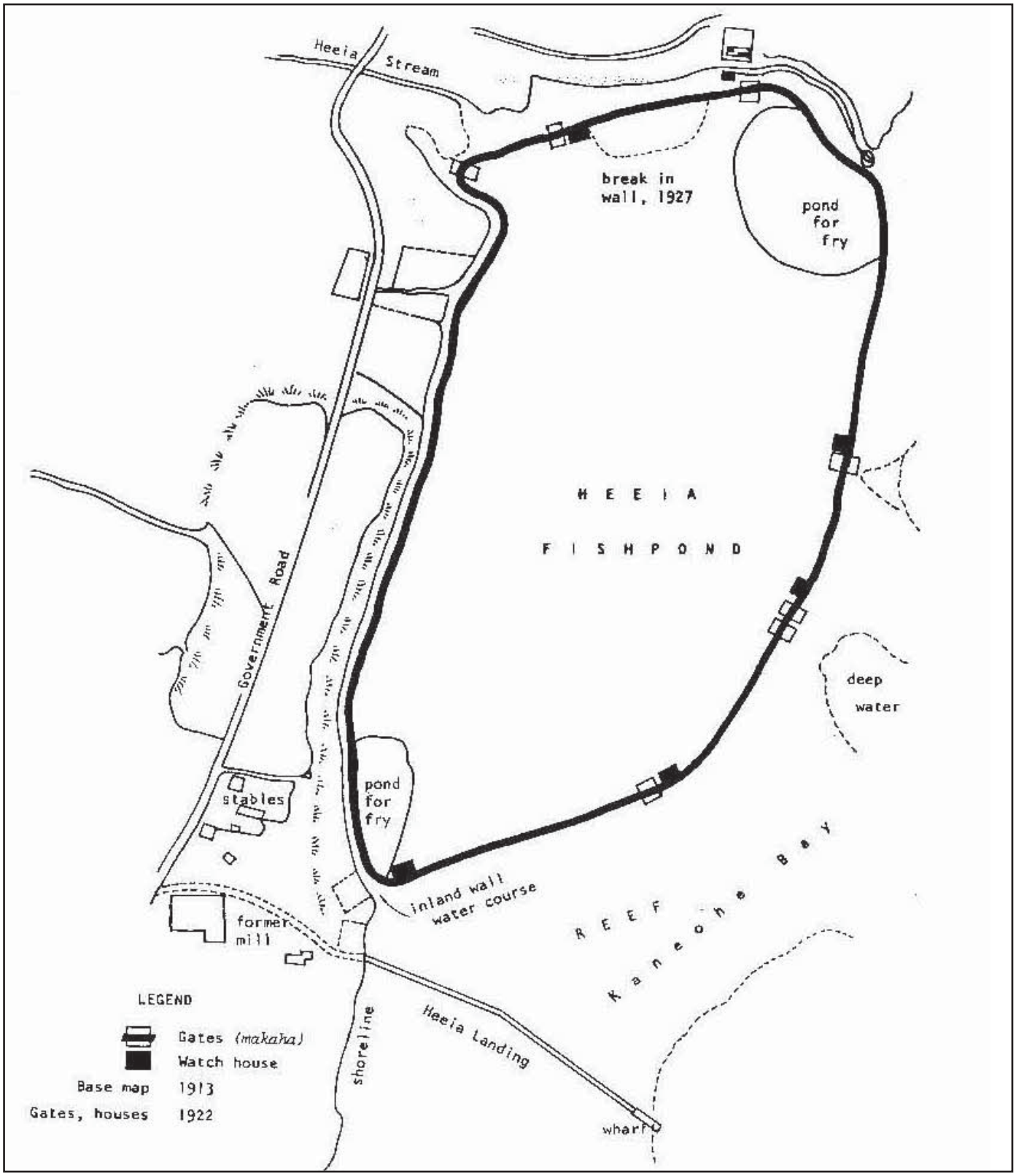

Figure 3 - Drawing of He‘eia Fishpond based on map by Monserrat, 1913. (Kelly 1976).

He‘eia, Ko‘olaupoko, ‘Oahu, Hawai‘i

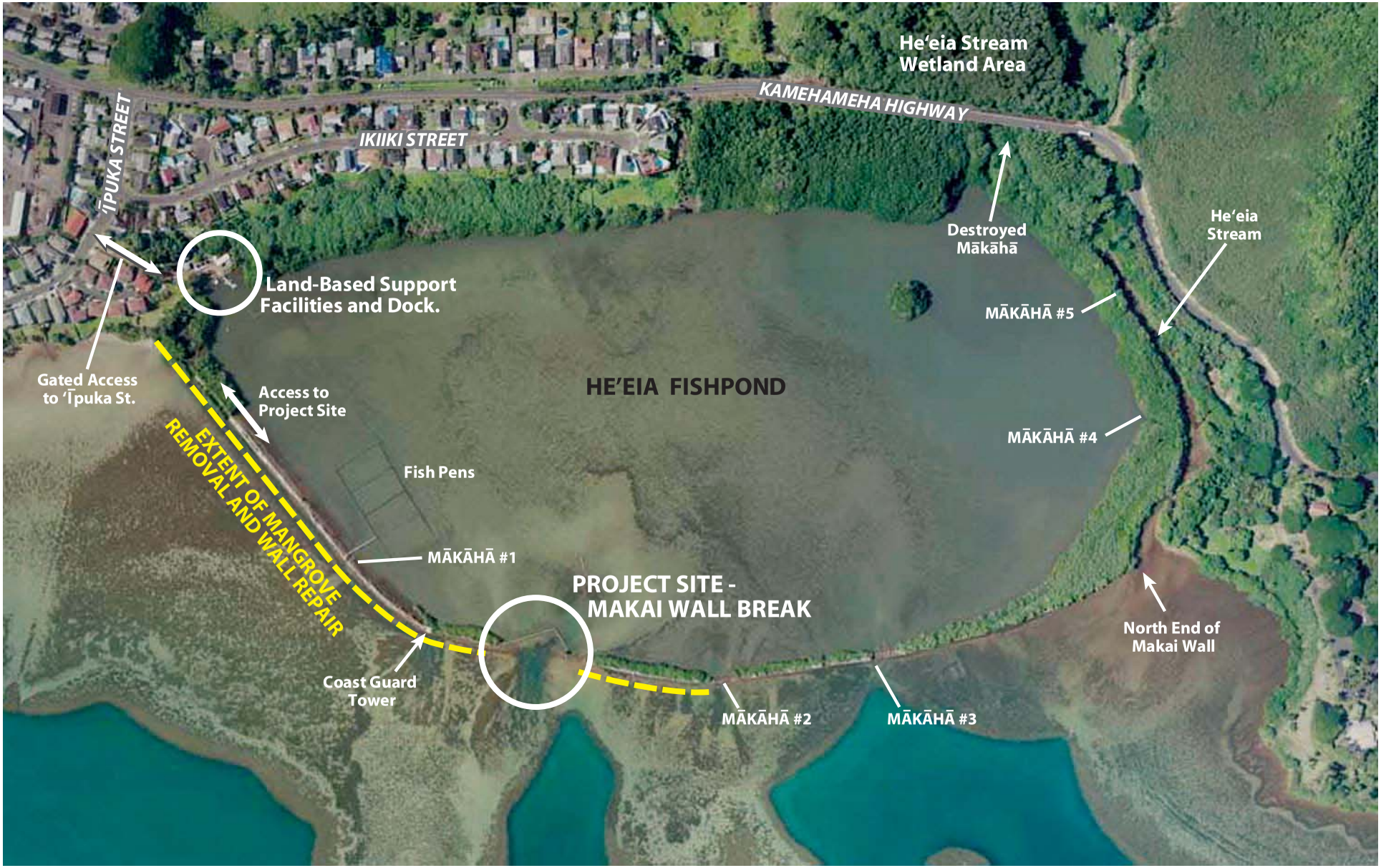

FIGURE 6 - HE'EIA FISHPOND FEATURES - TMK: 4-6-05:001
HE'EIA, KO'OLAUPOKO, 'OAHU, HAWAI'I *(Photo: University of Hawaii - SOEST December 2005).*

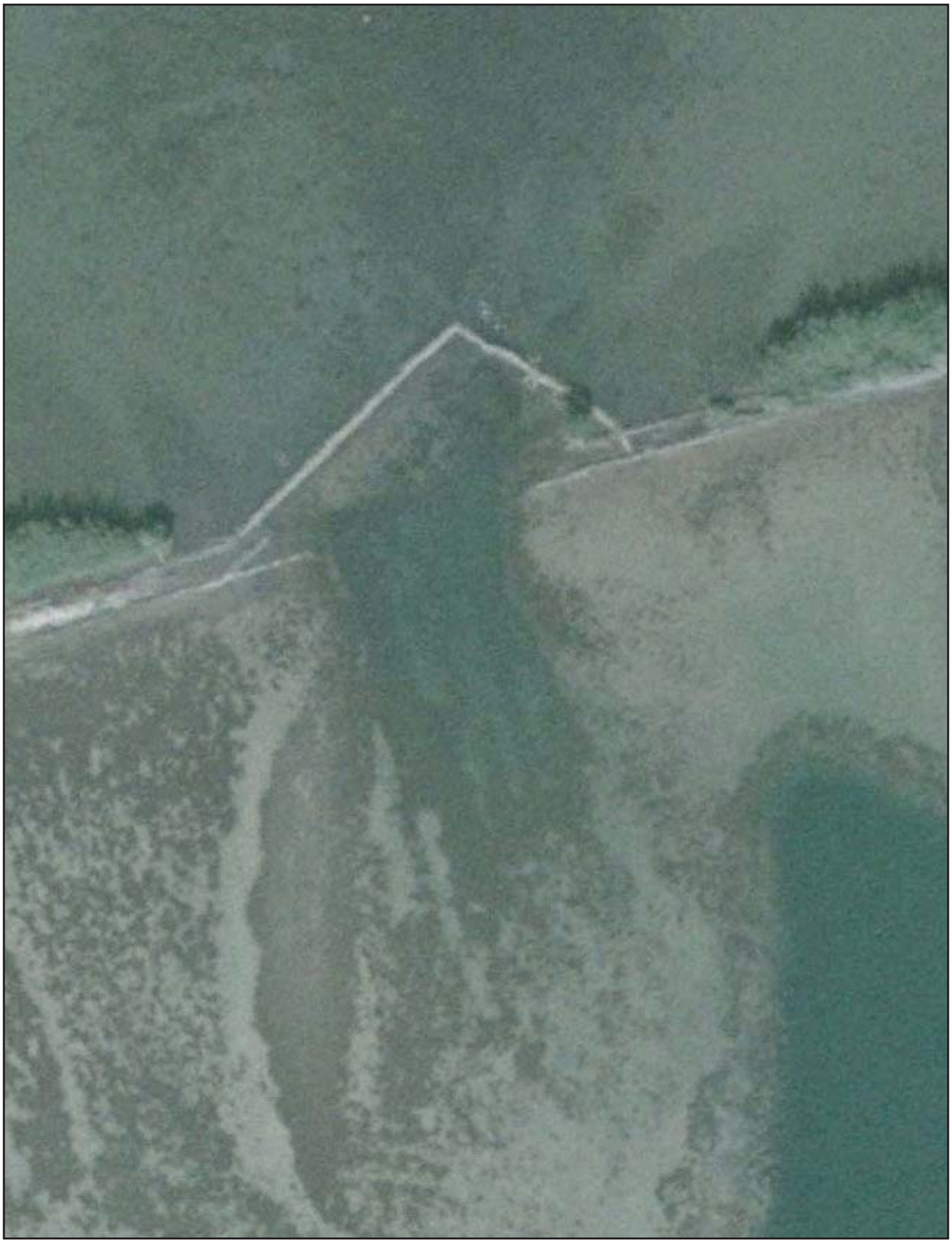

Figure 7. Aerial Photograph - Project Site - Makai Wall Break
He‘eia Fishpond, Kāne‘ohe Bay, He‘eia, Ko‘olauloko, O‘ahu
(Photo: Google Earth cir. 2007).

Figure 8. Submerged Temporary Wall and makai fishpond wall with break looking north at high high tide, 2.8 ft. (6/17/2011).

Figure 9 Same view at low low tide, -0.10 ft. (4/8/2011). The Temporary Wall is 3 ft. high and 3 ft. wide; The north wall segment is 95 ft. long, and south wall segment is 158 ft. long.

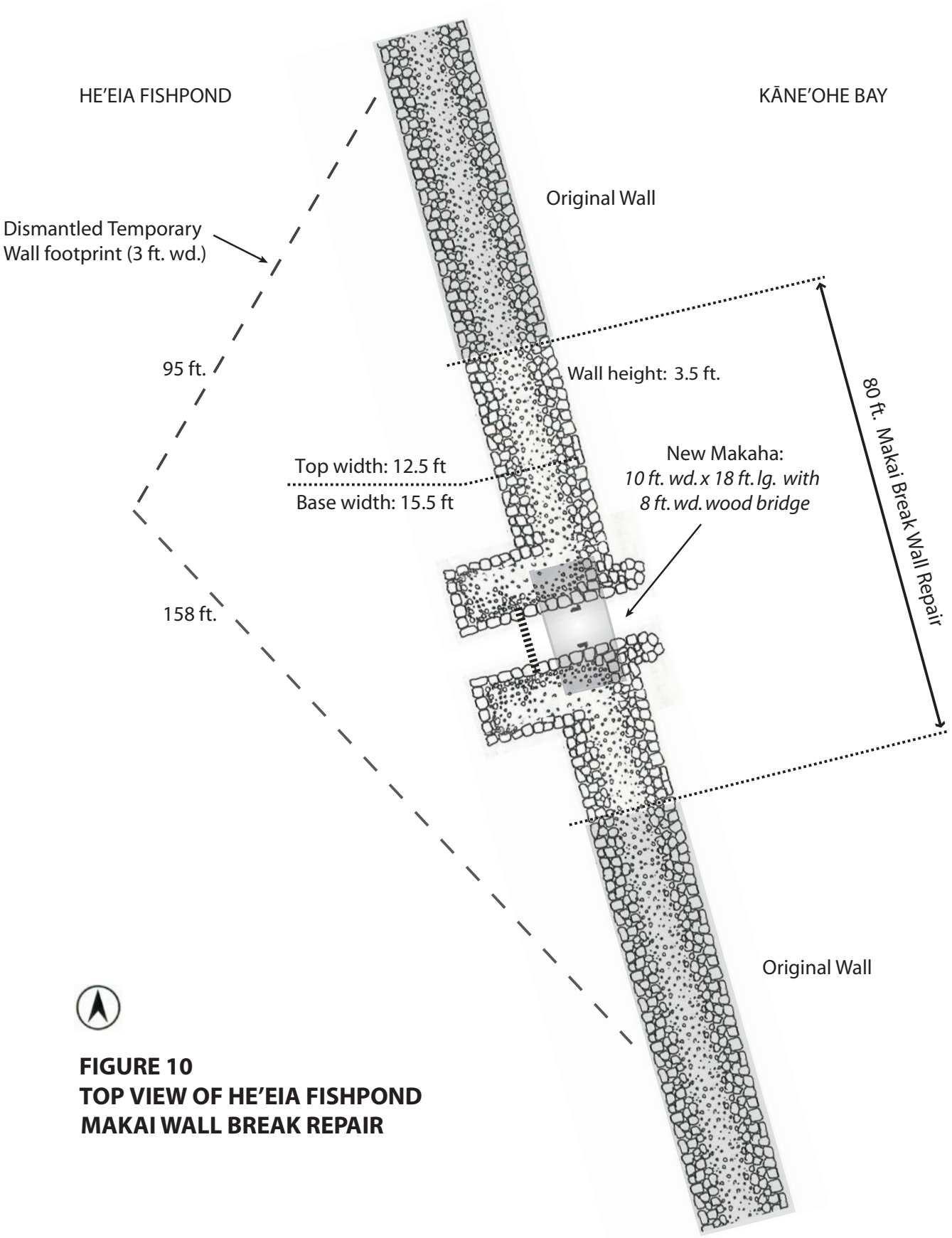

FIGURE 10
TOP VIEW OF HE'EIA FISHPOND
MAKAI WALL BREAK REPAIR

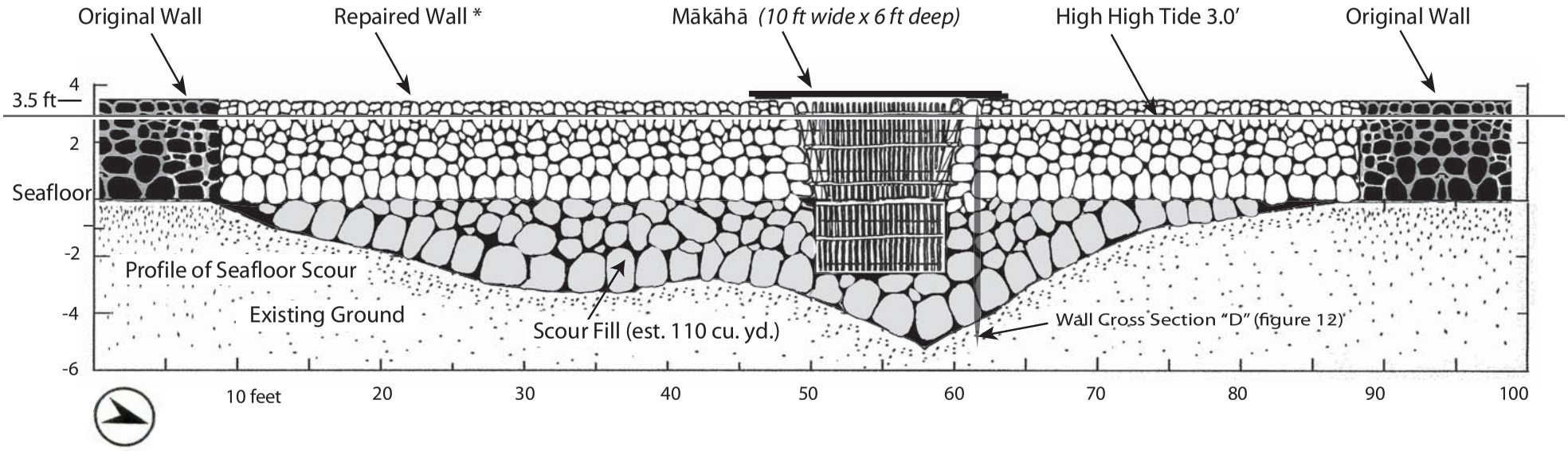

Figure 11
PROFILE OF HE'EIA FISHPOND MAKAI WALL BREAK REPAIR LOOKING MAUKA.

** Repaired Wall is 80′ long x 3.5′ high. 12.5′ top width x 15.5′*

DRAWING NOT TO SCALE

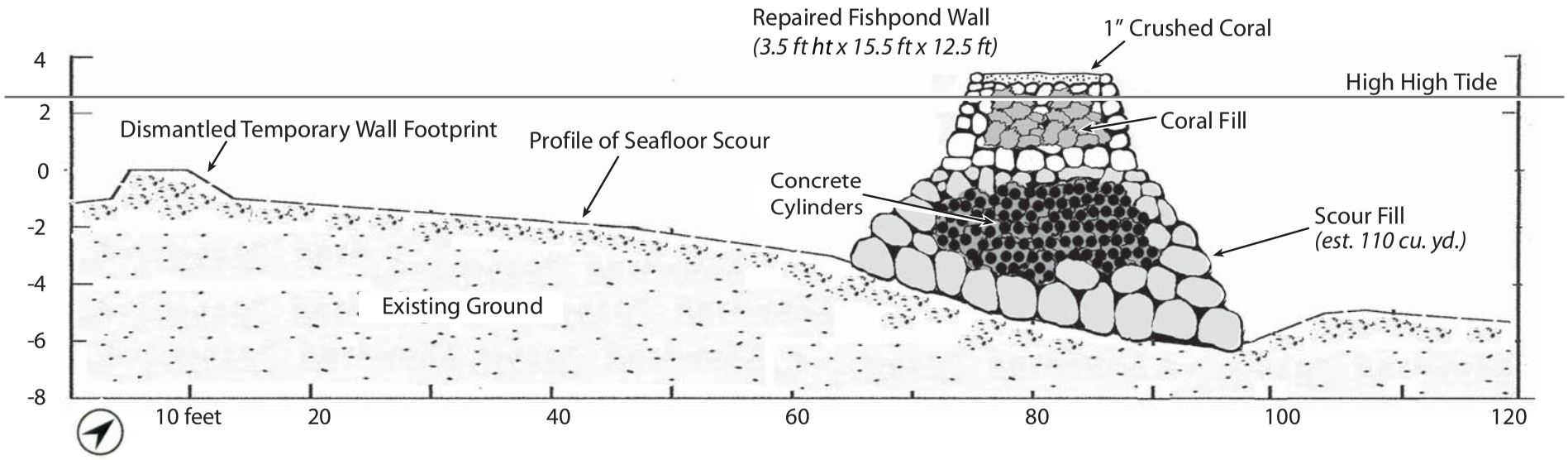

Figure 12
PROFILE VIEW OF HE'EIA FISHPOND MAKAI WALL BREAK REPAIR AT CROSS SECTION "D"

FINAL

Archaeological Literature Review and Field Inspection for the He‘eia Fishpond Wall Repair Project, He‘eia Ahupua‘a, Ko‘olaupoko District, O‘ahu Island TMK [1] 4-6-005:001

Prepared for

Paepae o He‘eia

Prepared by

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and

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Cultural Surveys Hawai‘i, Inc.

Kailua, Hawai‘i

(Job Code: HEEIA 11)

February 2012

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Management Summary

Reference	Final Archaeological Literature Review and Field Inspection for the He‘eia Fishpond Wall Repair Project, He‘eia Ahupua‘a, Ko‘olaupoko District, O‘ahu Island, TMK [1] 4-6-005:001 (Groza and Monahan 2012)
Date	February 2012
Project Number (s)	Cultural Surveys Hawai‘i Inc. (CSH) Job Code: HEEIA 11
Investigation Permit Number	Fieldwork was conducted under CSH’s annual archaeological permit # 12-04 issued by the Hawai‘i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawai‘i Administrative Rules (HAR) Chapter 13-282.
Agencies	SHPD/DLNR
Project Location	The project location is the He‘eia Fishpond along the seashore at He‘eia Ahupua‘a, immediately north of the town of Kāne‘ohe, east of Kamehameha Highway, and south of He‘eia Stream and He‘eia State Park, Ko‘olaupoko District, O‘ahu Island, TMK [1] 4-6-005:001, on O‘ahu Island’s windward coast. More specifically, the project location is a portion of the fishpond’s damaged *kuapā* (wall). This area is depicted in the 1998 Kāne‘ohe U.S. Geological Survey (USGS) 7.5-minute topographical quadrangle map (see Figure 1).
Land Jurisdiction	Private
Project Description	He‘eia Fishpond is a pre-Contact Hawaiian fishpond measuring approximately 88 acres in areal size and surrounded by a *kuapā* of basalt and coral measuring approximately a mile in length. The site was listed on the National Register of Historic Places in 1973 as Site 50-80-10-327. Portions of the wall were damaged during the 1965 Keapuka Flood creating a large gap in its seaward portion. The original size of this gap, commonly referred to as the “Makai Break,” is a matter of some dispute (some sources put it at 130 feet [ft.]); but it now measures approximately 82 ft. (25.0 meter [m]) across. Paepae o He‘eia, a private non-profit organization dedicated to caring for He‘eia Fishpond, is engaged in a project to repair the gap and restore the ancient *kuapā* to its original alignment. A temporary wall built along the gap within the inner portions of the pond in 1991 will be disassembled and used as a foundation for the wall restoration. Once the foundation is built, wall restoration will continue with basalt rocks and coral to complete the original wall alignment. It is the understanding of CSH that, in order to complete the wall repair project, Paepae o He‘eia will be seeking a change in its Conservation District Use Permit. The current study and document can be used to support such a request.
Project Acreage	0.1 acre, which is the approximate size of the Makai Break and

	immediately-surrounding area inspected during this project
Document Purpose	This investigation does not fulfill the requirements of an archaeological inventory survey (per HAR Chapter 13-276). Rather, it serves as a document to facilitate the proposed project's planning, and it supports historic preservation review compliance by identifying any cultural resources within the study area. Based on the results of this study, CSH presents cultural resource management recommendations (see Section 6.2 Recommendations). A companion cultural impact assessment (CIA) (Cruz and Hammatt 2012), prepared to support the project's Hawai‘i state environmental review, per the guidelines of the Hawai‘i State Department of Health's Office of Environmental Quality Control "*Guidelines for Assessing Cultural Impacts*," further evaluates the project's potential impacts to cultural resources. Both documents support the project's historic preservation and environmental assessment consultation effort.
Fieldwork Effort	Fieldwork for this study was conducted on January 26, 2012, by CSH archaeologists Randy Groza, M.A., and David Shideler, M.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The fieldwork, which required one person-day to complete, was conducted under archaeological permit number 12-04 issued to CSH by SHPD/DLNR, per Hawai‘i Administrative Rules (HAR) Chapter 13-282.
Results	Maintenance and repairs of the *kuapā* at He‘eia have been conducted on a fairly regular basis throughout historic and modern times. Efforts to remove invasive mangrove plants and trees has been ongoing since the 1920s. During field inspection, which included both above- and underwater observations and measurements, original *kuapā* basalt rocks were found scattered between 20 and 40 m *makai* of the existing *kuapā*. Other than the constituent components of the existing wall structure, including basalt and coral materials, no other historically-significant cultural materials were observed in or near the immediate vicinity of the project area.
Recommendations	Based on all available evidence, including background research and the field inspection recently conducted by CSH, it is highly unlikely that any historically-significant cultural resources—other than the basalt and coral making up the *kuapā* itself—will be encountered during project-related activities to repair the Makai Gap. Furthermore, as long as traditional methods and materials are used throughout the proposed wall-restoration project (i.e., hand stacking using no mortar or concrete of locally-available basalt rocks and coral), it should have no adverse effect on the integrity or historic significance of He‘eia Fishpond,

	which was listed on the National Register of Historic Places (50-80-10-327) in 1973 as significant under criterion D, for its potential to yield information important in prehistory or history. If, in the unlikely event, intact cultural resources or human skeletal remains are encountered during the course of repair activities, all work in the immediate area should stop and the SHPD/DLNR should be notified immediately. No further archaeological work is recommended for the proposed He‘eia Fishpond Wall Repair Project.

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Section 5 Results of Fieldwork

5.1 Field Inspection

On January 26, 2012, CSH archaeologists Randy Groza, M.A., and David Shideler, M.A., conducted a field inspection of the Makai Break. As described above (see Section 3.6.1 He‘eia Fishpond Wall Maintenance), a cement-cylinder wall is *mauka* of, and adjacent to, the Makai Break (Figure 20). The cement-cylinder wall was installed as a temporary repair following the review and negative declaration of the Environmental Assessment to restore aquaculture at the fishpond (Brooks 1991).

CSH archaeologists measured the current wall break as 25.0 m (82 ft.). Available background information suggests this break was once up to 130 ft. wide, as a result of the 1965 flood. It appears that incremental repair between the 1965 event and the present may have narrowed this once-larger gap.

An underwater inspection of the wall break was also conducted to determine whether cultural materials were present; to record the depth of the water in the fishpond (measured at 2 pm; between low [11 am] and high tide [5 pm]); and to determine the type of sediment present. Depth measurements (from the top of the water to the top of the sediment within) across the break were taken every 5 m (Figure 21) starting from the north end proceeding to the south end (Table 3).

Table 3. Results of Underwater Inspection

Location in Makai Break [1]	Depth (m) [2]	Sediment Descriptions
0-5 m	1.55	Silty coarse sand with scattered small-boulder-sized coral. No basalt rocks present; all structural rocks appear to have been removed
5-10 m	1.25	Silty coarse sand; small-boulder-sized coral and basalt measuring approximately 60 cm long with a few scattered *niho* (foundation) rocks present
10-15 m	1.05	Silty coarse sand; no rock or coral present
15-20 m	1.15	Silty coarse sand; scattered small coral present; no foundation rocks present
20-25 m	1.02	Silty coarse sand; more silt than was observed in areas just to the north; from 21.7 m to 25.0 m, a *mauka*/*makai* row of block-shaped foundation rocks is present; cement cylinders fill the area between

Notes:
[1] Starting from the north end of the Makai Break and proceeding to the south end
[2] Measurements from the top of the water to the top of the sediment

CSH archaeologists also inspected the area *makai* (east) of the break to determine whether basalt, coral or other cultural materials were present. Approximately 10 m *makai* of the outside wall, sediments are notably siltier than observed at the break. One large basalt rock is also present. Approximately 20 m *makai* of the outside wall near the central portion of the channel where there is more scouring action, sediments consist of silty coarse sand; no rock or coral is present. Between 25 and 40 m *makai* of the outside wall, many scattered large- to medium-sized basalt rocks are present (Figure 22). It seems most likely these rocks were once associated with the original *kuapā*, and were washed away in 1965.

An underwater inspection of the temporary cement-cylinder wall *mauka* (west) of the break (Figure 23) was also conducted to determine if basalt rock, coral and/or other cultural materials are present (Figure 24). The only materials present are scattered cement cylinders washed off the top of the wall by tidal action and storms; no other cultural materials are present.

Just south of the break, the *kuapā* measures 470 cm (15.4 ft.) wide (Figure 25). The *makai* basalt face is approximately 30–40 cm (11.8–15.7 in.) wide, the *mauka* basalt face is approximately 30 cm (11.8 in.) wide, and the coral fill center is the remaining approximately 400 cm (13.1 ft.). The height of the *makai* wall face is 95 cm (37.4 in.) and consists of five courses. The height of the *mauka* face is 70 cm (27.6 in.) and consists of three to five courses (Figure 26).

All repairs to the *kuapā* in the vicinity of the Makai Break have been carried out using traditional methods (i.e., hand building with no mortar). Areas of the *kuapā* north of the Makai Break have been repaired sometime in the past (prior to 1991) using concrete, as described by Brooks (1991:5; see Section 3.6.1 He‘eia Fishpond Wall Maintenance) (Figure 27).

5.2 Field Discussions with Paepae o He‘eia Staff

Monthly *kuapā* repair occurs at the fishpond, as described on Paepae o He‘eia’s website:

> Refurbishment at He‘eia Fishpond starts by removing all mangrove and invasive plants that are damaging the wall. Then the wall sections that need to be repaired are restacked using the traditional Hawaiian method of dry-stacking. Coral is then used to fill in behind the stacked pohaku [rock]. (Paepae o Heeia 2011)

As discussed with Paepae o Heeia staff during the field inspection, wall stabilization is essential to preserving the *kuapā*. Basalt rock found outside of the *kuapā* has been salvaged at low tide and reused in areas where mangrove undermined the wall. Other salvaged basalt has been laid in line with the existing *kuapā*, as described in Table 3 above (this was noted at the 20-25 m-mark in the Makai Break). In some places, cement cylinders washed off the top of the temporary wall by tidal action and storms have been used as underlying fill for the *kuapā* in place of coral (Figure 28). However, the upper, exterior structure is maintained with coral as shown in Figure 25 and Figure 26.

A review of the 2007 aerial photo showing the Makai Break (see Figure 17) shows extensive areas of mangrove on and adjacent to the *kuapā*. At the time of CSH’s field inspection, all mangrove has been removed from the vicinity of the Makai Break (Figure 29).

According to Paepae o He‘eia staff, the exterior face of the *kuapā* just south of the break is the most intact portion of the *kuapā* (Figure 30).

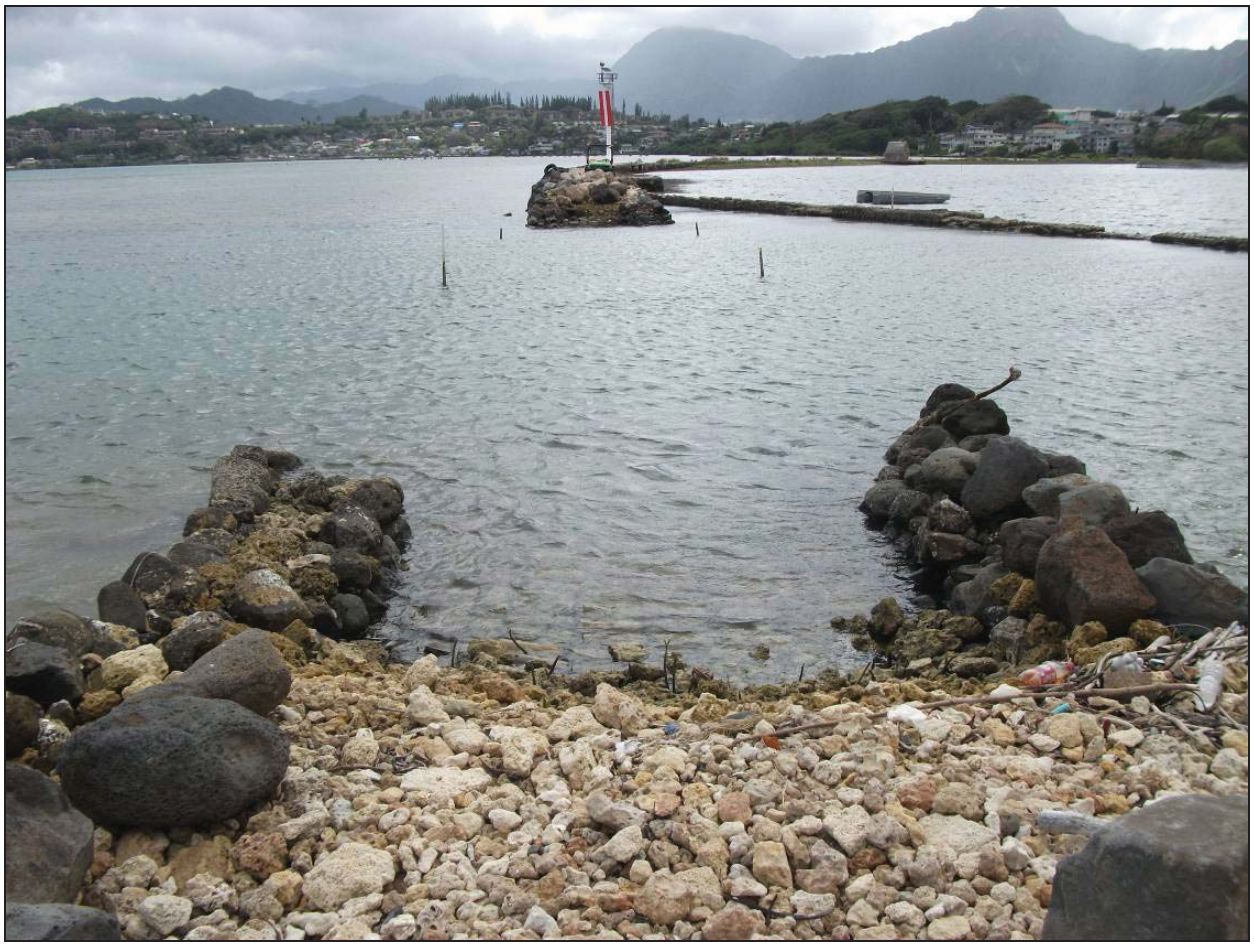

Figure 20. Looking across the Makai Break; a portion of temporary wall is visible to the right, view to south

Figure 21. CSH archaeologist taking measurements near center of break, view to north

Figure 22. Basalt boulder covered with *limu* (seaweed), view to east

Figure 23. Detail of cement-cylinder wall *mauka* of break, view to southwest

Figure 24. Underwater view of cement-cylinder wall, view to west

Figure 25. Upper surface of the *kuapā* facing a navigational marker in the background, view to south

Figure 26. Interior *kuapā* face and upper surface with top of exterior face in background, view to east

Figure 27. *Mākāhā* north of Makai Break; note use of concrete to maintain *kuapā*, view to northeast

Figure 28. Photograph showing northern portion of Makai Break with cement cylinders used as fill between basalt face of *kuapā*, view to south

Figure 29. Photograph showing *makai* portion of *kuapā* where mangrove has been removed. Note the extent of damage to the *kuapā* from the mangrove and the use of cement cylinders as fill, view to south; the Makai Break is to the southwest

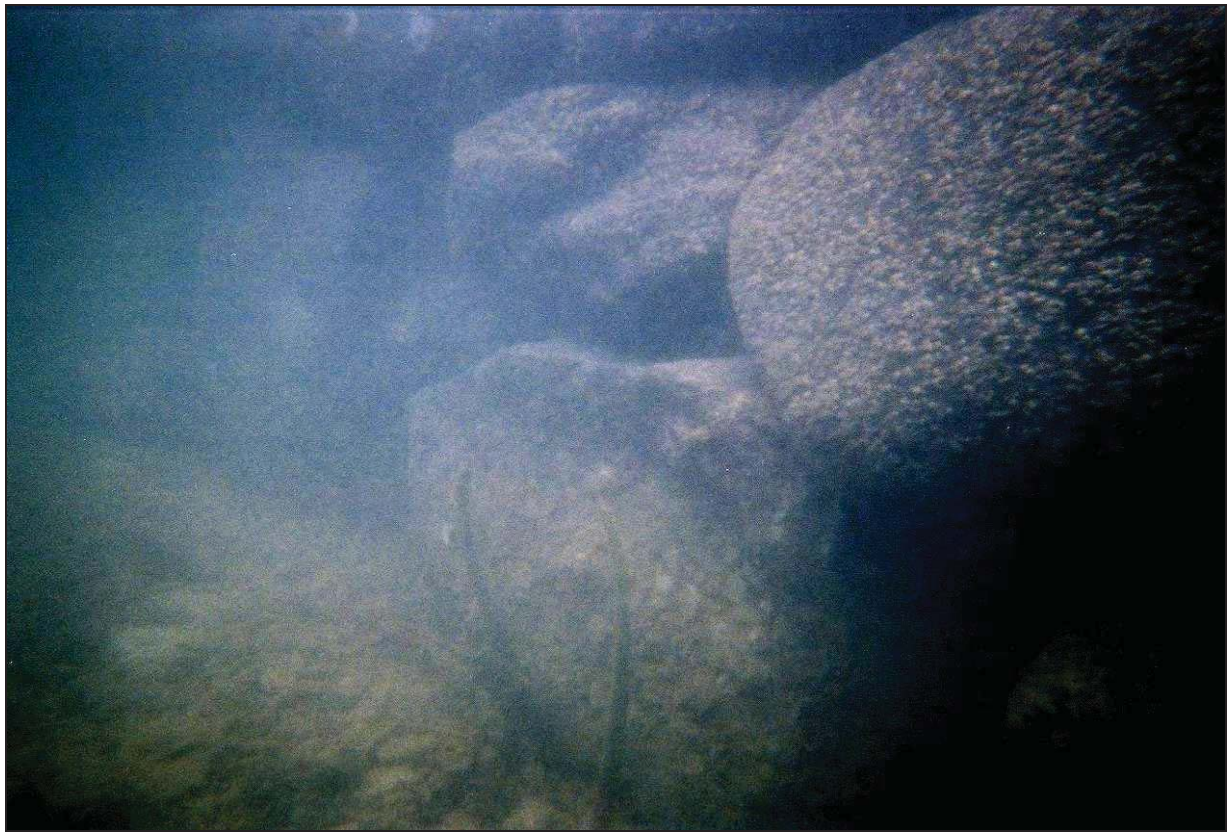

Figure 30. Photograph showing exterior face of *kuapā* just south of the Makai Break, view to east

Section 6 Summary and Recommendations

At the request of Paepae o He‘eia, a private non-profit organization dedicated to caring for He‘eia Fishpond, Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this archaeological literature review and field inspection for the proposed He‘eia Fishpond Wall Repair Project, He‘eia Ahupua‘a, Ko‘olaupoko District, O‘ahu Island, TMK [1] 4-6-005:001. The project is to repair and restore the *kuapā* (fishpond wall) to its original alignment.

He‘eia Fishpond is a pre-Contact Hawaiian fishpond measuring approximately 88 acres in areal size and surrounded by a *kuapā* of basalt and coral measuring approximately a mile in length, making it one of the longest in the Hawaiian Islands. Portions of the wall were damaged during the 1965 Keapuka Flood creating a large gap in its seaward portion. Paepae o He‘eia proposes to repair the gap, known as the Makai Break, using traditional materials and methods. A temporary wall built in 1991 is along the gap within the inner portions of the pond. This wall will be disassembled and used as a foundation for the wall restoration. Once the foundation is built, wall restoration will continue with basalt rocks and coral to complete the original rock wall alignment.

This investigation does not fulfill the requirements of an archaeological inventory survey (per HAR Chapter 13-276). Rather, it serves as a document to facilitate the proposed project’s planning, and it supports historic preservation review compliance by identifying any cultural resources within the study area. A companion cultural impact assessment has also been prepared by CSH for this project (Cruz and Hammatt 2012).

6.1 Summary

He‘eia Fishpond was listed on the National Register of Historic Places (Site 50-80-10-327) in 1973. Maintenance and repairs of the *kuapā* at He‘eia have been conducted on a fairly regular basis throughout historic and modern times. Efforts to remove invasive mangrove plants and trees has been ongoing since the 1920s.

During field inspection, which included both above- and underwater observations and measurements, original *kuapā* basalt rocks were found scattered between 20 and 40 m *makai* of the existing *kuapā*. Other than the constituent components of the existing wall structure, including basalt and coral materials, no other cultural materials were observed in or near the immediate vicinity of the project area.

CSH archaeologists measured the current wall break as 25.0 m (82 ft.). Available background information suggests this break was once up to 130 ft. wide, as a result of the 1965 flood. It appears that incremental repair between the 1965 event and the present may have narrowed this once-larger gap.

As the *kuapā* is built on a coral reef in shallow water, the likelihood of encountering historically-significant cultural material—other than the constituent basalt and coral comprising the *kuapā*—within the project area seems exceedingly low.

6.2 Recommendations

Based on all available evidence, including background research and the field inspection recently conducted by CSH, it is highly unlikely that any historically-significant cultural resources—other than the basalt and coral making up the *kuapā* itself—will be encountered during project-related activities to repair the Makai Gap. Furthermore, as long as traditional methods and materials are used throughout the proposed wall-restoration project (i.e., hand stacking using no mortar or concrete of locally-available basalt rocks and coral), it should have no adverse effect on the integrity or historic significance of He‘eia Fishpond, which was listed on the National Register of Historic Places (50-80-10-327) in 1973 as significant under criterion D, for its potential to yield information important in prehistory or history.

If, in the unlikely event, intact cultural resources or human skeletal remains are encountered during the course of repair activities, all work in the immediate area should stop and the SHPD/DLNR should be notified immediately.

No further archaeological work is recommended for the proposed He‘eia Fishpond Wall Repair Project.

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Cultural Impact Assessment for the He‘eia Fishpond Wall Repair Project, He‘eia Ahupua‘a, Ko‘olaupoko District, O‘ahu Island

TMK: [1] 4-6-005:001

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APPENDIX B (Partial Print)

Prefatory Remarks on Language and Style

A Note about Hawaiian and other non-English Words:

Cultural Surveys Hawai‘i (CSH) recognizes that the Hawaiian language is an official language of the State of Hawai‘i, it is important to daily life, and using it is essential to conveying a sense of place and identity. In this report, CSH uses italics to identify and highlight all foreign (i.e., non-English and non-Hawaiian) words. Italics are only used for Hawaiian words when citing from a previous document that italicized them. CSH parenthetically translates or defines in the text the non-English words at first mention, and the commonly-used non-English words and their translations are also listed in the *Glossary* (Appendix A) for reference. However, translations of Hawaiian and other non-English words for plants and animals mentioned by community participants are referenced separately (see explanation below).

A Note about Plant and Animal Names:

When community participants mention specific plants and animals by Hawaiian, other non-English or common names, CSH provides their possible scientific names (Genus and species) in the *Common and Scientific Names of Plants and Animals Mentioned by Community Participants* (Appendix B). CSH derives these possible names from authoritative sources, but since the community participants only name the organisms and do not taxonomically identify them, CSH cannot positively ascertain their scientific identifications. CSH does not attempt in this report to verify the possible scientific names of plants and animals in previously published documents; however, citations of previously published works that include both common and scientific names of plants and animals appear as in the original texts.

Management Summary

Reference	Cultural Impact Assessment (CIA) for the He‘eia Fishpond Wall Repair Project, He‘eia Ahupua‘a, Ko‘olaupoko Moku, O‘ahu Island (TMK: [1] 4-6-005:001) (Cruz and Hammatt 2011)
Date	January 2012
Project Number	CSH Job Code: HEEIA 12
Agencies	State of Hawai‘i Department of Health/Office of Environmental Quality Control (DOH/OEQC)
Project Location	The study area is the He‘eia Fishpond, adjacent lands on the coast of Kāne‘ohe Bay, and the entire ahupua‘a (land division extending from the uplands to the sea) of He‘eia.
Land Jurisdiction	Private
Project Description	The He‘eia Fishpond is an ancient Hawaiian fishpond approximately 88-acres in size and includes 1.3 miles of ancient rock wall surrounding the pond. Portions of the ancient rock wall were destroyed during the 1965 Keapuka Flood creating a gap measuring 180 feet long in the seaward portion of the wall, approximately 1500 feet from the shoreline. The gap, commonly referred to as the “Makai Break,” now measures 80 feet across. The purpose of this Project is to close the gap and restore the ancient rock wall to its original alignment. A temporary wall, built along the gap within the inner portions of the pond between 1989 and 1991, will be disassembled and used as a foundation for the wall restoration. Once the foundation is built, wall restoration will continue with basalt rocks and coral to complete the original rock wall alignment.
Project Acreage	0.1 acre
Area of Potential Effect (APE) and Survey Acreage	For the purposes of this CIA, the APE is defined as the approximately 0.1-acre Project area. While this investigation focused on the Project APE, the study area includes the entire ahupua‘a of He‘eia.
Document Purpose	The Project requires compliance with the State of Hawai‘i environmental review process (Hawai‘i Revised Statutes [HRS] Chapter 343), which requires consideration of a proposed Project’s effect on cultural practices and resources. Paepae o He‘eia requested CSH conduct this CIA. Through document research and ongoing cultural consultation efforts, this report provides information pertinent

	to the assessment of the proposed Project's impacts to cultural practices and resources (per the *Office of Environmental Quality Control's Guidelines for Assessing Cultural Impacts*) which may include Traditional Cultural Properties (TCPs) of ongoing cultural significance that may be eligible for inclusion on the State Register of Historic Places, in accordance with Hawai‘i State Historic Preservation Statute (Chapter 6E) guidelines for significance criteria according to Hawai‘i Administrative Rules (HAR) §13–275 under Criterion E. The document is intended to support the Project's environmental review and may also serve to support the Project's historic preservation review under HRS Chapter 6E and HAR Chapter 13–275.
Consultation Effort	Hawaiian organizations, agencies and community members were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the Project area and the vicinity. The organizations consulted included the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), the O‘ahu Island Burial Council (OIBC), Hui Mālama I Nā Kūpuna ‘O Hawai‘i Nei, the Ko‘olaupoko Hawaiian Civic Club, and community members of He‘eia Ahupua‘a.
Results of Background Research	Background research for this Project yielded the following results (presented in approximate chronological order): 1. The He‘eia Fishpond is a pre-Contact Hawaiian fishpond approximately 88-acres in size and it includes 1.3 miles of ancient rock wall surrounding the pond. Portions of the ancient rock wall were destroyed during the 1965 Keapuka Flood creating a gap measuring 180 feet long in the seaward portion of the wall, approximately 1500 feet from the shoreline. The gap, commonly referred to as the "Makai Break," now measures 80 feet across. 2. The ahupua‘a of He‘eia extends from the tallest peak of the Ko‘olau Mountains to the coast of Kāne‘ohe Bay and beyond to the western section of the Mōkapu Peninsula and includes the island, Moku o Lo‘e. 3. The term He‘eia may refer to the name of the grandson of the demigod ‘Olopana, who became the foster child of the goddess Haumea after ‘Olopana had been washed out to sea (Hoku o Hawaii 1928, cited in Sterling and Summers 1978:184). The term He‘eia may also derive from a tidal wave event that, "washed (he‘e ‘ia) the natives out to sea and back, after which they were victorious…[d]uring a battle with people from Leeward O‘ahu" (Pukui et al. 1974:44).

	4. McAllister (1933) recorded four loko i‘a (fishpond) in He‘eia: He‘eia Fishpond, two fishponds of unknown names located south of the Project area, and O‘ohope Fishpond (late maturity) approximately 1,000 meters southeast of the Project area. These fishponds were loko kuapā, or fishponds extending out from the shore onto the reef, that contained mākāhā (sluice gate) between the basalt and coral rock walls, which permitted the flow of seawater but prevented the fish from escaping (Kirch 1985:212). The walls of He‘eia Fishpond measure about 5,000 feet in length and enclose 88 acres, and several mākāhā line the 12-foot wide walls (McAllister 1933:173). 5. Frequent rainfall, ample streams, broad valley bottoms, and flatlands between the mountains and the sea, provided excellent conditions for lo‘i kalo (irrigated taro terrace) and other forms of irrigated agriculture in He‘eia and neighboring ahupua‘a, such as crops of ‘uala (sweet potato), uhi (yam), mai‘a (banana), hala (pandanus), wauke (paper mulberry), olonā (a native shrub used for cordage), and ‘awa (kava) (Handy and Handy 1972:456; Portlock 1789:4). 6. Traditional land use of the He‘eia Ahupua‘a prior to Western Contact included taro cultivation immediately inland of the He‘eia Fishpond and continued inland. The numerous lo‘i (irrigated terrace) and ‘auwai (ditch) systems of He‘eia dispersed the water over the cultivated lands, most of it percolating through the soil into the artesian lens (Kelly 1975:40). Thus, the irrigated network of lo‘i terraces inland of the He‘eia Fishpond, acted as a flood prevention device protecting the fishpond from flooding during heavy storms. The mauka (inland)/makai (seaward) relationship between the He‘eia Fishpond and the intricate inland lo‘i kalo system mauka of the fishpond in He‘eia allowed successful cultivation both on land and in the fishpond. 7. Archaeological investigations and historic documents suggest that many of the ahupua‘a of the moku (district) of Ko‘olaupoko, including He‘eia, contained well-developed fishpond systems and stream-fed irrigated upland terraces. The estuary system of Kāne‘ohe Bay—the largest anywhere in the Hawaiian archipelago—contained lagoons and productive fisheries protected by broad fringing reefs. Hawaiians harvested ‘ama‘ama (mullet), awa (milkfish), and other fish in the brackish waters of at least 30 loko i‘a on Kāne‘ohe Bay during pre-Māhele times (Devaney et al. 1982:114, 143–144; Summers 1964:2), most of which have been destroyed

	(Devaney et al. 1982:139). 8. In 2006, Carson conducted an archaeological assessment for replacement of a caretaker's house at He‘eia Fishpond, within the site boundary. Surface inventory survey and minimal subsurface testing were conducted; however no cultural resources were identified (Carson 2006). 9. According to Henry (1993:39), the god of the hīhīmanu (stingray) assigned a special stingray—Lupe-kia‘i-nui—to protect He‘eia Fishpond after the konohiki (overseer) of the fishpond promised that the fishpond would forever remain a fishpond.
Results of Community Consultation	CSH attempted to contact 16 community members and government agency and community organization representatives. Of the six people that responded, four kūpuna (elders) and/or kama‘āina (Native-born) participated in formal interviews for more in-depth contributions to the CIA. CSH also presented the Project information to the Ko‘olaupoko Hawaiian Civic Club. This community consultation indicates: 1. Mr. Barcase and Mrs. Kaluhiwa's association of the vicinity of the Project area with several wahi pana (storied place) and mo‘olelo (story, oral traditions) reveal a strong connection to past traditions and a renewed salience of those traditions today. They share the following mo‘olelo, which strongly articulate with archived mo‘olelo: Meheanu, the eel kia‘i (guardian) of Kāne‘ohe Bay who resided on the land of Luamo‘o behind He‘eia Fishpond (McAllister 1933:173); Makanui, the kahu (caretaker) at the leina (place to leap from) of Kealohi Point, a place where souls went for judgment and that divided the ahupua‘a into He‘eia Uli and He‘eia Kea (McAllister 1933:173); and Keahiakahoe, a mountain peak that connects to Moku o Loe and Pu‘u Pahu through a sibling rivalry (e.g., Hawaiian Ethnological Notes ms. Vol. 2:2181, cited in Sterling and Summers 1978:206; Landgraf 1994:94). 2. Mrs. Kaluhiwa, a kama‘āina and leading authority on the history, cultural sites and practices in He‘eia Ahupua‘a, reported that a stream-fed pond named Makawiliwili and an underwater cave were located nearby the Project area. 3. Mrs. Kaluhiwa recalls catching weke, āholehole, awa, and manini fish, gathering ‘ōpae lōlō and oysters, and hunting a variety of crabs, including ‘a‘ama on the shore rocks and haole crabs and kūhonu farther offshore (see Appendix B for

	common and scientific plant and animal names mentioned by community participants). She also used to gather limu and squid on the reefs, including two reefs named Malulina and ‘Iole. Mrs. Kaluhiwa reflects that her grandfather was a lawai‘a (fisherman)—he hunted turtles and could spear while standing on the bow of a boat. 4. Mr. Fred Takebayashi recalls his employment at the He‘eia Fishpond starting in 1946 to repopulate He‘eia Fishpond with mullet, bringing in 10,000 baby mullet a day. 5. Mrs. Kaluhiwa states that an ‘auwai once traversed the length of the ahupua‘a of He‘eia. Maintained by Mrs. Kaluhiwa’s grandfather, this ‘auwai diverted stream water from the valleys of Ha‘ikū and ‘Ioleka‘a down Ha‘ikū Road toward St. Ann Catholic Church. From there, one canal flowed toward He‘eia Fishpond, and another flowed toward a fishpond—most likely the O‘ohope Fishpond—near Yacht Club Street immediately adjacent to the current Project area. Mrs. Kaluhiwa speculates that this second branch of the ‘auwai may have entered the fishpond through mākāhā and its mauka walls to create the proper salinity for the raising of mullet. 6. From the mid-1970swhen Mrs. Kaluhiwa and her husband Jerry Kaluhiwa acquired the lease to the He‘eia Fishpond until 1982, they cared for the fishpond and implemented the “Limu Project” to propagate different varieties of limu within and around the He‘eia Fishpond. 7. Ms. Cypher of the Ko‘olaupoko Hawaiian Civic Club, states that this repair work needs to be done and that the He‘eia Fishpond is a vital element to food production for the ahupua‘a of He‘eia. She states that the He‘eia Fishpond is a very significant cultural site within the Ko‘olaupoko District and it is associated with many mo‘olelo poetically describing the significance of the fishpond.
Impacts and Recommendation	Based on the information gathered for the cultural and historic background and community consultation detailed in this CIA report, CSH foresees no potential adverse impacts of the proposed Project on Native Hawaiian or other ethnic groups’ cultural practices customarily and traditionally exercised for subsistence, cultural or religious purposes; however, caution should be taken when implementing the improvements to protect cultural resources located in and around the He‘eia Fishpond.

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Section 7 Community Consultation

Throughout the course of this assessment, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about traditional cultural practices specifically related to the Project area. This effort was made by letter, email, telephone and in-person contact. The initial outreach effort was started in May 2010. Community consultation was completed in June 2011. In the majority of cases, a letter, map, and an aerial photograph of the Project area were mailed.

In most cases, two attempts were made to contact individuals, organizations, and agencies apposite to the CIA for this Project. The results of the community consultation process are presented in Table 3. Excerpts from more extensive interviews specifically related to He‘eia Ahupua‘a and the Project area are presented in Section 8 below.

Table 3. Results of Community Consultation

Name	Affiliation, Background	Comments
Ailā, William	Hui Mālama I Nā Kūpuna ‘O Hawai‘i Nei	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011
Ayau, Halealoha	Hui Mālama I Nā Kūpuna ‘O Hawai‘i Nei	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011
Barcase, Al Makahinu	Kumu hula (hula teacher) and Hawaiian Studies teacher, King Intermediate School	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011. See complete interview in Section 8 below
Bridges, Cy	OIBC	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011
Camvel, Donna and Wali	Ko‘olaupoko Hawaiian Civic Club	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011
Cayan, Coochie	History and Culture Branch Chief, SHPD	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011. See SHPD response below in Figure 32
Cypher, Mahealani	President, Ko‘olaupoko Hawaiian Civic Club	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011. See complete interview in Section 8 below
De Silva, Kihei and Mapuana	Kama‘āina of Kailua	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011

Name	Affiliation, Background	Comments
Hewett, Alice	Ko‘olaupoko Hawaiian Civic Club	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011
Kaluhiwa, Rocky	Ko‘olaupoko Hawaiian Civic Club	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011. See complete interview in Section 8 below
Mahi, Aaron D.	Ko‘olaupoko Moku Representative, OIBC	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011
McKeague, Kawika	OIBC	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011
Meinicke, Fred Kalani	Professor, Windward Community College	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011
Nāmu‘o, Clyde	Administrator, OHA	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011. See OHA response below in Figure 33
Takebayashi, Fred	Waikalua Fishpond Preservation Society	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011. See complete interview in Section 8 below
Wada, Susan	Queen Lili‘uōkalani Children’s Center	CSH sent community outreach letter and figures on March 7, 2011 and May 3, 2011

7.1 State Historic Preservation Division

In a letter dated April 5, 2011, the SHPD (Figure 32)— suggested that CSH contact various groups and knowledgeable kama‘āina from Kāne‘ohe and Kailua as a strategy for more diverse community outreach. The SHPD also suggested that CSH contact kumu hula from the Kāne‘ohe area such as Frank Hewitt and Mapuana de Silva. The SHPD also provided the names and contact information of those who may contribute to this CIA such as Cy Bridges, Aaron Mahi, Steve Hoag, Kawika McKeague, Eric Enos and Fred Meinecke.

7.2 Office of Hawaiian Affairs

CHS contacted Clyde Nāmu‘o, Administrator of OHA, on February 22, 2011. In a written response sent to CSH on April 1, 2011 (Figure 33), OHA deferred comments to Paepae o He‘eia, who OHA recognizes as having demonstrated responsibility to the Project area. OHA applauds Paepae o He‘eia for their hard work and perpetuation of Hawaiian culture and traditional

stewardship concepts. OHA recognizes that Paepae o He‘eia’s members have ancestral connections to the Project area.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY H. KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAHUHIHEWA BUILDING
601 KAMOKILA BLVD, KAPOLEI HI 96706

April 5, 2011

Mr. Brian Kawika Cruz
Cultural Surveys Hawaii
P.O. Box 1114
Kailua, Hawaii 96734

Log No. 2011.0619
Doc.No.1104pc001

Dear Brian Kawika Cruz:

SUBJECT: HEEIA 12: A Cultural Impact Assessment (CIA) for the Proposed He'eia Fishpond Wall Repair Project, He'eia Ahupua'a, Ko'olaupoko District, O'ahu Island.
TMK: [1] 4-6-005:001.

Mahalo for the opportunity to comment on the aforementioned CIA proposal for the He'eia Fishpond wall repair project. The Paepae o He'eia group has many community people resources that you are well aware of and working with by now.

As a strategy for more diverse community outreach, the SHPD suggests the following:

- Contact with senior citizen groups in Kane'ohe and Kailua and finding folks who once lived and/or worked nearby the project.
- Contact with fisher folk at the pier who may be resources or refer you to others.
- Talk story with Na Kumu Hula of Ko'olauloa such as Frank Hewitt, Mapuana de Silva, etc. for a cultural and hula lens of the area.
- Talk story with other stewardship programs in Ko'olauloa such as Doc Burrows group.
- Consider other community and/or business groups in Ko'olauloa who may be resources.

Some folks who may be of kokua are:

1. Cy Bridges, OIBC district rep for Ko'olauloa bridgesc@polynesia.com
2. Aaron Mahi, OIBC district rep for Ko'olauloa aaronmahi@aol.com
3. Steve Hoag, OIBC landowner rep/kama'aina to Ko'olauloa hoags@hawaiireserves.com
4. Kawika McKeague, OIBC Chairman kawikam@hawaii.rr.com
5. Eric Enos of Ka'ala Farm regarding taro cultivation kaalafarm@gmail.com
6. Kumu Meinecke at Windward Community College – check Hawaiian Studies staff for others

Please call me at 808-692-8025 or email me at Phyllis.L.Cayan@hawaii.gov should you have any questions on the above suggestions for your CIA.

Sincerely,

Phyllis Coochee Cayan

Phyllis Coochie Cayan
SHPD History and Culture Branch Chief

Figure 32. SHPD response letter

PHONE (808) 594-1888 FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD11/5574

April 1, 2011

Brian Kawika Cruz, Researcher
Cultural Surveys Hawai'i, Inc.
P.O. Box 1114
Kailua, Hawai'i 96734

Re: **Pre- Cultural Impact Assessment Consultation**
He'eia Fishpond Wall Repair Project
He'eiaIsland of O'ahu

Aloha e Brian Cruz,

The Office of Hawaiian Affairs (OHA) is in receipt of your February 22, 2011 request for comments ahead of a cultural impact assessment (CIA) for the proposed He'eia Fishpond Wall Repair Project (project) which will reconstruct a 80-foot portion of the He'eia Fishpond wall which was breached during heavy flooding in 1965.

OHA defers comments on the CIA to Paepae o He'eia, who will be conducting the project. This is a rather unique situation where we are deferring comments on a CIA to the project proponent, but in this particular case we recognize Paepae o He'eia as having demonstrated responsibility to the project area and we applaud them for their hard work and perpetuation of the Hawaiian culture and traditional stewardship concepts. We are also aware that many members of Paepae o He'eia have ancestral connections to the project area and Kane'ohe Bay in general.

Thank you for initiating consultation. We look forward to seeing the project completed. Should you have any questions, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

Figure 33. OHA response letter

Section 10 Summary and Recommendations

CSH undertook this CIA at the request of Paepae o He‘eia. The cultural survey broadly included the entire ahupua‘a of He‘eia, and more specifically the approximately 88-acre He‘eia Fishpond, He‘eia Ahupua‘a, Ko‘olaupoko District, O‘ahu Island, TMK: [1] 4-6-005:001. The Project involves repairing and restoration an 80-foot gap in the makai wall of the He‘eia Fishpond created by the 1965 Keapuka Flood.

10.1 Results of Background Research

Background research on the Project area and surrounding area of He‘eia Ahupua‘a indicates:

1. The He‘eia Fishpond is a pre-Contact Hawaiian fishpond approximately 88-acres in size and it includes 1.3 miles of ancient rock wall surrounding the pond. Portions of the ancient rock wall were destroyed during the 1965 Keapuka Flood creating a gap measuring 180 feet long in the seaward portion of the wall, approximately 1500 feet from the shoreline. The gap, commonly referred to as the “Makai Break,” now measures 80 feet across.
2. The ahupua‘a of He‘eia extends from the tallest peak of the Ko‘olau Mountains to the coast of Kāne‘ohe Bay and beyond to the western section of the Mōkapu Peninsula and includes the island, Moku o Lo‘e.
3. The term He‘eia may refer to the name of the grandson of the demigod ‘Olopana, who became the foster child of the goddess Haumea after ‘Olopana had been washed out to sea (Hoku o Hawaii 1928, cited in Sterling and Summers 1978:184). The term He‘eia may also derive from a tidal wave event that, “washed (he‘e ‘ia) the natives out to sea and back, after which they were victorious…[d]uring a battle with people from Leeward O‘ahu” (Pukui et al. 1974:44).
4. McAllister (1933) recorded four loko i‘a (fishpond) in He‘eia: He‘eia Fishpond, two fishponds of unknown names located south of the Project area, and O‘ohope Fishpond approximately 1,000 meters southeast of the Project area. These fishponds were loko kuapā, or fishponds extending out from the shore onto the reef, that contained mākāhā (sluice gate) between the basalt and coral rock walls, which permitted the flow of seawater but prevented the fish from escaping (Kirch 1985:212). The walls of He‘eia Fishpond measure about 5,000 feet in length and enclose 88 acres, and several mākāhā line the 12-foot wide walls (McAllister 1933:173).
5. Frequent rainfall, ample streams, broad valley bottoms, and flatlands between the mountains and the sea, provided excellent conditions for lo‘i kalo (irrigated taro terrace) and other forms of irrigated agriculture in He‘eia and neighboring ahupua‘a, such as crops of ‘uala (sweet potato), uhi (yam), mai‘a (banana), hala (pandanus), wauke (paper mulberry), olonā (a native shrub used for cordage), and ‘awa (kava) (Handy and Handy 1972:456; Portlock 1789:4).
6. Traditional land use of the He‘eia Ahupua‘a prior to Western Contact included taro cultivation immediately inland of the He‘eia Fishpond and continued inland. The

numerous lo‘i and ‘auwai systems of He‘eia dispersed the water over the cultivated lands, most of it percolating through the soil into the artesian lens (Kelly 1975:40). Thus, the irrigated network of lo‘i terraces inland of the He‘eia Fishpond, acted as a flood prevention device protecting the fishpond from flooding during heavy storms. The mauka (inland)/makai (seaward) relationship between the He‘eia Fishpond and the intricate inland lo‘i kalo system mauka of the fishpond in He‘eia allowed successful cultivation both on land and in the fishpond.

7. Archaeological investigations and historic documents suggest that many of the ahupua‘a of the moku of Ko‘olaupoko, including He‘eia, contained well-developed fishpond systems and stream-fed irrigated upland terraces. The estuary system of Kāne‘ohe Bay—the largest anywhere in the Hawaiian archipelago—contained lagoons and productive fisheries protected by broad fringing reefs. Hawaiians harvested ‘ama‘ama (mullet), awa (milkfish), and other fish in the brackish waters of at least 30 loko i‘a on Kāne‘ohe Bay during pre-Māhele times (Devaney et al. 1982:114, 143–144; Summers 1964:2), most of which have been destroyed (Devaney et al. 1982:139).
8. In 2006, Carson conducted an archaeological assessment for replacement of a caretaker’s house at He‘eia Fishpond, within the site boundary. Surface inventory survey and minimal subsurface testing were conducted; however no cultural resources were identified (Carson 2006).
9. According to Henry (1993:39), the god of the hīhīmanu (stingray) assigned a special stingray—Lupe-kia‘i-nui—to protect He‘eia Fishpond after the konohiki of the fishpond promised that the fishpond would forever remain a fishpond.

10.2 Results of Community Consultation

CSH attempted to contact 16 community members and government agency and community organization representatives. Of the six people that responded, four kūpuna and/or kama‘āina participated in formal interviews for more in-depth contributions to the CIA. CSH also presented the Project information to the Ko‘olaupoko Hawaiian Civic Club. This community consultation indicates:

1. Mr. Barcase and Mrs. Kaluhiwa’s association of the vicinity of the Project area with several wahi pana and mo‘olelo reveal a strong connection to past traditions and a renewed salience of those traditions today. They share the following mo‘olelo, which strongly articulate with archived mo‘olelo: Meheanu, the eel kia‘i of Kāne‘ohe Bay who resided on the land of Luamo‘o behind He‘eia Fishpond (McAllister 1933:173); Makanui, the kahu at the leina (place to leap from) of Kealohi Point, a place where souls went for judgment and that divided the ahupua‘a into He‘eia Uli and He‘eia Kea (McAllister 1933:173); and Keahiakahoe, a mountain peak that connects to Moku o Loe and Pu‘u Pahu through a sibling rivalry (e.g., Hawaiian Ethnological Notes ms. Vol. 2:2181, cited in Sterling and Summers 1978:206; Landgraf 1994:94).

2. Mrs. Kaluhiwa, a kama‘āina and leading authority on the history, cultural sites and practices in He‘eia Ahupua‘a, reported that a stream-fed pond named Makawiliwili and an underwater cave were located nearby the Project area.

3. Mrs. Kaluhiwa recalls catching weke, āholehole, awa, and manini fish, gathering ‘ōpae lōlō and oysters, and hunting a variety of crabs, including ‘a‘ama on the shore rocks and haole crabs and kūhonu farther offshore. She also used to gather limu and squid on the reefs, including two reefs named Malulina and ‘Iole. Mrs. Kaluhiwa reflects that her grandfather was a lawai‘a (fisherman)—he hunted turtles and could spear while standing on the bow of a boat.

4. Mr. Fred Takebayashi recalls his employment at the He‘eia Fishpond starting in 1946 to repopulate He‘eia Fishpond with mullet, bringing in 10,000 baby mullet a day.

5. Mrs. Kaluhiwa states that an ‘auwai once traversed the length of the ahupua‘a of He‘eia. Maintained by Mrs. Kaluhiwa’s grandfather, this ‘auwai diverted stream water from the valleys of Ha‘ikū and ‘Ioleka‘a down Ha‘ikū Road toward St. Ann Catholic Church. From there, one canal flowed toward He‘eia Fishpond, and another flowed toward a fishpond—most likely the O‘ohope Fishpond—near Yacht Club Street immediately adjacent to the current Project area. Mrs. Kaluhiwa speculates that this second branch of the ‘auwai may have entered the fishpond through mākāhā and its mauka walls to create the proper salinity for the raising of mullet.

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10.3 Impacts and Recommendation

Based on the information gathered for the cultural and historic background and community consultation detailed in this CIA report, CSH foresees no potential adverse impacts of the proposed Project on Native Hawaiian or other ethnic groups’ cultural practices customarily and traditionally exercised for subsistence, cultural or religious purposes. It should be noted, however, that caution should be taken when implementing the improvements to protect cultural resources located in and around the He‘eia Fishpond.

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