NEIL ABERCROMBIE

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

ESTHER KIA'AINA
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
Office of Conservation and Coastal Lands
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

ref:OCCL:MC

OCT 11 2013

FILE COPY

OCT 23 2013

Genevieve Salmonson
Office of Environmental Quality Control
Department of Health, State of Hawai'i
235 S. Beretania Street, Room 702
Honolulu, Hawai'i 96813

Dear Ms. Salmonson:

With this letter, the Office of Conservation and Coastal Lands (OCCL) hereby transmits the final programmatic environmental assessment and Finding of No Significant Impact (FEA-FONSI) for the Statewide Programmatic General Permit and Programmatic Agreement for the restoration, repair, maintenance, and reconstruction of traditional fishpond systems in Hawai`i. Please publish this in the October 23, 2013 edition of the *Environmental Notice*.

The Draft Programmatic Environmental Assessment and anticipated Finding of No Significant Impact (DEA-AFONSI) for the project was published in the April 23, 2013 edition of the *Environmental Notice*. The FEA includes copies of public comments that were received during the 30-day public comment period on the DEA-AFONSI, as well as the corresponding responses.

We have determined that this program will not have significant environmental effects, and have therefore issued a FONSI.

A Conservation District Use Application (CDUA) will also be required for the program. This Programmatic FONSI does not constitute approval of the CDUA.

Enclosed is a completed OEQC Publication Form, a copy of the Final Programmatic EA-FONSI, an Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

If there are any questions, please contact Michael Cain at 783-2501.

Sincerely,

SAMUEL J. LEMMO, Administrator
Office of Conservation and Coastal Lands

RECEIVED
'13 OCT 11 P4:22
OFC. OF ENVIRONMENTAL QUALITY CONTROL

Enclosures: Final EA, OEQC Pub Form
Disc: FEA, OEQC Pub Form

c: Honua Consulting

AGENCY ACTIONS
SECTION 343-5(B), HRS
PUBLICATION FORM (FEBRUARY 2013 REVISION)

Project Name
Final Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Island: Statewide

Proposing/Determination Agency:
Office of Conservation and Coastal Lands;
Department of Land and Natural Resources;
1151 Punchbowl Street, Room 131, Honolulu, HI 96813
Sam J. Lemmo, Administrator (808) 587-0377

RECEIVED
'13 OCT 11 P4:22
OFC. OF ENVIRONMENTAL QUALITY CONTROL

Consultant:
Trisha Kēhaulani Watson, JD, PhD
Honua Consulting
4348 Wai`alae Ave #254, Honolulu, HI 96816
(808) 392-1617

Status (check one only):

__DEA-AFNSI — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.

_X_FEA-FONSI — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

__FEA-EISPN — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.

__Act 172-12 EISPN — Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov). NO environmental assessment is

	required and a 30-day consultation period upon publication in the periodic bulletin.
__DEIS	The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.
__FEIS	The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__ Section 11-200-23 Determination	The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.
__Section 11-200-27 Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
__Withdrawal (explain)	

Summary

The objective of the Proposed Action is the restoration, repair, maintenance and reconstruction of loko i`a (traditional Hawaiian fishpond systems) across the pae`āina of Hawai`i (Hawaiian archipelago). The Department of Land and Natural Resources (DLNR) is currently pursuing a State Programmatic General Permit (SPGP) from the federal government that will allow the State to streamline the permitting process by utilizing a single application process for the above activities. This action will stimulate traditional Hawaiian cultural activities, the restoration of fishpond systems and their related ecosystem services. Fishpond systems were a vital component of Hawai`i's pre-contact native Hawaiian communities; their degradation was caused by the urbanization and colonization brought and fostered by foreign contact. Fishponds are identified as valuable cultural and ecological resources that positively impact coastal ecosystems and their adjacent communities. The potential impacts on the environment of the Proposed Action, and a range of reasonable alternatives, are discussed and analyzed in this fPEA. The direct and indirect impacts of nutrient enrichment, turbidity, and invasive species resulting from the proposed action and alternatives are negligible. The long-term cumulative impacts will be the simulation of traditional Hawaiian cultural activities, the restoration of fishpond systems and their related ecosystem services.

Final Environmental Assessment / Finding of No Significant Impact

Statewide Programmatic General Permit and Programmatic Agreement for the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai‘i

October 2013

Prepared for:
Department of Land and Natural Resources
1151 Punchbowl St.
Honolulu, HI 96809

Prepared by:
Honua Consulting
4348 Wai‘alae Avenue #254
Honolulu, Hawai‘i 96816

With the support of:
Conservation International
Hawai‘i Fish Trust
7192 Kalaniana‘ole Hwy Ste G-230
Honolulu, HI 96825

Project Name

Final Programmatic Environmental Assessment and Finding of No Significant Impact (FPEA-FONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawaiʻi

Island: Statewide

Proposing/Determination Agency:

Office of Conservation and Coastal Lands;
Department of Land and Natural Resources;
1151 Punchbowl Street, Room 131, Honolulu, HI 96813
Sam J. Lemmo, Administrator (808) 587-0377

Consultant:

Trisha Kēhaulani Watson, JD, PhD
Honua Consulting
4348 Waiʻalae Ave #254, Honolulu, HI 96816
(808) 392-1617

Summary

The objective of the Proposed Action is the restoration, repair, maintenance and reconstruction of loko iʻa (traditional Hawaiian fishpond systems) across the paeʻāina of Hawaiʻi (Hawaiian archipelago). The Department of Land and Natural Resources (DLNR) is currently pursuing a State Programmatic General Permit (SPGP) from the federal government that will allow the State to streamline the permitting process by utilizing a single application process for the above activities. This action will stimulate traditional Hawaiian cultural activities and the restoration of fishpond systems and their related ecosystem services. Fishpond systems were a vital component of Hawaiʻi's pre-contact native Hawaiian communities; their degradation was caused by the urbanization and colonization brought and fostered by foreign contact, as well as natural impacts, such as tsunamis and storms. Fishponds are considered valuable cultural and ecological resources that can positively impact coastal ecosystems and their adjacent communities. The potential impacts on the environment of the Proposed Action, range of reasonable alternatives, and mitigation measures are discussed and analyzed in this FPEA. The direct and indirect impacts of fishpond repair, restoration, maintenance, and operation on the environment, including, but not limited to nutrient enrichment, turbidity, invasive species, and other biological impacts resulting from the proposed action and alternatives are found to be negligible. The SPGP process would only apply to actions that are not likely to cause significant negative long-term impacts to the environment. Avoidance and minimization of impacts will be achieved with BMPs and conditions on permits; otherwise a permit will not be issued under the SPGP process. The long-term cumulative impacts will be the stimulation of traditional Hawaiian cultural activities and the restoration of fishpond systems and their related ecosystem services.

FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

SEPTEMBER 2013

Lead Agency:

Office of Coastal and Conservation Lands, Department of Land and Natural Resources

Responsible Agency:

Office of Coastal and Conservation Lands, Department of Lands and Natural Resources

Prepared by: Honua Consulting

Point of Contact: Trisha Kēhaulani Watson, J.D., Ph.D.
Senior Consultant, Honua Consulting
4348 Waiʻalae Avenue #254
Honolulu, Hawaiʻi 96816
admin@honuaconsulting.com
(808) 392-1617

Summary

Hawaiian fishpond systems, loko iʻa, are some of Hawaiʻi's most significant traditional cultural resources. They are biocultural articulations of Hawaiian innovation in the areas of engineering, education, hydrology, aquaculture and biology. Further, they demonstrate traditional Hawaiʻi's excellence in sustainability, food sovereignty and natural resource management.

Research shows that approximately 400 fishponds once functioned across the main Hawaiian Islands and provided a significant and sustainable food source to the Islands' population, estimated at 1,000,000 people. Today, no fishponds are in operation. Those that remain are in disrepair. Many have been completely destroyed.

The objective of the Proposed Action is the repair, restoration, maintenance and operation of loko iʻa across the paeʻāina of Hawaiʻi (Hawaiian archipelago). This action will stimulate traditional Hawaiian cultural activities and the restoration of fishpond systems and their related ecosystem services.

The potential impacts on the environment of the Proposed Action, and a range of reasonable alternatives, are discussed and analyzed in this dPEA. The direct and indirect impacts of nutrient enrichment, turbidity, invasive species, and other biological impacts resulting from the proposed action and alternatives are negligible. Direct and indirect ecological, social, cultural and economic impacts of Hawaiian fishpond repair, restoration, maintenance, and operation are not likely to cause negative effects. The SPGP process would only apply to actions that are not likely to cause significant negative long-term impacts to the environment. Avoidance and minimization of impacts will be achieved with BMPs and conditions on the permit; otherwise a permit will not be issued under the SPGP process. The long-term cumulative impacts will be the stimulation of traditional Hawaiian cultural activities and the restoration of fishpond systems and their related ecosystem services.

Note on the use of Hawaiian language

Hawaiian is both the native language of Hawaiʻi and, per the Hawaiʻi State Constitution, an official language of the State of Hawaii. As such, Hawaiian language is used liberally throughout the document, and as a native language, not italicized.

The authors of this document use diacritical markings, but where Hawaiian language appears in cited sources, the use or non-use of diacritical markings is used in a manner true and consistent to the original text.

Table of Contents

1.0 Purpose of and Need for Action 8

1.1 Status of Traditional Hawaiian Fishpond Systems in Hawai`i 10

1.2 Background on the Statewide Programmatic General Permit and Programmatic Agreement that facilitates the repair, restoration, maintenance and operation of traditional Hawaiian fishpond systems across Hawai‘i 12

1.2.1 Regulatory impediments to repair, restore, maintain and operate Hawaiian fishponds 13

1.2.2 Scope and Authority of Environmental Assessment 13

1.3 Geographic Scope of Analysis 14

1.3.1 History of Hawaiian Fishponds 15

1.3.2 Types of Ponds 15

1.3.2.1 Inland Ponds 15

1.3.2.2 Shore Ponds 15

1.3.2.3 Loko I‘a Kuapā 16

1.3.2.3.1. Fish 16

1.3.2.3.2 Placement 17

1.3.2.3.3. The Walls (Dimensions) 17

1.3.2.3.4 Materials 17

1.3.2.3.5 Mākāhā 17

Stocking 18

Pond Floor / Cleaning 18

1.3.2 Relevant Resource Issues within the Geographic Scope of Analysis 18

Figure 4. Selected Loko I‘a of Hawai‘i County 19

Figure 5. Selected Loko I‘a of Maui County 20

Figure 6. Selected Loko I‘a of O‘ahu 21

Figure 7. Selected Loko I‘a of Kaua‘i County 22

2.0 Proposed Action and Alternatives 23

2.1 Alternative A: Status Quo (No Action) 23

2.2 Alternative B: Limited Site Program 24

2.3 Alternative C: Statewide Programmatic General Permit (Proposed Action and Preferred Alternative) 24

2.3.1 Systems Eligible for Application Under the Program 25

2.3.2 Activities Eligible for Application Under the Program 25

2.3.3 Activities Categorically Excluded from the Program 26

2.3.4 Explanation of Program 26

TABLE 1: FISHPOND RESTORATION ACTIVITIES 31

TABLE 2: DESCRIPTION OF THE REVIEW PROCESS 32

3.0 Description of the Environmental Setting Without the Project 34

3.1 Physical Setting 34

3.2 Water Quality 35

3.3 Biological Setting 36

3.3.1 Introduced and Invasive Species 36

3.3.2 Endangered and Threatened Species 38

3.3.4 Wetland Birds 39

3.3.5 Fish 39

3.3.6 Essential Fish Habitat 40

3.3.7 Corals 40
3.3.8 Other Invertebrates 40
3.3.9 Algae 40
3.3.10 Coastal Habitats and Other Physical Environment Elements 41
3.4 Socioeconomic Setting 41
3.5 Cultural Setting 42
3.6 Natural Hazards 46

4.0 Potential Environmental and Cultural Impacts of the Proposed Program 47
4.1 Physical Effects 47
4.2 Water Effects 48
4.2.1 Best Management Practices Relating to Water Quality 50
4.2.1.1 Site Identification 50
4.2.1.2 Standard Best Management Practices 51
4.3 Biological Effects 51
4.3.1 Best Management Practices Relating to Biological Resources 53
4.3.1.1 Review and Evaluation 54
4.3.1.2 Standard Best Management Practices (General Conditions) 54
4.4 Socioeconomic Effects 56
4.5 Cultural Effects 57
4.5.1 Best Management Practices Relating to Cultural Resources 58
4.6 Effects on Natural Hazards 59
4.7 Effects on Other Environmental Elements 60

4.8 Summary of Evaluation of Significance Criteria 60

5.0 Environmental Regulations and Permits 62
5.1 Environmental Regulations 62
5.1.1 Clean Water Act 62
5.1.1.1 Section 401 62
5.1.1.2 Section 404 63
5.1.2 Endangered Species Act 63
5.1.2.1 Section 7 64
5.1.3 Rivers and Harbors Act 64
5.1.3.1 Section 10 64
5.1.4 Migratory Bird Treaty Act 64
5.1.5 Fish and Wildlife Coordination Act 65
5.1.6 Federal Coastal Zone Management Act 65
5.1.7 National Historical Preservation Act 65
5.1.8 Magnuson-Stevens Fishery Conservation and Management Act 66
5.1.9 Marine Mammal Protection Act 67
5.1.10 National Marine Sanctuaries Act 67
5.2 Permits and Consultations 68
5.2.1 U.S. Army Corps of Engineers Regional General Permit 68
5.2.1.1 State of Hawai'i, Department of Health, Clean Water Branch (DOH) Requirements 68
5.2.1.2 National Historic Preservation Act (NHPA) Compliance 68
5.2.1.3 Endangered Species Act, Section 7 Consultation 70
5.2.1.4 Essential Fish Habitat 71
5.2.1.5 Fish and Wildlife Coordination Act 71
5.2.2 Conservation District Use Permit 71

5.2.3 Coastal Zone Management Consistency Statement 71
5.2.4 National Environmental Policy Act Compliance 72

6.0 Conclusion 72

7.0 List of Agencies Consulted 73
7.1 Federal Agencies 73
7.1.1 National Marine Fisheries Service, Pacific Islands Regional Office, Aquaculture Program 73
7.1.2 National Marine Fisheries Service, Pacific Islands Regional Office, Habitat Conservation Division 73
7.1.3 National Marine Fisheries Service, Pacific Islands Regional Office, Protected Resources Division 73
7.1.4 National Ocean Service, Hawaiian Islands Humpback Whale National Marine Sanctuary 73
7.1.5 U.S. Army Corps of Engineers, Honolulu District Office 73
7.1.6 U.S. Fish and Wildlife Service 73
7.2 State Agencies 73
7.2.1 Department of Health, Clean Water Branch 73
7.2.2 Office of Planning, Coastal Zone Management 73
7.2.3 Office of Hawaiian Affairs 73
7.2.4 Department of Land and Natural Resources, State Historic Preservation Division 73
7.3 Community Organizations 73
7.3.1 Hui Loko Iʻa Kuapā 73
7.3.2 Paepae o Heʻeia 73
7.3.3 Hui ʻĀina Momona 73
7.3.4 Kuaʻāina Ulu ʻAuamo 73

8.0 List of Preparers 74

9.0 Public Comments in Response to the dPEA 75

10.0 References 76

Appendix A: Declaration of Hui Mālama Loko Iʻa

Appendix B: OHA Support of Hui Mālama Loko Iʻa Declaration

Appendix C: Coastal Zone Management Federal Consistency General Concurrence

Appendix D: Comments and Responses

1.0 Purpose of and Need for Action

Hawaiʻi Revised Statutes Section 183B-1 defines “Hawaiian fishponds” as:

> The unique, traditional system and methodology of aquaculture practiced by the aboriginal people of Hawaiʻi, and found nowhere else in the world. Generally referred to as "loko iʻa", the system mastered by ancient Hawaiians includes but is not limited to loko kuapa, loko umeiki, and loko puʻuone. Loko iʻa are natural or artificial enclosures; loko kuapa are enclosures built upon a reef, loko umeiki are a type of permanent fish-trap structure, and loko puʻuone are enclosed by sand. The term does not include any fishpond designed in a manner or constructed for purposes other than those associated with traditional loko i`a management and culture.

Hawaiian fishpond systems, loko iʻa, are some of Hawaiʻi’s most significant traditional cultural resources. They are biocultural articulations of Hawaiian innovation in the areas of engineering, education, hydrology, aquaculture and biology. Further, they demonstrate traditional Hawaiʻi’s excellence in sustainability, food sovereignty and natural resource management.

The history of loko iʻa is rich and extensive. According to oral histories, Hinapukuiʻa, whose name translates to “Hina gathering seafood,” is the goddess of fishermen. She is the wahine (wife or mate) of Kūʻulakai and sister of Hinapukuʻai, whose name translates to “Hina gathering vegetative foods,” and mother to ʻAiʻai. Hinapukuiʻa’s kane (husband or mate), Kū`ulakai, is the god and kupuna of fishermen, and is said to have built the first fishpond at Lehoʻula. Of Kūʻulakai it has been written:

While Kūʻula and his wife were living at Lehoʻula, he devoted all his time to be chosen vocation of fishing. His first work was to construct a fishpond handy to his house, but near the shore where the surf breaks, and he stocked his pond with all kinds of fish. Upon a rocky platform, he also built a house, which he called by his own name, Kūʻula. Here he offered the first fish caught to the fish god, and because of his observations, fish were obedient (laka loa) to him

Kūʻula, as he was also known, was said to be kino lua, dual bodied. He was said to be empowered with mana kupua, supernatural powers. He could control all the fish in the sea.

Kūʻulakai and Hinapukuiʻa lived in Alea-mai on East Maui. They made their residence near Kaiwiopele, the cinder hill named for “the bones of Pele,” for the place where Pele left some of her iwi after a battle with her sister, Nā-maka-o-Kahaʻi. It was near Kaiwiopele that Kūʻulakai built the first traditional Hawaiian fishpond in Hāna. Kūʻulakai would share his knowledge of fishing and fishing practices with makaʻāināānā across Hawaiʻi through his son, ʻAiʻai, identified also as a god of fisherman. Written sources and oral traditions tell of ʻAiʻai’s extensive travels throughout Hawaiʻi during which he established fishing alters, called kūʻula after his father, and fishing areas, known as koʻa.

Loko iʻa were an important part of Hawaiʻi’s complex and sustainable natural resource management system.

The full-scale development of loko iʻa (fishponds) from mauka (the mountains) to makai (the ocean) dates back over half a millennium. Cultivation and propagation centered on many

different fresh- and salt-water plants and animals, with the primary species being the prized ‘ama‘ama (mullet) and ‘awa (milkfish). An inventory in the early 1900s found 360 loko i‘a in the islands, and identified 99 active ponds with an estimated annual production total of about 680,000 pounds, including 486,000 pounds of ‘ama‘ama and 194,000 pounds of ‘awa. Loko i‘a were extensive operating systems that produced an average of 400–600 pounds per acre per year, a significant amount considering the minimal amount of fishpond “input” and maintenance effort apparent by that time (Keala 2007).

Increasing immigration and western influences during the 19th and 20th centuries, coupled with industrialization and urbanization would have a devastating impact on the traditional Hawaiian resource management systems in Hawai‘i. As a result, most Hawaiian fishponds fell into disrepair.

There is a renewed interest in the repair, restoration, maintenance, and operation of traditional Hawaiian fishponds, for their cultural, economic and ecological value. However, community organizations and traditional fishpond practitioners have struggled for decades to maintain and restore fishpond systems due to the abundance of government regulations that control uses within the shoreline area, making it difficult to obtain all of the necessary approvals to revitalize these important resources. The difficulty of Hawaiian fishpond revitalization is compounded by the unique, fragile, and sometimes-rugged environments in which they exist. Due to their geographic locations, unique ecosystems, engineering and complex biological functioning, Hawaiian fishponds are subject to a myriad of regulations and oversight by a host of different agencies (Hlawati 2002). The end result is that obtaining the necessary permits and approvals to to work on fishponds is both costly and time-consuming. Many restoration efforts have been stymied by this permitting process.

In an effort to address this obstacle to the cultural practices that can take place within traditional fishpond systems, Hawai‘i State Senate Resolution 86 (2012) urged the Department of Land and Natural Resources, the Office of Planning, and the Department of Health to streamline the permitting process for the restoration of Hawaiian fishponds. This strengthened decades of on-going efforts to address permitting and regulatory complexities that hampered fishpond restoration, as outlined in Section 1.2.

The objective of the proposed action is to create a Statewide Program under the Department of Land and Natural Resources, Office of Coastal and Conservation Lands, which helps to facilitate the permitting process for actions that contribute to the repair, restoration, maintenance, and operation of loko i‘a across the pae‘āina of Hawai‘i (Hawaiian archipelago).

It will accomplish this objective through the development of a statewide programmatic general permit (SPGP) application for use by organizations and practitioners that streamlines the permitting processes of numerous government agencies by utilizing a single application process administered through the Office of Conservation and Coastal Lands (Department of Land and Natural Resources). One of the purposes of this FPEA-FONSI is to support state and federal regulatory processes to authorize the SPGP. It is envisioned that the process will include the SPGP and a Programmatic Agreement between state and federal agencies that supports the use of a single authorization process for loko i‘a repair, restoration, maintenance, and operation activities that does not result in significant negative, long-term impacts to the environment.

This programmatic action will stimulate traditional Hawaiian cultural activities, the restoration of fishpond systems and their related ecosystem services. Fishpond systems were a vital component of Hawaiʻi's pre-contact native Hawaiian communities; their degradation not only had an adverse impact on the ponds themselves, but also on their stewards who relied on this sustainable resource for subsistence. Fishponds are considered valuable cultural and ecological resources (also collectively known and referred to herein as biocultural resources) that can positively impact coastal ecosystems and their adjacent communities. Their restoration is likely to positively impact coastal ecosystems and communities across Hawaiʻi.

Loko iʻa were known to be in operation on at least six of the inhabited Hawaiian Islands: Hawaiʻi Island, Maui, Oʻahu, Molokaʻi, Lānaʻi and Kauaʻi. Efforts to maintain and restore these systems continue today on all six of these islands. Visible structural remains of the pond walls are also visible on all six of these islands (Wyban 1992).

Restoring functional integrity to ponds, through restoration of historic wall structures and removal of invasive vegetation encroaching on the pond ecosystem, could have significant cumulative benefits to Hawaiʻi's environment and coastal resources and communities. The program could help restore valuable ecosystem services and human capital to coastal areas, which have been degraded due to overpopulation and urbanization.

1.1 Status of Traditional Hawaiian Fishpond Systems in Hawai`i

Traditionally, fishponds were economically, culturally and environmentally critical to the sustainability of Hawaiʻi's unique and fragile ecosystems (Madden 1977). The traditional ahupua'a system, created by the Aliʻi Māʻilikūkahi, mindfully delineated a system that extended from the top of the watershed (where the water source is located) out to the reef or near shore waters. The near shore fisheries were essential to providing fish and food to the surrounding communities.

Historically, fishponds provided important ecosystem services to their moku (traditional Hawaiian districts). As studies have shown, urbanization and development negatively altered the once healthy shoreline of Waikīkī, which in part resulted in the complete destruction of the fishpond systems that once existed in the area and serviced its community and near shore fishery (Miller and Fletcher 2003). Figures 1 and 2 show the dramatic change in the Waikīkī shoreline from 1909 to 2000. It is an example of how coastal degradation and its related water impairment were the result of urbanization and industrialization; activities not associated with fishpond system activities.

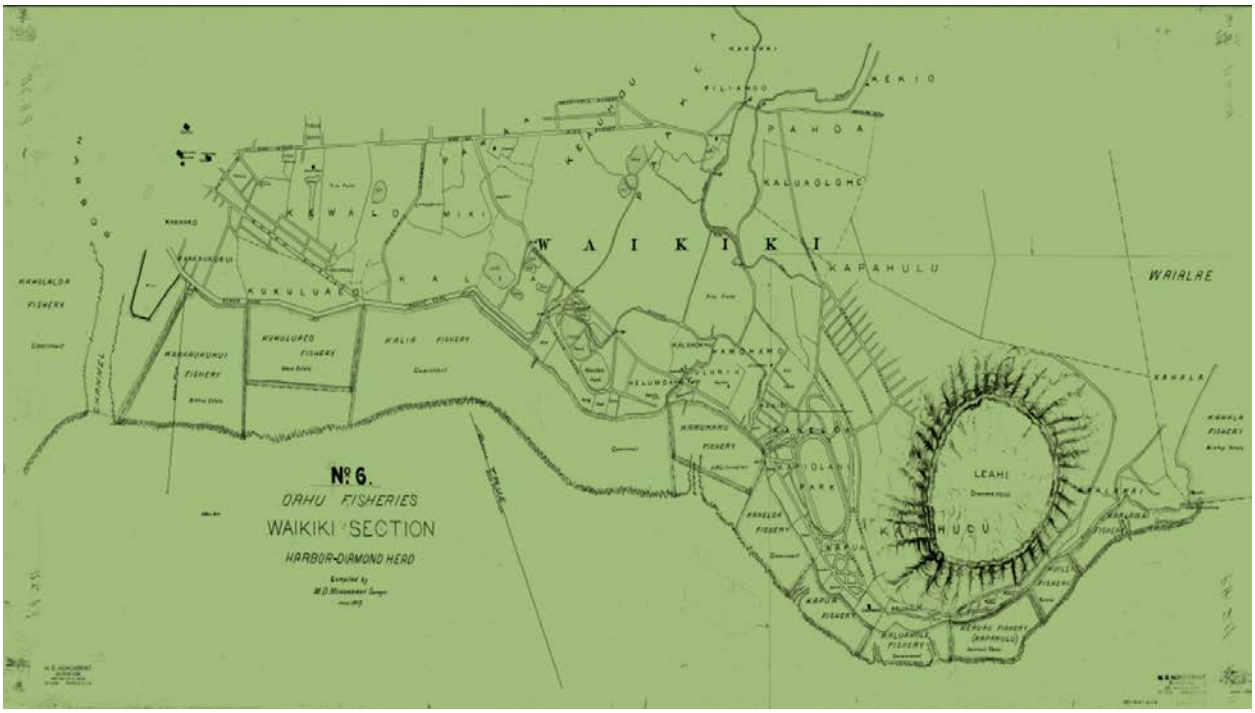


Figure 1: Historical map of Waikīkī Fisheries 1909

Figure 2 and Figure 3: Waikīkī Shoreline 2000

In addition, coastal degradation, water impairment, and the destruction of fishpond systems may also be caused by other natural and human factors, including earthquake, tsunami, storm waves, and lack of maintenance.

In addition to the obvious biological services that functioning Hawaiian fishponds provide, the monitoring and maintenance activities that fishpond revitalization will foster provides opportunities for much needed public participation in the management of Hawaiʻi's natural resources. Active fishponds not only promote economics and food production, but they offer opportunities for communities to actively help keep their coastal resources healthy and productive.

1.2 Background on the Statewide Programmatic General Permit and Programmatic Agreement that facilitates the repair, restoration, maintenance and operation of traditional Hawaiian fishpond systems across Hawaiʻi

The teachings of Kūʻulakai continue to flourish on Molokaʻi, where fishpond practitioners played a major role in the revitalization and rebuilding of several Molokaʻi fishponds in the 1990s. Recognizing the importance of traditional Hawaiian fishponds as cultural and ecological treasures left by our kūpuna to use today, practitioners from Molokaʻi approached Paepae o Heʻeia, a 501(c)(3) based at Heʻeia Fishpond dedicated to perpetuating traditional fishpond activities and practices, with the idea of starting a statewide hui of fishpond practitioners. Its purpose would be to create a network of fishpond practitioners that would facilitate the communication and sharing of resources among fishponds statewide.

Paepae o Heʻeia partnered with the Hawaiian Learning Center to put on the first statewide fishpond conference in August 2004. Other statewide meetings would follow. In November 2012, on the shores of Halulu Fishpond in Waipā, the fifth statewide practioner's meeting was held, hosted by the Waipā Foundation.

The meeting brought together over 100 practitioners, supporters and community leaders. The goal of the meeting was to enhance collective efforts to improve the ability of fishpond practitioners to do their jobs at their respective ponds. The conference was an opportunity to visit the diverse fishpond systems across Kauaʻi, and in addition gave group opportunities to learn about and conduct service projects at some of Kauaʻi's wahi pana, famed or storied places. Huakaʻi, day trips, included visits to Hōʻai, Lawaʻi Kai, Alekoko, the loko iʻa at Kauikeolani Estates and Hāʻena State Park.

Experts were invited to help generate discussion on a variety of topics, including capacity building and sustainability planning, aquaculture and permitting. Permitting issues have proven to be a challenge to fishponds for decades; concern over this ongoing issue was extensively discussed at the conference.

Led by practitioners from Kaloko pond (Hawaiʻi Island), the hui drafted and passed a declaration to express support for the development of an interagency programmatic agreement and related documents for the purpose of obtaining a state programmatic general permit and streamlining the permitting process (Appendix A). The declaration emphasizes the many values of traditional Hawaiian fishpond systems. The document points to the historic and cultural values of

fishponds, but also emphasizes that fishponds provide important ecosystem services and play a role in mitigating local impacts of climate change. Support for the effort was subsequently obtained from the Office of Hawaiian Affairs (Appendix B).

An effort to streamline to permitting process is underway at the State level. Led by the Department of Land and Natural Resources Office of Coastal and Conservation Lands, Hawaiian Islands Humpback Whale National Marine Sanctuary, National Marine Fisheries Service and Conservation International, the goal is to work with other agencies such as the US Army Corps of Engineers and Department of Health to develop a state programmatic general permit that allows a range of activities to occur at traditional Hawaiian fishpond systems under a simplified permitting process. The goal is to have the SPGP in place by summer 2014.

1.2.1 Regulatory impediments to repair, restore, maintain and operate Hawaiian fishponds

From 1999 - 2003, with the support of the late Senator Daniel K. Inouye, the Pacific American Foundation completed a project on fishpond restoration on Molokaʻi, funded by the Environmental Protection Agency. Their final report stated:

It has been noted that to restore a fishpond there are potentially 17 permits and processing could easily cost $50-$80,000 and take several years to complete. The complexity lies in the fact that there are multiple regulatory agencies with often times overlapping regulatory purpose but no established guiding process nor lead agency to help navigate one through the labyrinth of permits. What a community is up against is a process that by default favors those with the resources necessary to hire experts to navigate through this regulatory process—leaving those who wish to restore fishponds for traditional purposes at a disadvantage (Pacific American Foundation, 2003a).

Organizations have advocated for years to improve this situation and process.

1.2.2 Scope and Authority of Environmental Assessment

This draft Programmatic Environmental Assessment (PEA) has been prepared pursuant to Hawaiʻi Revised Statutes (HRS), Chapter 343 and Hawaiʻi Administrative Rules (HAR) § 11-200. This Environmental Assessment is meant to provide the public, government agencies and stakeholders, with an opportunity to review and consider potential impacts of proposed programmatic actions and their alternatives on natural and cultural resources. This document serves as an environmental disclosure document, including identification of the purpose of and need for the proposed action (Section 1.1), proposed actions and alternatives (Section 2.0), existing environmental conditions (Section 3.0), potential environmental impacts (Section 4.0), including measures to avoid or minimize such impacts. The information provided in this document shall provide the basis for determining whether or not a Finding of No Significant Impact (FONSI) is appropriate.

It should be noted that HRS §183B-2 exempts Hawaiian fishponds from Chapter 343 provided that it complies with the conditions of §183B-2, which are:

(1) The fishpond is not adjacent to a sandy beach;

(2) The fishpond stocks only native aquatic organisms;

(3) The fishpond does not operate as an intensive culture system in which cultured organisms require frequent or periodic artificial feeding, artificial aeration of water, or artificial pumping of water through the fishponds for their growth and survival;

(4) Bulk chemical are not added to the water for the control of pathogens or parasites;

(5) Coastal access is allowed to any person mauka of the fishpond and makai of walls;

(6) The fishpond and its operations do not harm any threatened or endangered species; and

(7) The fishpond is not used for water recreational purposes except those recreational activities customarily and traditionally practiced in Hawaiian fishponds prior to 1778.

The proposed action under this project meets all the conditions set forth under HRS §183B-2. Nevertheless, this PEA is being prepared due to the statewide implications of the actions in terms of the number of stakeholders (fishpond practitioners) that could be affected, agency interest at all levels of government, and to ensure that virtually all circumstances involving fishpond repair, restoration, maintenance, and operation can be accommodated. For instance, some of the fishponds covered under this PEA and the SPGP may be adjacent to a sandy beach. HRS §183B-2 does not exempt these actions from Chapter 343, HRS, but the PEA would cover some of the actions that might take place in the vicinity of beaches.

1.3 Geographic Scope of Analysis

The proposed project areas include the coastal land areas, shoreline areas and nearshore ocean waters within the State of Hawaiʻi where existing Hawaiian fishponds are located. The specific geographic area of each individual fishpond system is defined by the type of fishpond. This geographic area was selected purposefully to be consistent with the State of Hawaiʻi Coastal Zone Management Act (CZMA) Federal Consistency General Concurrence for Minor Federal Permit Activities for Hawaiian Fishpond Restoration Repair, Maintenance and Reconstruction dated November 15, 2012 (Appendix C).

Fishponds are categorized into six main types according to the "Hawaiian Fishpond Study" (DHM Planners, Inc. and Public Archaeology Section, Applied Research Group, Bernice Pauahi Bishop Museum, June 1989; based on information by William K. Kikuchi, 1973, Hawaiian Aquacultural System). Each fishpond type is specific to a particular geographic area.

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

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

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

Type IV – Loko Iʻa Kalo: An inland fishpond utilizing irrigated taro plots.

Type V – Loko I‘a ‘Ume‘iki: A fishtrap, similar to a Type I – loko i‘a kuapā, which has various combinations of inward and outward leading lanes.

Type VI – Kaheka and Hapunapuna: A natural pool or holding pond.

Maps of ponds identified by the State of Hawai‘i Office of Planning are provided on the following pages. They are provided to give the reader a general overview of the historical placement of traditional Hawaiian fishponds. Many of the ponds identified on the map are in grave disrepair or have been completely destroyed and therefore it is unlikely that they would be reconstructed under the SPGP, although such proposals could be considered on a case-by-case basis.

1.3.1 History of Hawaiian Fishponds

Fishponds were an important part of the Hawaiian ecosystem and an effective way of feeding the ‘Aupuni ‘o Hawai‘i (nation of Hawai‘i). There is record of fishponds on 7 of the lower 8 (excluding Kaho‘olawe) Hawaiian Islands. Most of these ponds are in ruins or have been completely destroyed by time or development. The estimated number of fishponds on all islands (excluding the numerous small island ponds) is 210 (Cobb, 1902 P. 429). The general name for fishpond is loko i‘a, although there are more specific names depending on certain factors. Generally the ponds were used for growing and storing fish for food.

Hawaiians had very strict kapu (taboos) around gathering and fishing. Fish were kapu during times of spawning in order to ensure sustainability. This kapu extended beyond the maka‘āinana (commoner) and restricted ali‘i (chief) and mo‘ī (high chief) from fishing during these times.

1.3.2 Types of Ponds

1.3.2.1 Inland Ponds

While this project will focus primarily on the Loko Kuapā (a variety of shore ponds) it is important to know that other varieties and methods of fish growing existed. There were three varieties of Inland Ponds: the Pu‘uone, the Loko I‘a Kalo and the Loko Wai. Loko I‘a Kalo, as the name suggests, is a combination loko i‘a/ lo‘i kalo (taro patch). In the case of the **Loko I‘a Kalo,** the pond would be stocked by hand with awa, ‘o‘opu, aholehole and ‘opae ‘oeha‘a after the kalo had been planted. **Loko Wai** refers to fresh ponds that predated Hawaiians and were believed to be made during the creation of the islands. Most likely these loko were existing ponds along a river or stream where fish would congregate.

Before Waikīkī was developed into the tourist destination it is today it was one of the most famous **Pu‘uone** ponds in all the islands. Waikīkī was made by digging ditches in areas connected to brackish and freshwater sources.

1.3.2.2 Shore Ponds

Shores ponds were ponds, unlike inland ponds, that extended from the shore and into the ocean. There are two varieties of shore ponds the most common existing today is the Loko Kuapā and the less common Loko ‘Umeiki.

Loko ‘umeki is a shore pond “surrounded by a low wall that is submerged at high tide and has openings, walled on each side like lanes, leading in or out of the pond” (Beckley, 1883, P. 20). There is record of at least 10 Loko ‘Umeki on the island of Moloka‘i including the Loko I‘a Mikiawa (in Ka‘amola boarding Keawanui) but there is no evidence of such a pond existing on the other islands. This is most likely because of the longer shape Moloka‘i allowed for these kinds of expansively large loko i‘a.

1.3.2.3 Loko I‘a Kuapā

Loko I‘a Kuapā is a “fishpond made by building a wall on a reef” (Pukui and Elbert, 1957, p. 157). While the use of different kinds of fishponds is not exclusive to Hawaii, because of the distinctive physical conditions to Hawai‘i, the loko i‘a kuapā variety is completely original and unique to Hawai‘i. The kuapā were commanded under the kuleana (privilege and responsibility) of ali‘i (chiefs) and mo‘ī (high chiefs) and were built through the collaboration of the people in a ahupua‘a.

The earliest recorded loko i‘a kuapā was built in the 15th century at Ke‘oneo‘io by Kauholanuimahu (Fornander, 1880, p. 71). Summers (1964, p.12) believes that “ponds were probably built before this time for by the 13th century, or perhaps earlier, the chiefs had enough power to command the number of people required to build a large loko kuapā” (Summers, 1964 p.12). Ponds were built until the early 19th century; some being destroyed by the sea of volcanic activity; others were simply abandoned because of the great population decline. In some of these cases, the very existence of the pond has been forgotten.

The following is a list of loko i‘a kuapā that were still being used commercially in 1960 (compiled by the State Department of Agriculture Conservation)

O‘ahu	Moloka‘i
He‘eia Pond, He‘eia	Ka‘opeahina Pond, Kalua‘aha
Pond, Honouliuli	Keawanui Pond, Keawanui
Kahauna Pond, Kahalu‘u	Kupeke Pond, Kupeke
Kuapā Pond, Maunalua	Ualapua Pond, Ualapue
Moli‘i Pond, Kualoa	
Waikalua Pond, Kane‘ohe	

1.3.2.3.1. Fish

The most commonly raised fish in loko kuapā were the ‘ama‘ama, and awa. (Hiat, 1944 p. 254). The fish received most of their food from the “microbenthos which grow best in brackish water and at a depth not exceeding 2 feet” (Summers 1964, p.2).

1.3.2.3.2 Placement

The ponds were built along sheltered seashores or in bays. Most often they were located near brackish springs or at the mouth of a stream. The loko iʻa took advantage of the momona (fertile) water that has washed through many loʻi kalo up mauka (in the highlands).

1.3.2.3.3. The Walls (Dimensions)

There were two methods of building the wall of a loko iʻa. The first was to construct a wall across the mouth of a small bay or between two close points of land. The second was to run a wall out from two sites on the shore and to connect them with a circular wall creating a full enclosure. Most fishponds were built using the latter method and while all methods were time consuming the latter required a significantly longer wall to be constructed. In areas where two loko iʻa were bordering each other, some ponds were built by using a portion of the existing/ bordering wall precisely because of the amount of physical labor involved in building the walls. There are also a few cases of a third pond being built between two neighboring ponds by connecting a small wall to the opening between them (Kapuʻu). These measures were taken to connect and share pond walls because it took at least a year to build a single pond (Kamakau 1869).

While ponds varied in size, many had walls over 2,000 feet long and the size of the actual kuapa could vary "from 1-523 acres, the largest being Kuapā or Keahupua o Maunalua Pond at Maunalua, Oʻahu (now a part of the Hawaiʻi Kai housing development)" (Summers 1964, p.5). The longest wall reported for an Oʻahu pond, Heʻeia, is 5,000 feet and is currently undergoing restoration. The length of the wall is not always indicative of the overall area of the pond, as some ponds used existing bays, and so have a large pond area with shorter walls. Nonetheless, the discipline and labor needed to construct these kuapā should be noted.

The width of the walls varied from 3 to 19 feet with an average of about 5 feet. They varied from 2 to nearly 6 feet in height depending on the depth of the water. Unlike the Loko ʻumeki these walls were not to be submerged during high tide.

1.3.2.3.4 Materials

The walls were usually constructed of coral and/or basalt. Since some of the stones used in the walls weighed nearly half a ton the most accessible materials were used. In a few cases sand or dirt was added to help bind the wall. In some other cases coralline algae was included to strengthen the wall. The walls were loosely constructed to allow for water to seep in and out according to the tide and therefore preventing stagnation in the pond (Summers 1964, p.7). However, this was not the case for two Oʻahu ponds, Wailupe Pond and Heʻeia, because both had multiple Makaha (gates/openings) that provided ample circulation.

1.3.2.3.5 Mākāhā

Mākāhā were built to allow water and young fish to enter the pond without letting the larger fish escape. The mākāhā were a series of straight sticks tied with beams in an upright standing position. The sticks were fastened close enough together than no fish wider than an inch and a half could pass. This was done not only to trap the grown fish from escaping but also to protect the fish from predators. Although no part of an ancient mākāhā was movable some today can be

opened or closed like a gate, while others can be raised or lowered. It was customary to build a small thatched guard house, hala kiaʻi, near the mākāhā for the keeper of the mākāhā to stay.

1.3.2.3.5 Stocking

There were two ways to stock a pond. One way is to allow young fish to enter through the mākāhā and growing too large to exit. The other method required catching young fish measuring ½ to 1 inch long in nets while in shallow bay waters and transporting the live fish to the pond. When the keeper wanted to harvest or remove fish he would go to the mākāhā during high tide (where the fish would congregate as they were attracted to the incoming seawater) and use a scoop net to catch the number of fish desired. When a large number of fish were desired, an ʻupena kuʻu (a long net) was used. The fish raised in the ponds varied from ʻamaʻama, awa, awaʻaua, kaku, aholehole, ʻoʻopu, ʻopae and puhi.

1.3.2.3.6 Pond Floor / Cleaning

"During heavy rains sediments were washed into the ponds, especially into those which were located at the mouth of a stream. In order to prevent the filling of a pond with silt, an entrance, probably with a mākāhā, was sometimes built near the shore on either side of the pond. On the flow of the tide, the water entered through one entrance and washed the silt to the other side of the pond where it would be carried out through that entrance at the ebbing of the tide. This method of cleaning was employed in some of the Molokaʻi ponds (Summers 1964, p.11).

There is documentation that sometimes a weighted bamboo rake, kope ʻohe, was used to clean the pond floor. The rake would be towed behind a canoe and the collected matter taken to the sluice. There was no fear that doing so would kick up harmful organic matter or sediments that would negatively affect the pond or ocean. Once or twice a year the makaʻāinana would scoop mud out of the pond to firm the pond floor and maintain it to help keep ecosystem function high (Summer 1964, p.12).

1.3.2 Relevant Resource Issues within the Geographic Scope of Analysis

The proposed action does not include constructing any new permanent infrastructure in submerged lands, significant discharges of fill material, significant dredging, or using any hazardous materials that could be released into the environment. Therefore, it has been determined that the potential impacts to vegetation, aesthetics, traffic, utilities, population and demographics, public access to the coastline, and air quality, are negligible.

Figure 4. Selected Loko Iʻa of Hawaiʻi County

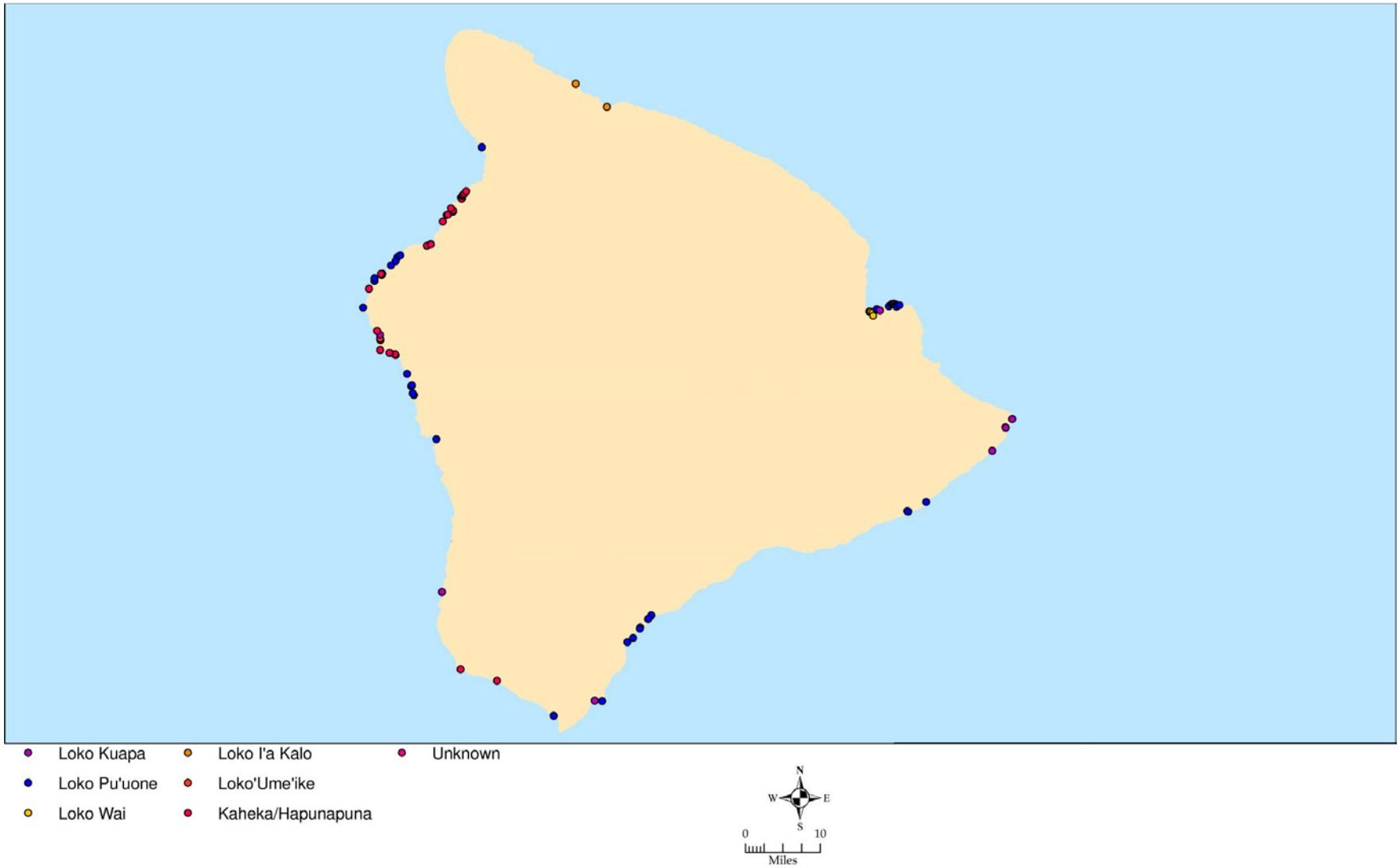


Figure 5. Selected Loko I‘a of Maui County

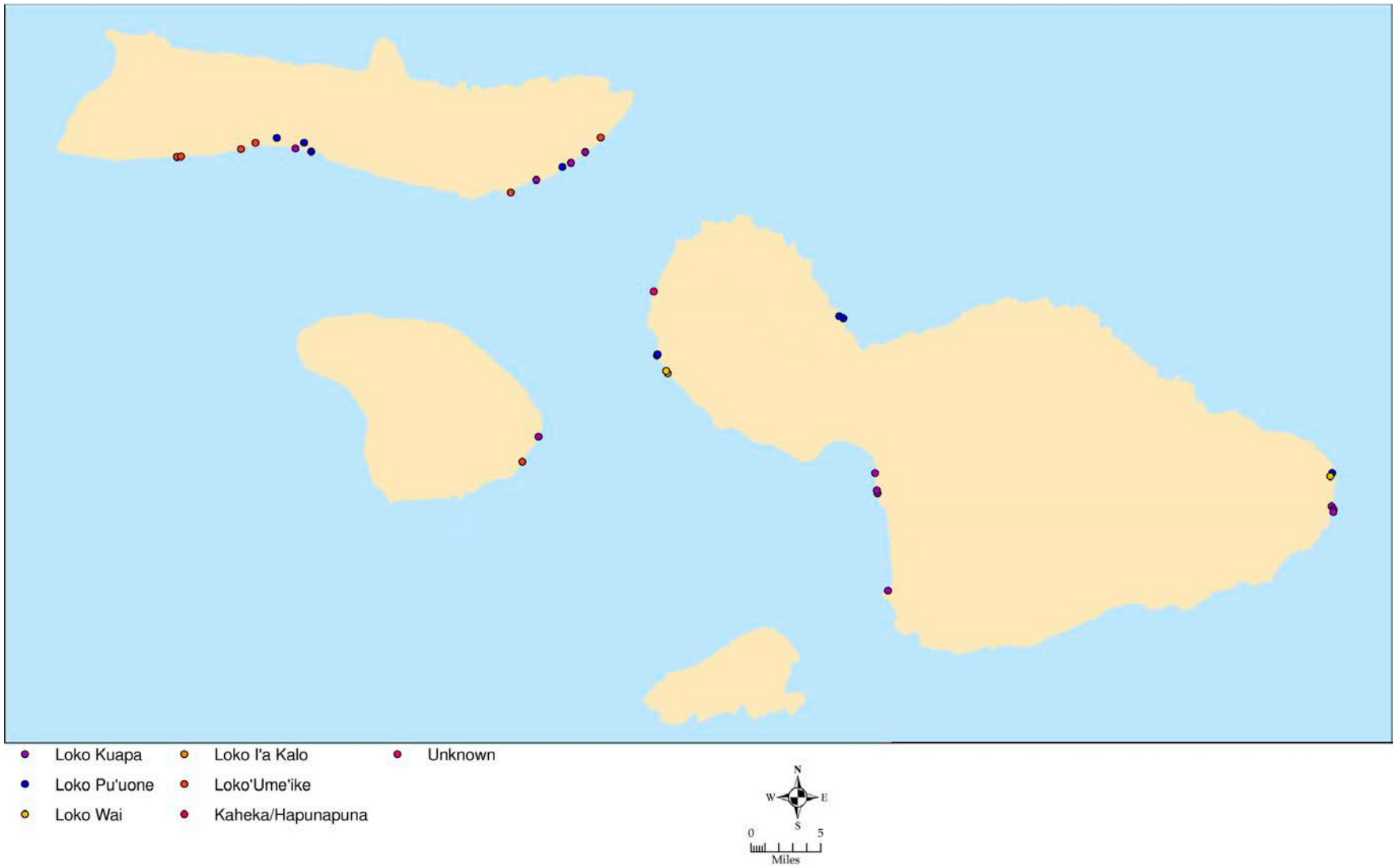


Figure 6. Selected Loko I‘a of O‘ahu

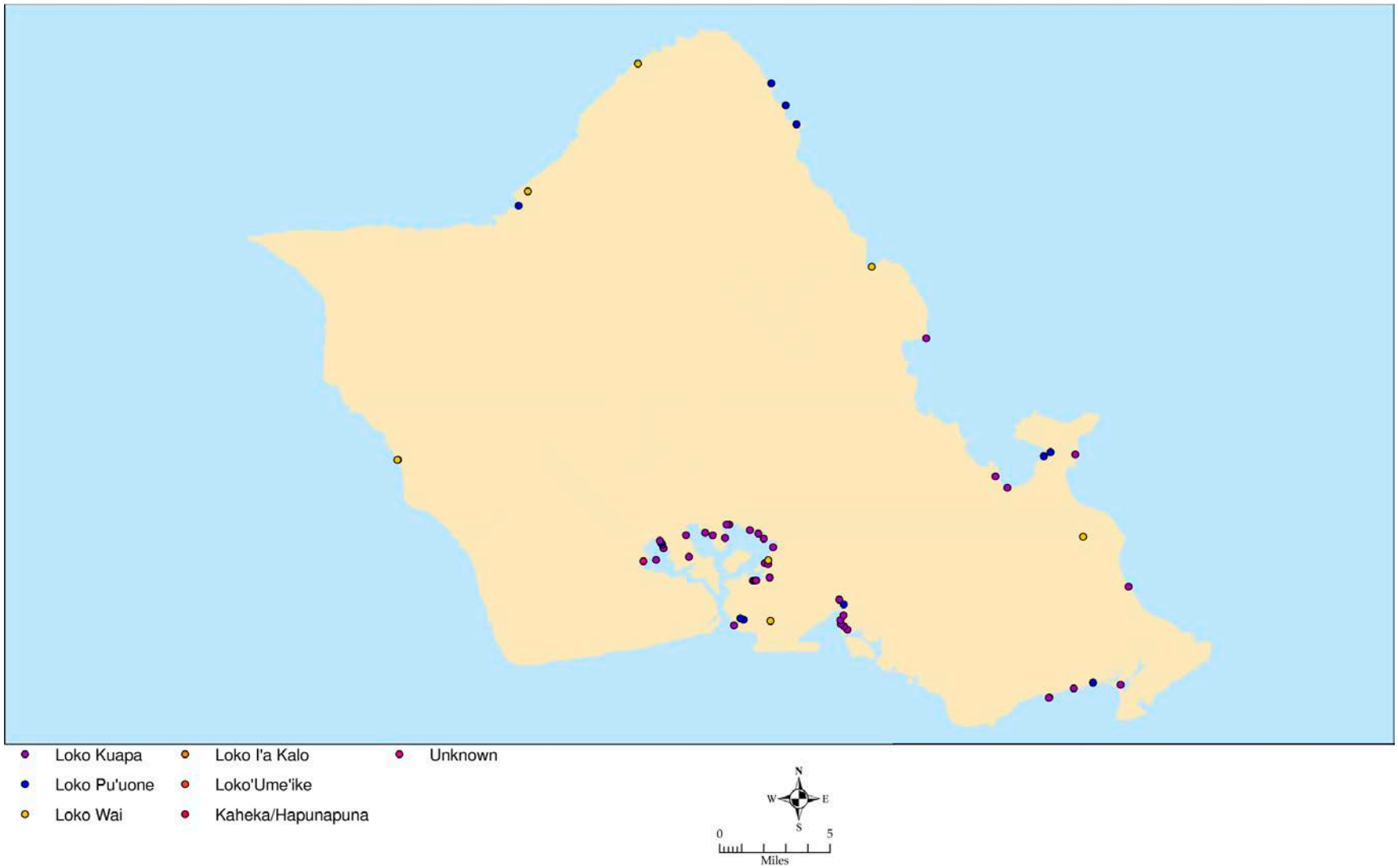
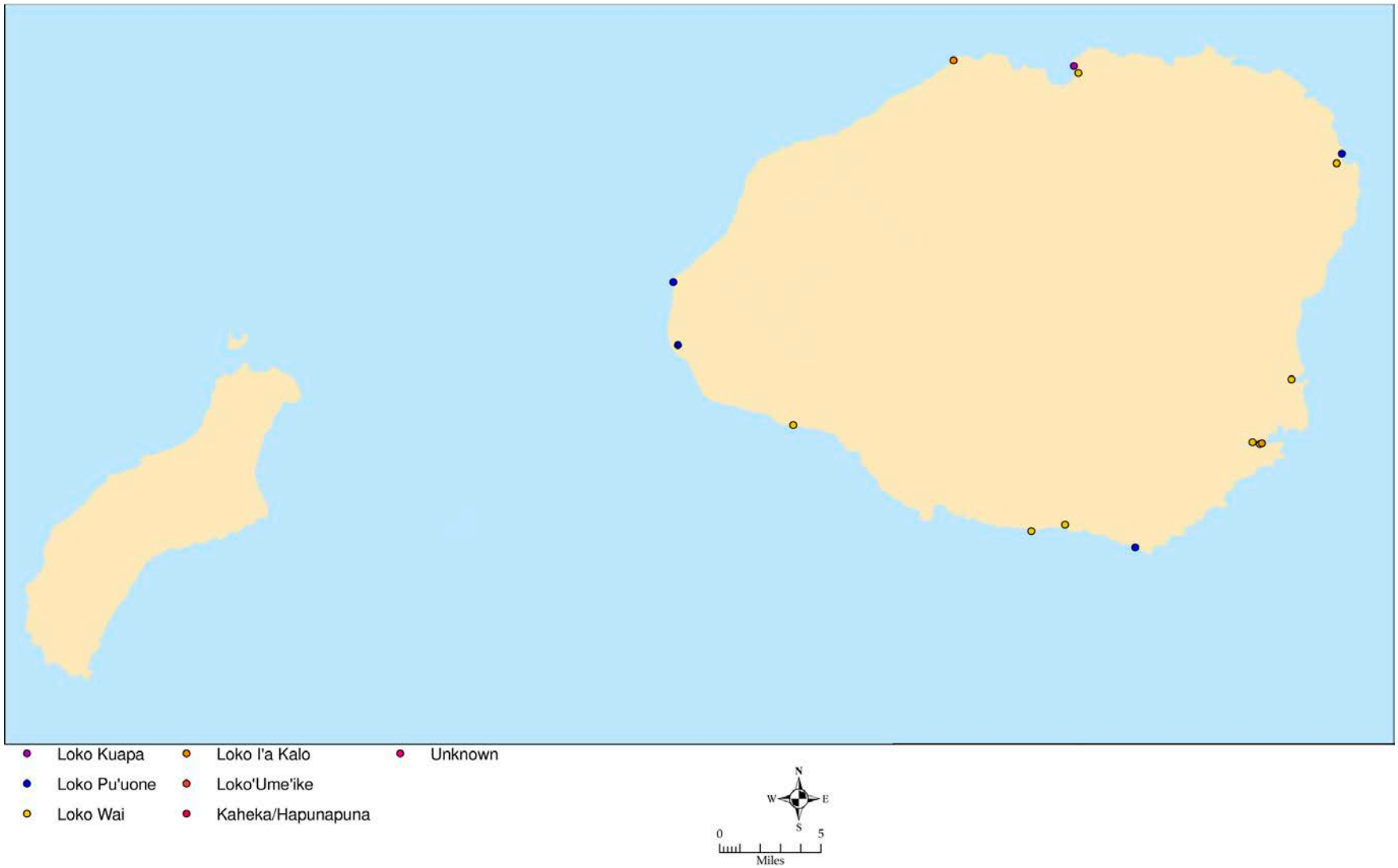


Figure 7. Selected Loko I‘a of Kaua‘i County



2.0 Proposed Action and Alternatives

Loko iʻa are rich and critical biocultural ecosystems that provide important ecosystem services to their surrounding and adjacent environments. Hawaiian fishponds also have the potential to provide nutritious food for local consumption.

Surveys were sent to numerous fishpond owners, organizations and practitioners and thereafter the information from those surveys was collected online and through oral interviews. The information collected provided a representative sample of the activities currently underway at fishpond systems across the state and helped to establish the range of traditional activities covered under this program. Through historical and archeological studies, there are over 400 identified fishponds across the state. Today, there are less than one hundred (100) that have community groups or landowners who have expressed interest in the future use of the pond or currently make use of the pond. Survey information and other information was successfully collected from approximately twenty (20) fishponds through the statewide network known as Hui Mālama Loko Iʻa. Additional information about other ponds that do not participate with the hui was collected through research and community inquiries to ensure an accurate and representative sampling of information was gathered and utilized to inform the development of this program.

The majority of activities reported are restoration, maintenance and educational activities. These activities include: 1) manual replacement of wall stones dislodged as a result of heavy surf action or natural disrepair, 2) manual removal of wave-deposited sand and rock from the fishpond basin to maintain pond depths, 3) manual removal of mangrove and other invasive species from the fishpond wall and basin to prevent damage to wall, and 4) educational and research activities. It is anticipated that these are the majority of activities that would be conducted under the SPGP. However, this does not necessarily represent the totality of activities that would be conducted under the auspices of the SPGP/PEA. In some cases, contemporary construction methods may be utilized to repair, restore, and maintain and operate Hawaiian fishponds.

To the extent possible, fishpond use and management will follow traditional practices and methods, subject to existing State-regulated fishing methods, seasons, and catch limits. Marine organisms cultured or harvested within the pond will be used for either subsistence purposes, as stocking materials for other fishponds, and for limited commerce.

2.1 Alternative A: Status Quo (No Action)

There are existing efforts to repair, reconstruct and/or restore traditional Hawaiian fishponds across Hawaiʻi. These efforts currently take place on a case-by-case basis. The process of acquiring the necessary studies and permits is laborious, time-consuming, and expensive. It has become the leading impediment to the repair and reconstruction of fishponds.

Most current fishpond system activities are focused on repair, reconstruction and restoration (of both structural and ecosystem services). These repair activities currently include the following:

- Repair and reconstruction of fishpond walls, known as kuapā;
- Repair and reconstruction of sluice gates, known as mākāhā;

- Restoration of the pond area;
- Restoration of ʻauwai, or traditional waterways, for the purpose of restoring water sources into the system which enable functionality to the system;
- Removal of invasive species, including, but not limited to, mangroves and *Gracilaria salicornia*, for the purpose of restoring use and functionality to the system.

Potential environmental impacts stem largely from repair and reconstruction activities focusing on the system structures. Repair and reconstruction involve: 1) the physical movement, alignment, and retrieval of wall foundation boulders from within the pond basin using a tracked backhoe or loader/dozer; 2) the manual movement, manipulation, and temporary stockpiling of smaller ʻiliʻili (stones, pebbles or rubble) within the fishpond basin; and 3) reconstruction of the pond wall using existing onsite rock, mechanized equipment, and manual labor.

Additional potential environmental impacts derive from activities that aim at restoring system functionality. Restoration of ʻauwai and other water sources is essential to the functioning of loko iʻa.

Periodic post-construction maintenance activities are required to facilitate the long-term use and management of the fishpond. These activities will include manual replacement of wall stones dislodged as a result of storm surges, and removal of wave-deposited sand and rock from the fishpond basin to maintain pond depths.

2.2 Alternative B: Limited Site Program

One alternative would only select a limited number of sites and fishpond systems for program eligibility. A variation of this alternative occurred on the island of Molokaʻi. The program saw limited success.

This alternative may be exclusive of fishpond systems and groups that may not have been a part of the collective community effort to advocate for system restoration. Additionally, as a significant percentage of the individuals engaged in fishpond restoration are Native Hawaiian, it is important to enable and facilitate to the extent possible under this program customary and traditional rights of Native Hawaiians as affirmed under the Hawaiʻi State Constitution.

A limited site program would enable traditional and customary rights of some practitioners while potentially and arbitrarily denying that opportunity to other practitioners. Therefore, this alternative was not selected as the preferred alternative.

2.3 Alternative C: Statewide Programmatic General Permit (Proposed Action and Preferred Alternative)

The proposed action includes the development of a Statewide Programmatic General Permit that facilitates the, repair, restoration, maintenance and operation of traditional Hawaiian fishpond systems across Hawaiʻi. This program would create a discretionary streamlined and simplified permitting process for obtaining approval to undertake activities related to the repair, restoration, maintenance, and operation of traditional Hawaiian fishpond systems. This process would

provide fishpond owners and operators the option to obtain the necessary federal and state approvals for repair, restoration, maintenance and operation through submittal of a single application to the Department of Land and Natural Resources (DLNR) Office of Coastal and Conservation Lands (OCCL). The application would then undergo review by an interagency/advisory group consisting of member representatives from the following federal and state agencies:

- DLNR OCCL
- DLNR SHPD
- DLNR DAR
- DOH CWB
- NMFS PIRO
- USACE
- Traditional Fishpond Practitioner-
- Additional members as necessary, appropriate and/or practicable

This option would only be available for fishpond activities that meet the criteria set forth in this PEA, which excludes any activities that would cause significant negative, long-term impacts to any biological resources. Activities for which BMPs and other permit conditions will minimize and avoid negative impacts to the extent that they become insignificant can be permitted under an SPGP covered by this PEA and the Programmatic Agreement.

2.3.1 Systems Eligible for Application Under the Program

Any traditional Hawaiian fishpond system built prior to 1968 is eligible for application under this program. DLNR OCCL estimates that between ten (10) and thirty (30) loko iʻa will participate in the program over a five (5) year period.

2.3.2 Activities Eligible for Application Under the Program

In March 2013, the Hawaii Department of Business, Economic Development and Tourism requested that the Federal Consistency General Concurrence for Minor Federal Permit Activities for Hawaiian Fishpond Restoration, Repair, Maintenance and Reconstruction be incorporated into the Hawaii Coastal Management Program (CMP). The following range of activities were incorporated as routine program changes (RPCs), pursuant to Coastal Zone Management Act (CZMA) regulations at 15 C.F.R. part 923, subpart H, and Office of Ocean and Coastal Resource Management (OCRM) Program Change Guidance (July 1996). The activities below have been approved under the Federal Consistency General Concurrence for Minor Federal Permit Activities for Hawaiian Fishpond Restoration, Repair, Maintenance and Reconstruction and are eligible for application under this program:

(a) Reconstruction, restoration, repair and maintenance of fishpond walls and sluice gates, including but not limited to the placement, movement, manipulation and temporary stockpiling of necessary materials.

(b) Placement, movement, manipulation and temporary stockpiling of small stones or rubble for interior wall fill (ʻiliʻili).

(c) Silt removal by hand and/or mechanized equipment from within fishponds to restore original fishpond depth.

(d) Vegetation removal by hand and/or mechanized equipment from within fishponds and from fishpond walls.

(e) Periodic post-restoration maintenance activities required to facilitate the long-term use, management and operation of fishponds.

(f) Use of hand and/or mechanized equipment to conduct fishpond restoration activities.

(g) Placement of temporary structures within fishponds, which are necessary to conduct restoration activities.

(h) Placement and use of aquaculture pens, nets, and/or cages within fishponds.

(i) Use of harvesting equipment within fishponds.

2.3.3 Activities Categorically Excluded from the Program

Activities that are explicitly excluded from authorization or consideration under the Program are those projects that utilize any of the following:

1) Blasting
2) Pile-driving, pre-drilling for pile-driving
3) Activities that penetrate the pond floor
4) New construction or dredging or in-water trenching not related to original fishpond structure/function.
5) Construction of new or expanded effluent discharge systems
6) Construction of new bank stabilization structures
7) Exploration or construction within estuaries or the marine environment that cannot be conducted from a work vessel or an existing bridge, dock, or wharf
8) Any use of treated wood in marine or aquatic habitats (other than pressure-treated)
9) Actions determined for any reason by the technical advisory team to have a significant adverse environmental or cultural impact
10) Use of chemicals inside or outside the fishpond to control or capture organisms
11) Use of live rock or coral to construct or repair fishpond walls or other features
12) Actions that would cause extreme turbidity, purposeful damage to live rock or coral, extreme eutrophication, or other long-term impairment to water quality

2.3.4 Explanation of Program

The objective of the proposed action is to help facilitate the process under which actions that contribute to the repair, restoration, maintenance and operation of loko iʻa across the paeʻāina of Hawaiʻi (Hawaiian archipelago) are authorized.

The strategy is to develop an Interagency Programmatic Agreement (Interagency PA), which allows a wide range of common fishpond restoration activities to be authorized through a single program, administered by the DLNR OCCL. Once complete, the State Programmatic General Permit will be published in the Environmental Notice for public review.

The Program is not intended to include all permits, approvals and/or concurrences required in fishpond restoration, only to include some of the more complex and cumbersome permits as to streamline the process for community organizations and fishpond practitioners so that they may focus energy and resources on the restoration tasks at hand.

This Program is not intended to incorporate the state leasing process for fishpond practitioners that wish to restore fishponds located on state public land. It is not intended to incorporate county permits that may be required in the course of fishpond restoration (i.e., Shoreline Management Area (SMA) Permit; Shoreline Setback Variance; Grading, Grubbing and Stockpiling Permit; or Building Permit). While most of the actions to restore Hawaiian fishponds would involve the use of lands within the jurisdiction of the State and Federal agencies, this PEA may be used to support respective County actions, where applicable. However, actions to repair, restore, maintain, and operate Hawaiian fishponds that trigger County regulatory requirements will continue to be handled by the respective County agencies. Actions that are processed by the OCCL to repair, restore, maintain, and operate fishponds will continue to be reviewed by the respective County agencies through the active solicitation of their comments by OCCL. If the action to restore a Hawaiian fishpond involves the use of State public land, OCCL will work with the project applicant(s) and the Department of Land and Natural Resources, Land Division to ensure as seamless a process as possible towards the execution of a public lease or easement. OCCL also acknowledges that HRS §174C, the State Water Code, may apply to some fishpond restoration activities, as such Stream Channel Alternation and Stream Division Works Permits may be required for the restoration of punawai/kahawai. It is not the intent of the program to include those permits at this time. Additionally, it is entirely reasonable to assume that a range of other permits may become applicable in different restoration projects, as due to range and diversity of fishpond systems across the state, individual projects are likely to have individual needs. Again, it is not the intent for the Program to cover all potential and possible permits that may be associated with fishpond restoration, only to cover those most commonly required for restoration activities and/or those considered to be the greatest hindrances to restoration efforts. In the event that an individual project may require permits outside those covered under the Program, the Program, through the participating agencies and its community partners, will do its best to help individual applicants and projects navigate additional permits that may apply to an individual applicant's restoration activities.

PERMITS OR ACTIVITIES STREAMLINED UNDER PROGRAM

This Program covers five (5) permits or authorizations and compliance with seventeen (17) different state and federal laws that currently govern an element of fishpond restoration. The program is carefully designed to save fishpond practitioners time and planning expenses. It does not create any additional requirements for fishpond restoration.

Action	Agency	Authority	Notes
Coastal Zone Management Consistency Statement	State of Hawaii Office of Planning	HRS §205A-1, HRS §205A-3, HRS §225M-2	Action completed by Office of Planning (April 2013)
Environmental Assessment / FONSI	Office of Environmental Quality and Control	HRS §343	
General Permit	U.S. Army Corps of Engineers	Section 404 CWA Section 401 CWA Section 10 Rivers and Harbors Act	Section 106 NHPA[1], Section 7 ESA, Essential Fish Habitat, FWCA, MBTA[2], NEPA compliance to be conducted by U.S. ACE
Water Quality Certification	State of Hawaii Department of Health Clean Water Branch	Section 401 CWA HRS §342D	
Conservation District Use Application	Office of Coastal and Conservation Lands, Department of Land and Natural Resources	HRS §183B HRS §188-44	Board of Land and Natural Resources approval required

[1] Under §106 of the NHPA, the U.S. ACE is the federal agency tasked with the responsibility of complying with this Section, as the federal nexus of this program is the issuance of a General Permit under §404 of the CWA, §401 of the CWA and §10 of the Rivers and Harbors Act. There has been some confusion as to which government agency is responsible for §106 compliance under this action. Formal S106 consultation shall be initiated with the appropriate agencies by the U.S. ACE Honolulu District Office upon receipt of a completed permit application from OCCL. Under this Section, U.S. ACE and SHPO have the option to enter into a §106 programmatic agreement. This programmatic agreement is than the interagency programmatic agreement (PA), which DLNR OCCL intends to enter into with other state and federal agencies for the purpose of implementing this program.

[2] Migratory Bird Treaty Act, 16 U.S.C. 703-712

Estimated Timeline and Public Review Opportunities

APR 2013	Submission of dPEA to OEQC	30 day public review
OCT 2013	Submission of fDEA/FONSI to OEQC	
OCT 2013	Submission of General Permit Application to U.S. ACE[3]	30 day public review
NOV 2013	Submission of Clean Water Quality Application to State of Hawai‘i DOH Clean Water Branch (CWB)	30 day public review
DEC 2013	Preparation of CDUA	Statewide public hearings
JAN 2014	Preparation of PA between DLNR OCCL, USACE, DOH, State Office of Planning (invited), SHPD (invited), OHA (invited)	PA issued in Environmental Notice for Public Comment
FEB 2014	Presentation of CDUA Application and PA for approval by BLNR	Public Notice
MAR 2014	Program Implementation Begins	

[3] The permit application process for the General Permit with the Army Corps of Engineers includes compliance with the following federal statutes:

- Endangered Species Act, Section 7
- National Historic Preservation Action, Section 106
- Magnuson-Stevens Act
- National Environmental Policy Act
- Fish and Wildlife Coordination Act

Restoration of Hawaiian fishponds is currently governed by a complex range of federal, state and local agencies. When implemented, the program will create a process whereby organizations and practitioners can utilize a single application to obtain authorization under a series of laws and regulations to conduct fishpond system restoration work. The program will be managed through the DLNR OCCL.

Once an applicant submits a completed application, the application will be reviewed by OCCL. Activities eligible for authorization under the program will be sorted into Tiers, Tier I representing the lowest level of authorized activity (minor activities) and Tier III representing the highest level (moderate activities).

All authorized activities will be subject to conditions set forth in the State Programmatic General Permit and conditions proposed in this fPEA and potentially additional site specific conditions based on the information provided during the application process.

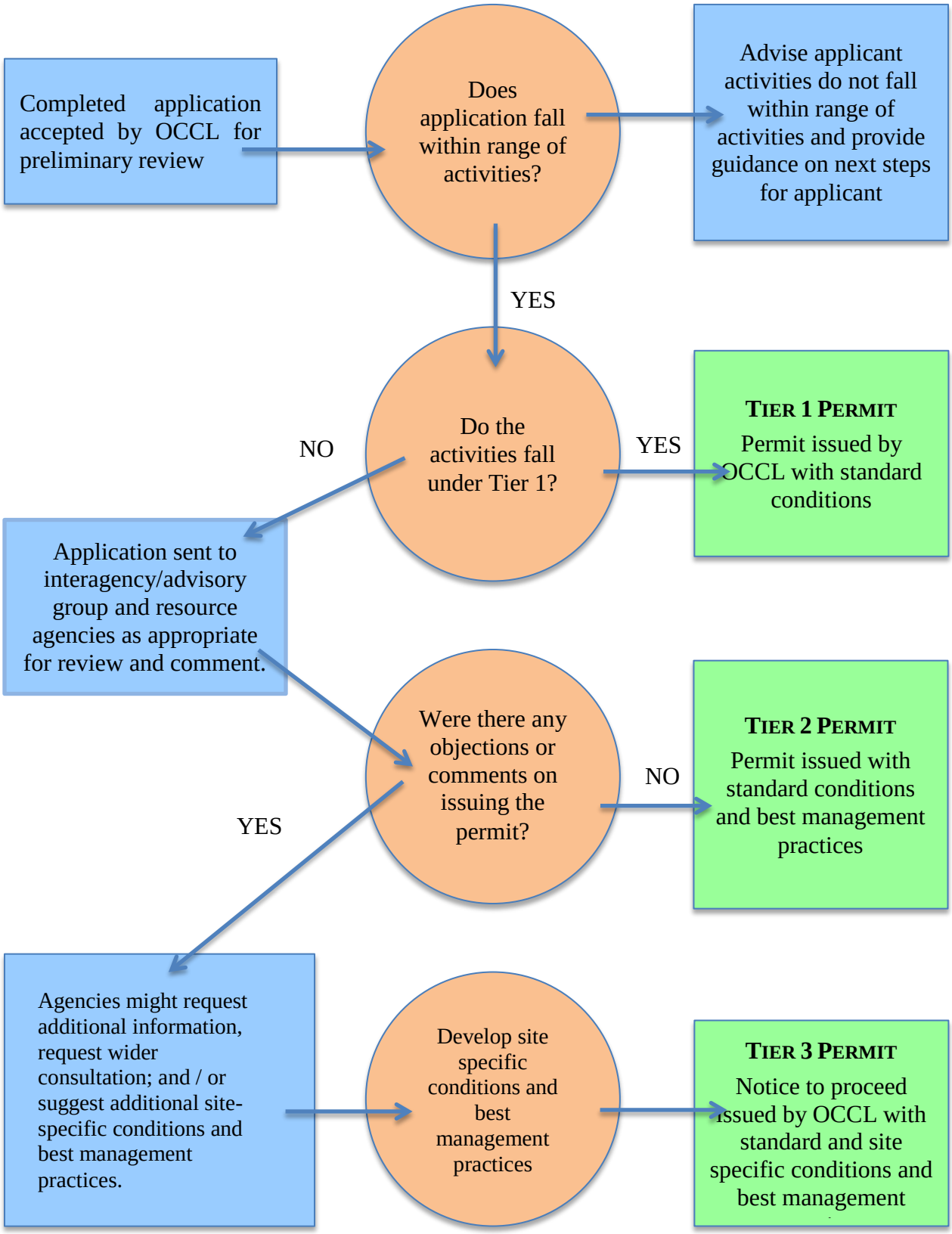
TABLE 1: FISHPOND RESTORATION ACTIVITIES

Activities with potential significant environmental impacts not covered under this EA		New fishpond construction Activities that are likely to have significant, long-term negative impacts on marine life, water quality, or coastal processes/access (e.g. activities excluded from authorization under section 2.3.3) Activities that are likely to result in take of endangered, threatened, or otherwise protected species or significant damage to special aquatic sites such as wetlands, vegetated shallows, mudflats, coral reefs, and seagrass beds Introduction or culture of alien species
Tier III General Conditions, Monitoring and BMPs Additional and Site Specific Conditions;	**Legal Authorities** Rivers and Harbors Act, §10 CWA §404 CWA §401 ESA § 7 NHPA § 106 NEPA MBTA EFH FWCA CZMA HRS § 183-44 HRS § 183B HRS §343	Fishpond repair, restoration, maintenance, and operation involving work that is in excess of 50 percent of the original fishpond structure , with the caveat that that the Department has the discretion to exclude major projects from the Programmatic Permit due to the potential for significant environmental impacts. Fishpond dredging involving the use of mechanized equipment. Any activity that may moderately affect/alter sandy beaches or sediment deposition.
Tier II General Conditions, Monitoring and BMPs		Emergency repair Fishpond repair, restoration, maintenance, and operation involving work that is in excess of 10 percent, but less than 50 percent of the original fishpond structure.
Tier I General Conditions, Monitoring and BMPs	**Legal Authorities** CZMA HRS § 183-44 HRS § 183B HRS § 343	Minor repair, restoration, maintenance and operation of existing fishponds (e.g., replacement of small wall sections, replacement of individual rocks or other wall materials, repair of gates, ‘auwai, minor dredging by non-mechanized means and non-routine maintenance of vegetation), Construction or placement of minor structures (not to exceed 600 square feet) in the Conservation District accessory to the maintenance and operation of a loko i‘a Stocking & harvesting with traditional methods Removal of alien species (e.g. mangroves)
Activities not subject to regulation		Routine maintenance of existing fishpond by hand or with hand-tools and utilizing existing traditional materials

TABLE 2: DESCRIPTION OF THE REVIEW PROCESS

Activities with potential significant environmental impacts not covered under this EA	Upon review of completed application, applicant is notified that activities are outside the scope of the environmental assessment and/or SPGP and advised to pursue individual permits No notice provided to cooperating agencies
Tier III Additional and Site Specific Conditions; General Conditions, Monitoring and BMPs	Upon review of completed application, applicant is notified that the application is either accepted or that additional information is required Upon receipt of a complete application OCCL forwards application to interagency/advisory group and resource agencies as appropriate for review. Reviewers can respond with one or more of the following: • Request for additional information; • Seek additional review / consultation from cooperating agencies or subject matter area experts; and/or • Identify additional and/or site-specific conditions, monitoring and BMPs. Once the review process is complete, notice is provided to cooperating agencies of findings and/or issuance of authorization to proceed. If no comments or concerns are received within thirty days then the permit will be issued with standard best management practices and conditions.
Tier II General Conditions, Monitoring and BMPs	Upon receipt of a complete application OCCL forwards application to interagency/advisory group and resource agencies as appropriate for review. Reviewers committee can respond with one or more of the following: • Request for additional information; • Seek additional review / consultation from cooperating agencies or subject matter area experts; and/or • Identify additional and/or site-specific conditions, monitoring and BMPs. Once review is complete, notice is provided to cooperating agencies of findings and/or issuance of authorization to proceed.
Tier I General Conditions, Monitoring and BMPs	Upon review of completed application, OCCL issues permit to applicant and may choose to provide BMPs and/or monitoring requirements as conditions on the permit. OCCL provides notice to cooperating agencies.
Activities not subject to regulation	Upon review of completed application, OCCL notifies applicant that activities are not regulated, but provides language to applicant regarding BMPs.

Flow Chart of Review Process



3.0 Description of the Environmental Setting Without the Project

For hundreds of years, Native Hawaiians managed the natural resources of Hawaiʻi by developing complex and innovative political systems that gave makaʻāinanānā (commoners) rich opportunities to operate the lands and resources under their stewardship. The most successful of these political systems was the ahupuaʻa, the ecosystem-based management regime developed and implemented by Māʻilikūkahi on the island of Oʻahu in the 15th century. The ahupuaʻa system combined numerous farming techniques by integrating agriculture with freshwater and marine aquaculture into a complete system. These systems were built to be self-sufficient, with nutrients and food passing through them from high watersheds ultimately to extensive marine fishponds. This ingenuity allowed the cultivation of a variety of crops, which included kalo, banana, shrimp, crabs, and fish providing a localized source of food that was cared for by selected families over generations.

Although the integration of various farming techniques was in itself novel, the true engineering feat was the management of ocean and coastal resources through loko kuapā or coastal fishponds. These ponds were site specific and considered the unique features of the area, which included coastal topography, wave energy, and biodiversity. This essentially led to the cultivation of marine species while allowing the integration of each community's cultural beliefs and traditions thereby providing a unique and invaluable cultural resource.

Some loko iʻa are considered "open coastal waters" by the Hawaiʻi State Department of Health, however, the term loko iʻa represents six (6) different types of fishponds: loko kalo and loko iʻa kalo (upland agriculture pond), loko wai (freshwater pond), loko puʻuone (wetlands), loko kuapā (coastal fishponds), and loko umeʻiki (coastal fish traps). This section provides a description of program sites based on selected studies and accounts of loko kuapā.

3.1 Physical Setting

The underwater topography of fishponds and adjacent near-shore areas typically consist of five physiographic zones:

1) Intertidal and near-shore sub-tidal zones consisting mainly of sand and silt;
2) A pond basin characterized by basalt rock, ranging in size from larger boulders to smaller cobble stones;
3) A zone comprised of small stones, known as ʻiliʻili, which were used traditionally for a variety of cultural purposes;
4) The structural remains of the fishpond wall, known as the kuapā;
5) Seaward facing limestone reef flats.

Fishpond systems typically include two major subdivisions of marine benthic habitats: intertidal and sub-tidal. The intertidal region is characterized as "the shore bordered on the seaward side by the reach of ebbing (falling) tides and landward by the reach of flooding (rising) tides" (Huisman et al. 2007). It is essentially the part of the shore that is intermittently awash or exposed as a result of tidal exchange. Although the boundaries of the intertidal vary with the phase of the moon and the intensity of wave action, the unique geographic location of the

Hawaiian Islands provides less than 20 centimeters of tidal exchange. Hawaiʻi is primarily surrounded by shallow fringing reefs, providing an ideal topography for the distribution of marine organisms that thrive under these environmental conditions. The constantly immersed sub-tidal zone includes species of marine algae, fish, and invertebrates, such as polychaetes, sea urchins, sea cucumbers and crabs. With space at a premium, species must constantly take advantage of changes in the physical environment, such as fluctuations in salinity due to rainfall or flooding, and/or newly available substrate caused by a physical disturbance such as herbivory or storm surge. Some of these changes can occur within seconds while others are on a timescale of hundreds of years. The traditional ahupuaʻa system, in particular loko kuapā, provided both intertidal and sub-tidal species a refuge and food-rich environment in which to live and reproduce. These ponds offered a complete trophic cycle; sunlight would promote algal growth, herbivorous fish would consume and regulate the algae, predatory fish would regulate the herbivores, crustaceans and filter feeders would filter the water providing healthy conditions for plant and animal life, and bacteria would consume detritus and organic matter. In order to maximize productivity and yield, Native Hawaiians took into consideration sudden and seasonal changes of coastal topography, wave energy, depth, and biodiversity when designing and erecting each individual pond.

3.2 Water Quality

State of Hawaiʻi (2010) reports that while Hawaiʻi's reefs are still in fair to good condition, many urban areas and popular destinations have suffered from land-based sources of pollution. This report goes on to state that land-based sources of pollutants, such as sediment and nutrients threaten the quality of coral reef ecosystems. These pollutants are often transported in surface-water runoff and by groundwater seepage into coastal waters. While the complex interrelationship between land-based sources of pollution, water quality, and the health and integrity of coral reef ecosystems is not well understood, enough is known to require management policies that minimize polluted surface-water runoff (State of Hawaiʻi 2010). Some significant pollutants include pesticides, petroleum hydrocarbons, pharmaceuticals, heavy metals, pathogens, and excess nutrients (State of Hawaiʻi 2010). Impacts from toxic pollutants are poorly understood but potentially severe (State of Hawaiʻi 2010). Persistent organic pollutants can build up in organisms, particularly apex predators.

In addition to chemical and biological pollutants, sediment can pollute nearshore waters from run-off and development, potentially damaging coral reefs and causing stress to nearshore organisms that reduce their resiliency to other threats, such as climate change. The Department of Land & Natural Resources (2011) states in its the Rain Follows the Forest plan that sedimentation from erosion harms the once-pristine near-shore marine waters and coral reef ecosystems of Hawaiʻi, and Friedlander et al. (2008) report that sediment is likely the leading land-based pollutant causing alteration of reef community structure.

While water quality in fishponds varies across the state, in some cases, fishponds can demonstrate physical and chemical characteristics encountered in typical near-shore coastal waters with slight groundwater inputs from punawai (fresh water springs) or kahawai (streams or surface water inputs). In these cases, water quality in fishponds is generally high with no physical or chemical parameters likely to be limiting to marine organisms. Fishponds with inputs from streams may be subject to moderate siltation associated with discharges from those

attached streams. These discharges may have an influence on coral growth or other conditions that may affect marine life in the pond. In other cases, existing water quality in fishponds is "impaired" in that it fails to meet Hawaiʻi State Department of Health (DOH) Water Quality Standards. Pursuant to Section 303(d) of the Clean Water Act, the State of Hawaiʻi DOH has identified Water Quality Limited Segments (WQLS) around the State. WQLS are defined as water bodies within the State, which, without additional action to control nonpoint sources of pollution, cannot be reasonably expected to attain or maintain State Water Quality Standards. Fishponds with significant inputs from streams, near highly urbanized areas, or in areas severely impacted by drought may have or develop "impaired" waters due to conditions unrelated to the activities or operations of the fishpond system. Moreover, disrepair of fishponds, such as poor condition of the kuapā (wall) and/or mākāhā (sluice gate) may also lead to less healthy conditions by affecting the internal circulation of the pond. The Hawaiʻi DOH monitors water quality throughout the state. Hawaiʻi Department of Health (2012) reports that the percent of impaired marine waters in the Hawaiian Islands is the following: Kauaʻi 11%, Oʻahu 32%, Molokaʻi 1%, Lānaʻi 4%, Maui 35%, and Hawaiʻi 16%.

3.3 Biological Setting

Native or naturalized vegetation, wildlife, and the habitats in which they occur are collectively referred to as biological resources. There is a range of biological resources that can be found in the programmatic geographic area. In addition to other factors, the degradation of fishpond systems has led to the diminishment of the quality of the ecosystem services and biological functioning that were supported by fishponds in the past. Fishponds were a component of a larger social system of ecosystem management traditionally practiced by Hawaiians, and records indicate abundance of reef organisms in these systems was high in the late 1700's (at the time of initial western contact) under local management regimes (Kittenger et al. 2011).

Hawaiʻi's coastal fisheries have undergone major changes over the last 100 years, with a shift away from traditional management and subsistence to commercial fishing and tourism (Friedlander, 2004). The fisheries for akule (*Selar crumenopthalmus*) and opelu (*Decapterus* spp.) account for close to 80% of coastal catch by weight (Friedlander, 2004). Other commercial species include a variety of reef species, such as surgeonfish and goatfish (Friedlander, 2004). Nearshore recreational and subsistence catch is likely similar to commercial catch levels, and intense fishing pressure has led to declines in some fisheries and concern about sustainability (Friedlander, 2004). Marine protected areas with a wide variety of place-based rules exist throughout the state to help restore and manage Hawaiʻi's fisheries. All fisheries regulations occurring in the programmatic geographic area will be followed as part of any application for permits under this PEA. For an extensive description of historical fisheries and modern impacts to fisheries by island area see Lowe (2004).

3.3.1 Introduced and Invasive Species

There is a range of invasive species found in loko kuapā. A common and highly problematic invasive species is the red mangrove (*Rhizophora mangle*). Red mangrove was introduced to Molokaʻi in 1902 for the purpose of stabilizing mud flats (Allen1998). Two other species of mangrove have also been established in the Hawaiian Islands: *Bruguiera gymnorrhiza* and *Conocarpus erectus* (Allen 1998). Although mangroves provide important habitats in their

native areas, introduction of mangroves to the Hawaiian Islands has caused negative impacts such as reduction in habitat quality for the Hawaiian stilt, (*Himantopus mexicanus knudseni*) and colonization and overgrowth of important cultural sites and biological habitats (such as anchialine ponds) (Allen 1998), Mangroves, known for their thick and extensive root systems, have proven destructive to kuapā. They enhance sediment deposition and decrease oxygen circulation in the ponds.

A variety of invasive algae also occur in nearshore areas. Smith et al. (2002) conducted surveys to evaluate distribution and impacts of invasive algae occurring in the Hawaiian Islands. Habitat characteristics can make certain areas more susceptible to invasion. In healthy coral reef ecosystems, corals and coralline algae dominate with macroalgae and turf algae growth mainly in areas that are difficult for herbivores to access (Smith et al. 2001). Phase shifts of coral reefs to algal dominance (from both invasive and native algae) can result in changes in reef community structure and decreased biodiversity (Smith et al. 2001).

At least 19 species of macroalgae have been introduced to Hawai‘i since the mid 1950’s (Shluker, 2003). At least five have established and dispersed around the Hawaiian Islands. Three species, *Gracilaria saliconia*, *Hypnea musciformis*, and *Kappaphycus* spp., form extensive destructive blooms.

In addition to algae and mangroves, 34 marine fish species have been introduced to Hawai‘i’s waters and at least 20 have become established (Shluker, 2003). Of these species, 13 were purposeful releases and seven were accidental introductions. For example, ta‘ape (blueline snapper, *Lutjanus kasmira*) and Roi (peacock grouper, *Cephalopholis argus*) were introduced by the State of Hawai‘i as food fishes in the late 1950’s.

With respect to invertebrates, it is estimated that 201 marine and brackish invertebrate species have been introduced to Hawai‘i, and 86 additional species cannot be determined to be native or introduced (Shluker, 2003). Of these species, 248 have become established.

Various introduced bird species associated with fishpond systems include common (Indian) mynah (*Acridotheres tristis*), zebra dove (*Geopelia striata*), spotted dove (*Spilopelia chinensis*), northern cardinal (*Cardinalis cardinalis*), mannikins (*Lonchura* spp), and the Japanese white-eye (*Zosterops japonicas*).

The Indian mongoose (*Herpestes edwardsii*), various rats and mice, and occasional feral goats and pigs, in additional to other terrestrial introduced species, are common in fishpond systems.

3.3.2 Endangered and Threatened Species

There are various endangered and threatened species that may potentially be found in and near fishpond across the state.

Common Name	Hawaiian Name	Scientific Name	Status
Hawaiian Black-Necked Stilt	‘Ae‘o	*Himantopus mexicanus knudseni*	Endangered
Hawaiian Coot	‘Alae ke‘oke‘o	*Fulicia alai*	Endangered
Hawaiian Moorhen	‘Alae ‘ula	*Gallinula chloropussandvicensis*	Endangered
Hawaiian Duck	Koloa maoli	*Anas Wyvilliana*	Endangered
Hawaiian Goose	Nēnē	*Branta sandvicensis*	Endangered
Hawaiian Monk Seal	Ilioholoikauaua	*Monachus schauinslandi*	Endangered
Green Sea Turtle	Honu	*Chelonia mydas*	Threatened
Hawksbill Sea Turtle	Ea	*Eretmochelys imbricata*	Endangered
Hawaiian Hoary Bat	‘Ōpe‘ape‘a	*Lasiurus cinereus semotus*	Endangered

There is no designated critical habitat within the action area. Although there is a proposed rule to revise the critical habitat for Hawaiian monk seals to include areas in the inhabited Hawaiian Islands, manmade structures, such as fishponds, and the land on which they located are specifically excluded from the proposed designation area (Fed. Reg. Vol. 76, No. 106. June 2, 2011).

In addition to the species above, three coral species with ranges overlapping the Hawaiian Islands have been proposed for “threatened” status under the ESA. Two of the three species are found in the programmatic geographic area, ringed rice coral (puna kea) and Hawaiian reef coral. These are lumpings of several previously recognized species—*Montipora patula/verrili* and *Montipora dilitata/flabellata/turgescens* respectively. The third species proposed for listing, staghorn coral (*Acropora paniculata*), is found only at French Frigate Shoals. Additional ESA petitions are at various stages of review by NOAA, including petitions to list blue-green damselfish (*Chromis viridis*) and Hawaiian damselfish (*Dascyllus albisella*).

3.3.3. Food Webs and Functional Groups

Nearshore and intertidal areas are home to a variety of species that function at different trophic levels. The food web associated with these areas is a subset of the larger oceanic food web. Organisms in this food web act as both predators and prey. This can vary with different life stages. Primary productivity (the energy created by organisms that photosynthesize or chemosynthesize) is the basic building block. Beyond primary production, there is secondary production from zooplankton and other small creatures that feed upon the primary producers. Tertiary production results from dead predators (Tait and Dipper 1998). There are also detritivores and decomposers (such as bacteria) that cycle dead organisms back into the elements that feed primary production. In the programmatic area, the main functional groups include producers, such as plankton and algae, herbivores, filter feeders, detritivores/burrowers, predators, including grazers, coralivores, and shallow water predators (both benthic and in the water column), and apex predators like birds and seals. Both rocky and coral dominated nearshore habitats help to support a variety of organisms that include plants, fish, invertebrates, turtles, and seals.

3.3.4 Wetland Birds

Hawai‘i’s wetlands are important habitat for wetland birds. There are five main species of wetland waterbirds that potentially use areas within the programmatic geographic area. These include four of the birds listed above as endangered: Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, and Hawaiian duck, as well as the black-crowned night heron (‘auku‘u, *Nycticorax nycticorax hoactli*). Migratory waterfowl and shorebirds also periodically occur in the programmatic geographic area. For an exhaustive list of Hawai‘i’s birds and their occurrence, history, distribution, and status, please refer to Pyle and Pyle (2009).

3.3.5 Fish

There are many fish species found in the programmatic geographic area. As a relatively isolated archipelago, the Hawaiian Islands is known for its high rates of endemic species; the level of fish endemism in the Hawaiian Islands overall has been reported to be as high as 23% (Randall, 1998). A wide variety of nearshore fish may be found in and near fishponds, including damselfish, angelfish, and groupers, among others. When in regular operation, loko kuapā were controlled aquaculture environments reserved mainly for herbivores. The species most often cultivated are listed below.

Common Name	Hawaiian Name	Scientific Name
Hawaiian flagtail	‘Āholehole	*Kuhlia xenura*
Zebra-head flagtail	‘Āholehole	*Kuhlia sandvicensis*
Milkfish	Awa	*Chanos chanos*
Stripped mullet	‘Ama‘ama or ‘Anae	*Mugil cephalus*
Pacific threadfin	Moi	*Polydactylus sexfillis*

3.3.6 Essential Fish Habitat

EFH has been described for pelagic organisms, bottomfish & groundfish, crustaceans, precious corals, and coral reef ecosystems (Western Pacific Regional Fishery Management Council, 2009). Pelagic and bottomfish & groundfish EFH starts at the shoreline, but these fishes are typically not found in fishpond systems. Spiny and slipper lobsters (*Panulirus* spp., *Scyllarides haanii*, and *Parribacus antarcticus*) and Kona crab (*Ranina ranina*) have EFH as larvae in the water column from the shoreline to a depth of 150m and as juveniles and adults, on bottom habitat from the shoreline to a depth of 100m. Specific locations in the Hawaiian Islands have been designated as EFH for precious corals (see Western Pacific Regional Fishery Management Council (2009) for details). In the Hawaiian Islands, precious corals have only been found in deep inter-island channels, and off promontories at depths 300-1,500 meters and 30-100m (Western Pacific Regional Fishery Management Council, 2009). The shallow EFH for precious corals consists of three areas: between Miloli‘i and South Point on Hawai‘i Island, The ‘Au‘au Channel in Maui Nui, and the southern border of Kaua‘i. The ‘Au‘au Channel area is a Habitat Area of Particular Concern (HAPC) for the shallower precious corals. Coral reef ecosystem EFH includes the water column and all benthic substrate to a depth of 100m. A variety of areas have been designated as HAPC for coral reef ecosystems throughout the inhabited Hawaiian Islands. These are described in depth by Western Pacific Regional Fishery Management Council (2009).

3.3.7 Corals

At least fifty-nine stony coral species have been found in the inhabited Hawaiian islands (Maragos et al. 2004), and many species are found in the programmatic geographic area (Brainard et al. 2011). Coral was a component of fishpond systems, both inside the pond systems and outside the pond structures. Mesophotic corals occur in deeper waters than fishponds so are not discussed here.

3.3.8 Other Invertebrates

A variety of non-coral invertebrates also occur in and near fishponds. Like fish, invertebrates occur at many trophic levels and are an important component of ecosystem function. Some examples of shallow water invertebrate predators are anemones (‘ōkole, Anthozoa), octopus (he‘e, Octopoda), cone snails (pūpū‘alā, Conidae), and miters (‘aha‘aha, Mitridae). Other invertebrates may be scavengers, like most crab species, or herbivores/planktivores, like the zooplankton, some shrimps, and ‘opihi (*Cellana* spp). Like fish, marine invertebrates in the Hawaiian Islands often show more endemism than in other places (*e.g.* 21% for marine snails) (Paulay & Meyer, 2002).

3.3.9 Algae

Algae (limu) exist in many forms, including macroalgae, encrusting coralline algae, turf algae, and filamentous forms. In healthy coral reef ecosystems, corals and coralline algae dominate with macroalgae and turf algae growth mainly in areas that are difficult for herbivores to access (Smith et al. 2001). Herbivores play important roles in the composition of algal communities in Hawai‘i’s coral reef and nearshore habitats (Hixon and Brostoff, 1996). For example, research in Kaneohe Bay, O‘ahu that evaluated effects of herbivory on coral reef systems examined

damselfish dominated areas, where dominant algal forms were filamentous, and surgeonfish/parrotfish dominated areas, where dominant algal forms were encrusting (Hixon and Brostoff, 1996). Smith et al (2001) report that anthropogenic disturbances, such as removal of herbivores and eutrophication, causes algal growth that can overgrow corals and other benthic invertebrates, which can ultimately lead to erosion of reefs and changes in reef community structure. Blooms of native algae can be destructive to reefs in ways similar to blooms of alien algal species (Smith et al, 2002). However, native algae have important roles to play in reef system health. Mesophotic algae are also important in deeper areas, but as they do not occur in depths where fishponds exist, they are not considered further here. Some examples of native algal species that may occur in and near fishponds are *Ahnfeltiopsis coccina* (limu akiʻaki), *Laurencia* spp. (limu mane`one`o), and *Codium edule* (limu wawaeʻiole). Many algae are edible and used by Native Hawaiians - *Laurencia* spp. are used as condiments and *Codium edule* is a popular edible seaweed sold in markets[4]

3.3.10 Coastal Habitats and Other Physical Environment Elements

Due to lack of maintenance, drought, run off and other sources of environmental degradation, siltation build up can be a serious issue for some fishpond systems; particularly systems in areas where these conditions are severe. Sedimentation has significantly contributed to the degradation of fishpond systems. Sedimentation build up of up to three or four feet has been reported in ponds on the islands of Lānaʻi and Molokaʻi. Sedimentation decreases circulation, oxygen levels, and operation space in fishpond systems. Maintenance of fishponds can reduce negative impacts of sedimentation on marine organisms in the fishpond system.

There are numerous species of coastal terrestrial plants than can be found near fishponds, either in the kuapā or in the low-lying areas in the immediate adjacent inland areas. Some examples include soapberry (aʻe or mānele, *Sapindus saponaria*) and java sedge (ʻahuʻawa, *Mariscus javanicus*). .

3.4 Socioeconomic Setting

Over the past century, the collapse of marine fisheries has become a far too common occurrence. With the global human population continuing to increase at an exponential rate and the demand for fish at an all-time high, it is presently believed that 30% of world marine resources are exploited beyond sustainability (Duarte 2007). In part, to circumvent harvesting diminishing wild populations, commercial aquaculture has been developed at unprecedented levels, providing in excess of 40 million tons of products annually (FAO 2007). However, the majority of aquaculture is focused on freshwater organisms, with only an estimated 10% from marine species. Moreover, within the past decade, techniques for establishing and maintaining aquaculture have been consistently criticized for their environmental impacts, including erosion, coastal degradation, and increased occurrence of harmful algal blooms (Maso & Garces 2006, Jayappa et al. 2006, Pergent-Martini et al. 2006). These environmental conditions have caused numerous ecological concerns (i.e. fish die-offs, marine mammal strandings) as well as human health concerns, namely the consumption of infected fish and crustaceans and the ingestion of

[4] http://www.hawaii.edu/reefalgae/natives/sgfieldguide.htm

contaminated water (Sapkota et al. 2007, Vasas et al. 2007, Lopez-Rodas et al. 2006, Maso & Garces 2006).

3.5 Cultural Setting

Cultural resources can be defined as any of the following, or a combination of one or more:

- material remains of past human activities, from historic or pre-historic periods
- traditional cultural properties such as ceremonial areas which may or may not have evidence of material remains and/or surface architecture
- archaeological resources on the surface or sub-surface, and including submerged areas and associated man-made features
- large and small scale man-made features related to traditional subsistence economies
- natural resources collected for cultural utilization, both occurring in modified and unmodified habitats
- landscape features named in the oral traditions of mo`olelo, mele, and oli, and/or identified by cultural practicioners as wahi pana, sacred or storied places, such as pu`u (cinder cones), lua (lava tube caves or pits), kahawai (streams), punawai (springs), pohaku (natural boulders and boulder features), awāwa (gulches or valleys), and pali (cliffs).

Identification of cultural resources is the first step to actively managing them; the goal is enhanced understanding of human behavior, and the protection of cultural resources. Protection of cultural resources is afforded under the National Historic Preservation Act (NHPA). Traditional Hawaiian fishponds, loko i`a, are cultural resources: archaeological structures, some dating to pre-contact times; an integral part of traditional Hawaiian subsistence and food economy; and wahi pana, storied places, some associated with gods and demigods. As articulated throughout the document, they are closely associated with traditional Hawaiian knowledge, innovation, and history. Loko i`a are integral to traditional Hawaiian pedagogy, specifically the intergenerational transmittance of indigenous knowledge, including biodiversity and sustainability. Loko i`a are also central foci for Hawaiian communities and practitioners.

As determined by DLNR OCCL, the geographic area for this project encompasses any area where fishpond systems are found, including portions of the open ocean and near shore environment, extant or submerged, in-use or abandoned.

The comprehensive listing of known fishponds that was included in the dPEA was removed for the final to reduce confusion. While any known pond would be eligible for application, OCCL anticipates that due to the destruction and severe degradation of many loko i‘a, it is likely that only ponds demonstrating some surviving structural element and demonstrating the potential for functional integrity would apply for a permit under the Program.

Loko i`a have been studied for over a hundred years, for their archaeological and biological significance. Archaeological and historical evidence suggests that loko i`a were constructed as early as AD 1000, and continued to be built until the 1820’s. Fishpond construction intensified

beginning in the late 1500's and early 1600's as pre-contact Hawaiian population was rapidly expanding and socio-political systems evolving in complexity. Estimates of fishpond counts place the total number between 300 to 500, ranging in size from less than one acre to over 100 acres (Fleming et al. 1995).

Additional historic and cultural sites found within the geographic area of the program include historic structures, burials, fishing shrines, heiau (religious structures), leina (cultural sites from which spirits leapt into the next world), as well as cultural structures related to traditional Hawaiian and Polynesian navigation and seafaring.

Over 400 fishponds have been documented (Cobb 1904, Tinker 1939, Kikuchi 1973, Cleghorn et all 1989). Currently, 10% of those documented fishponds are listed on the Hawaii State Register of Historic Places and/or the National Register of Historic Places. Five are on Kauai: Alekoko Fishpond, also known as the Menehune Fishpond, in Nawiliwili, SHPD site 30-11-0501, listed on the National Reigstry; Esetera Pond in Hā`ena, SHPD site 30-02-1600; an unnamed fishpond in Hā`ena, SHPD site 30-02-1600; and two unnamed fishponds in Wailua, SHPD site 30-03-9052. Seven are on Oahu: He`e`ia Fishpond in Hakipu`u, SHPD site 80-10-0327, listed on the National Register; Huilua Fishpond in Kahana, SHPD site 80-06-0301, listed on the National Register; Kahouna Fishpond in Kahalu`u, SHPD site 80-10-0319, listed on the National Register; Kaloukai Fishpond in Kahuku, SHPD site 80-01-0257; Mōli`i Fishpond in Kualoa, SHPD site 80-06-0313, listed on the National Reigster; Okiokilepe Fishpond in the West Loch area of Pearl Harbor, SHPD site 80-13-0143; and Pāhonu Fishpond in Waimanalo, SHPD site 80-15-1037. Nineteen named fishponds and numerous additional unnamed fishponds on Moloka`i are listed on the Hawaii State Historic Registry and/or the National Historic Registry: Ali`i Fishpond in Makakupaia, SHPD site 60-03-135; Halemahana Fishpond and `Ualapu`e of the `Ualapu`e Archaeological Complex, SHPD site 60-04-185; an unnamed trap in Honouliwai, SHPD site 60-05-233; `Ipuka`iole Fishpond in Kainalu, SHPD site 60-05-219; Kahinapohaku in Moanui, SHPD site 60-05-228; Kainalu's nameless fishpond, SHPD site 60-05-220; Koloko`eli Fishpond in Kaimaloloa, SHPD site 60-03-133; Kalua`aha Fishpond in Kalua`aha, SHPD site 60-04-188; Keawanui Fishpond of Kalaeloa, SHPD site 60-04-163 Kipapa Fishpond and Pahiomu Fishpond of the Keonoku`ino Complex, SHPD sites 60-04-150 and 60-04-149; Mahilika in Kalua`aha, SHPD site 60-05-189; the two fishponds named Panahana in Makolelau and Puko`o, SHPD site 60-05-202; and Waiakea Fishpond in Kahanui 1, SHPD site 60-02-101. Ko`ie`ie Fishpond, of Kalepolepo-Kihei is the only Maui fishpond listed on the National Historic Register, SHPD site 50-09-1288. Eleven fishponds on Hawai`i island are listed on the Hawaii State and/or National Historic Registry: `Aimakapa`a, `Aiopi`o, Kaloko, and an unnamed fishpond of the Honokohau Archaeological Complex, SHPD site 10-27-4138; Haleipalala Fishpond of Honaunau Archaeological Complex, SHPD site 10-27-4137; Nino`ole Fishpond, the "Hilea Ponds" of Ka`ū, and three unnamed fishponds in the Honu`apo-Ka`ū Archaeological Complex, SHPD site 10-62-5503; and Keawa`iki of the Keawa`iki Complex, SHPD site 10-72-2161.

Loko Okiokilepe, on O`ahu, was officially listed on the National Registry in 2006. Most of the interior of Loko Okiokilepe has been filled, but the seaward coral wall remains intact.

In a traditional Hawaiian perspective, natural and cultural resources are viewed as being one and the same: without the resources provided by nature, cultural resources could and would not be procured. From a Hawaiian perspective, (1) all natural and cultural resources are interrelated, and (2) all natural and cultural resources are culturally significant.

This symbiotic relationship has a central place in Hawaiian cosmogony, in the union of the sky father, Wākea, and earth mother, Papa-hānau-moku, Papa-who-births-islands. Each island has its own cosmogony, all paternally linked to Wākea. The natural resources created after the islands' formation is contained in many epic poems, chants, and mele, the most well-known being the *Kumulipo*. Resources are paired and presented in a male-female and land-ocean dichotomy.

Land tenure was seen as an inherent extension of this cosmogony, with the kanaka as stewards of the `āina. Land management and resource control was accomplished through subdivision into smaller units, based on a combination of geomorphology, economics and productivity, and political power. Generally speaking, the largest unit, the mokupuni or island, was divided into districts, moku, usually leeward, windward, or by similar geographical demarcation. Each moku was further subdivided into ahupua`a, which were typically pie-shaped 'wedges' from upland mountains all the way to the coastline, occasionally extending into near-shore areas to include fisheries. By utilizing this form of division, each ahupua`a encompassed resources from the sea, lowlands and/or inland plains, and the mountains.

The next smallest unit of land after ahupua`a is the `ili, meaning isolated, stranded, or inherited. Each ahupua`a could contain many `ili, or none at all. In some cases, `ili were not necessarily confined to the geographic ahupua`a, they were located in but could be related to another ahupua`a in a different moku. A common pattern of `ili are tracts of land containing irrigated and non-irrigated agricultural fields and fishponds.

In pre-historic and pre-contact times, all fishponds and fish traps were considered part of the land, and were predominantly associated with a singular ahupua`a or `ili, never overlapping into larger land divisions. Although the land division boundaries documented in the cadastral surveys during the Māhele were probably different from the pre-Māhele divisions, the recorded land features and distinct land units were maintained in the surveys and are still present in today's modern tax maps. When a tract of land was awarded, all physical features within the land unit boundaries were included in the grant, inclusive of loko i`a.

The high chiefs, ali`i[5], whose birthright could be traced back to Papa and Wākea, were at the head of the traditional land tenure system. Their direct lineage back to the universe's progenitors gave them the right and authority to rule and own. Ownership could be by district or an entire island, and thus included all resources. Smaller fishponds, especially those in irrigated agricultural areas, were left to local use and were loosely managed by the chiefs. Large fishponds were more stringently controlled in order to retain them, and their resources, for the chief's exclusive use.

Fishpond ownership and utilization can, therefore, be divided into two general groups: loko i`a owned exclusively by the chiefs, and managed by their land supervisor/overseer; and loko i`a managed by the extended family, sometimes falling under management of the chief's land supervisor/overseer.

---

[5] Ali`i is the general term used to indicate a chief. Ali`i can also be a prefix, attached to the traditional land divisions to classify both power and access to resources. Ali`i-nui: 'great chief', usually indicative of ownership of an entire island. Ali`i-`ai-moku: ruler of a district, or moku. Ali`i-`ai-ahupua`a: ruler of an individual or multiple ahupua`a.

In order for the chiefs to exercise control of their land holdings effectively, supervisors were selected to oversee the economic stability of the holdings. As mentioned earlier, fishponds and fish traps were considered part of the land. All loko i`a were managed by one of three types of overseer:

> Konohiki: an appointed supervisor loyal to the ali`i, either by birthright or association. Konohiki were always males of chiefly lineage less than that of the ali`i he was subservient to. Konohiki were always associated with the ali`i and never acted independently of the ali`i; because of this, konohiki also served as intermediaries between the ali`i and tenant `ohana.
>
> Kia`i-loko: male caretaker of a loko i`a, whose sole duty was tending the loko i`a. Kia`i loko could freely eat of any fish not reserved for the ali`i, and were responsible for harvesting resources on demand of the ali`i.
>
> Haku-`ohana: the most senior male member of the `ohana's land tenants, who spoke for and represented the `ohana in meetings with the konohiki, relaying the desires of the ali`i and konohiki to the individual tenants. `Ohana remained on the land, playing an active part in natural resource management for the benefit of the land tenants and `ohana (Kikuchi 1973).

The different strata of chiefs, their appointed supervisors, and additional specialized overseers (in this particular application, loko i`a managers) represent a highly complex socio-political system of power and access to exclusively held resources. This hierarchy of power, its role in loko i`a management, and the manner in which resources of the loko i`a were utilized are important in acknowledging that these loko i`a are indeed important cultural resources. Loko i`a reflect the core principles of traditional Hawaiian culture: resource management based on long-term sustenance, focused on consumption and conservation; co-existence with and in the natural environment; and the recognized symbiosis between kanaka and `āina.

Historically, the State Historic Preservation Division has promoted sensitive historic preservation, community revitalization and economic revitalization, specifically identifying as an objective in their Statewide Historic Preservation Plan (State Historic Preservation Division, 2001) to "Support the perpetuation and preservation of native Hawaiian cultural places and historic properties." One of the actions listed was "Restore Hawaiian fishponds." There is no evidence to show that this objective has been met. This program is a response to the Legislative directive of S.R. 86 (2012), which states:

> WHEREAS, the process in obtaining a permit for the restoration of Hawaiian fishponds is time consuming, complicated, and confusing and varies depending upon the circumstances of party applying for the permit; and
>
> WHEREAS, the existing regulations and permit requirements preclude community organizations and Native Hawaiian aquaculturalists from repairing and maintaining Hawaiian fishponds; and

> WHEREAS, the State has the ability to streamline the permit process and promote interagency cooperation to facilitate restoration and leasing of fishponds to cultural and familial descendants; and
>
> WHEREAS, the State has not led a comprehensive initiative to streamline the permit process for restoration of Hawaiian fishponds in over thirty years; and
>
> WHEREAS, the restoration and reuse of *loko iʻa* provide an opportunity to increase supplies of certain fish which will make Hawaii more food-secure and increase sustainable economic development opportunities for rural communities; now, therefore,
>
> BE IT RESOLVED by the Senate of the Twenty-sixth Legislature of the State of Hawaii, Regular Session of 2012, that the Department of Land and Natural Resources, Department of Health, and Office of Planning are urged to streamline the permitting process for the restoration of Hawaiian fishponds (Senate Resolution 86 (2012)).

This program thereby looks to remedy the chronic degradation and disrepair of traditional Hawiaian fishponds that currently exists in Hawaiʻi.

3.6 Natural Hazards

Natural hazards have always posed a threat to fishponds, yet practitioners report an increased frequency with which fishponds have suffered damage from tsunamis, storm surges or coastal inundation. It is believed that this may be caused by compounding factors, such as the degradation of the kuapā and mākāhā over time weakening the overall pond structure, neglect of sedimentary conditions leading to changes in localized oceanographic conditions (i.e., intertidal zone), and the improper restoration of the ponds using unsuitable techniques. Moreover, an increase in terrestrial hazards from droughts and/or flooding has also been recorded.

4.0 Potential Environmental and Cultural Impacts of the Proposed Program

While most environmental assessments only review the harmful impacts of programs and projects, this assessment recognizes that restoration projects can have benefits that should be weighed in the planning process. This Section reviews both positive and negative impacts of the proposed program.

The Proposed Action and Alternatives involve primarily short-term repair, restoration, maintenance and operational activities. As described in Section 2, fishpond practitioners have developed and refined many BMPs and monitoring measures for carrying out their activities. As described in Section 3, the existing baseline conditions within the geographic scope of analysis vary with the level of human activity and presence (i.e., from minimally populated rural areas to heavily developed beachfront communities). This section will discuss the impacts of the Proposed Action and Alternatives on each relevant resource component. Each aspect of the environment that may be affected by the Proposed Action is discussed to the level of detail commensurate with the potential effect. Those aspects of the environment that would not be affected are discussed briefly. These impacts will be compared to the existing baseline conditions by rating them as negligible, minor, moderate and major. The content, intensity, and likelihood of the impact were taken into consideration in the making of these ratings.

The proposed action will result in enhancement of long-term productivity, with no short-term losses. The action does not foreclose on future options, narrow the range of beneficial uses of the environment, or pose long-term risks to health or safety.

There are no irreversible and irretrievable commitments of resources involved in the proposed action. Any work conducted on fishponds can be removed, and ponds can be deconstructed if desired in the future. The proposed action does not include take or harassment of protected species or significant damage to corals or live rock (see Section 4.3). There will not be any use of chemicals or external materials for feeding or maintaining fishponds that could cause long-term damage to water quality or resources. There are no unresolved issues associated with the proposed action.

4.1 Physical Effects

None of the alternatives presented in this FPEA would significantly affect the soils within the area of potential effect, nor would the topography be significantly impacted. Activities are expected to include fishpond wall reconstruction, some grading and grubbing actions, possibly including minor to moderate excavation of sediment from loko iʻa and removal of vegetation, both of which compromise the functional integrity of the system. Potential effects of coastal littoral sediment processes will be assessed in the review process.

Any grading and/or grubbing activities would utilize standard and appropriate site-specific best management practices (BMPs) to prevent discharge and protect soil resources.

The proposed action does not anticipate including county grading and grubbing permits in the program at this time. As described in section 2.3.4 of this FPEA, any permits or authorizations

required by County agencies are not authorized in this program, although the FPEA and associated standards and guidelines for fishpond restoration should be considered by the respective County agencies in the independent review of actions taking place within the Special Management Area.

Physical Effects: Minor or negligible adverse effects

4.2 Water Effects

The Proposed Action would not have significant negative environmental impacts on water quality or water resources, individually or cumulatively. Conversely, it is likely that the actions, which will restore functional integrity and ecosystem services to the fishpond systems, may result in individual and cumulative benefits to water quality by restoring circulation to stagnating pond areas.

Activities related to water resources would include, but not be limited to, the following:

- Clearing of ʻauwai, or traditional waterways, to allow for restoration of fresh water flow into the loko iʻa, thus restoring functional integrity and ecosystem services;
- Removal of invasive species from loko iʻa that diminish oxygen and other ecosystem services to the pond system;
- Restoration of pūnāwai, wai hū, waipuna, kele, ʻele, kahawai and/or other fresh water sources for the purpose of restoring functional integrity to the system and ecosystem services; and/or
- Stocking and breeding native species of flora and fauna using traditional methods for the purpose of restoring functional integrity and ecosystem services to the system.

All activities will adhere to standard and additional site specific BMPs as appropriate to minimize, monitor and manage any short-term impacts during restoration actions. These specific BMPs and other permit conditions will be determined by the OCCL and advisory panel made up of agency representatives and others as described in Section 2.3.

Dredging sediments can result in release of accumulated toxins in the benthos. Major dredging activities will not be considered as part of the programmatic activities, and if there is reason to believe that significant pollutants would exist in benthic habitat in or near dredging activities, BMPs, monitoring, or other conditions may be required for issuance of a permit that includes disturbing the benthos. We are aware of no evidence to suggest that there are significant amounts of toxins trapped in the sediments that would be disturbed by fishpond restoration, but each site applying for permits will be considered on a case-by-case basis with regard to potential for release of sediment pollutants.

The programmatic activities are limited to traditional Hawaiian fishpond activities that have no potential to be a significant source of pollutants or toxins, and therefore would not significantly increase the potential for pollutants or toxins to impact the water quality in the affected geographic area. Additionally, fishpond systems would maintain activities associated with traditional aquaculture and would not include the use of chemicals or artificial/pellet fish foods.

Salinity is unlikely to be negatively affected. Fishponds are generally part of openly circulating coastal waters, and maintaining and restoring fresh water resources may reduce salinity in ponds, thus restoring functional integrity and ecosystems services to ponds currently not suitable for traditional aquaculture. Fresh water input is critical to pond function, as it helps foster an attractive and healthy breeding environment for young fish, known to practitioners as pua.

Restoration activities are likely to have minor, short-term impacts to turbidity, which is a measure of water clarity. Turbidity can be a natural occurrence in ponds, but it can be exacerbated by erosion and other land-based factors. Turbidity can be minimized through BMPs. Managing turbidity is a necessity of the program, as any factors that would reduce storage capacity of the ponds or impair the environment for cultivation defeats the purpose of restoration and function.

Increased nutrients (eutrophication) must also be considered. Activities that have a cumulative negative impact on water quality or otherwise impair water quality are counterproductive towards the purpose of the program, which is to restore functional integrity and ecosystem services. High nutrient levels can cause a series of problems, including odor, inhibitory environmental factors, and/or algal blooms. Recognizing that phosphorous, nitrogen and other elements can enter pond systems via soil or other sedimentation, BMPs will be instituted to minimize adverse impacts to water quality in the pond, which thereby minimizes adverse impacts to water quality in the receiving waters outside the pond wall structures. BMPs can be effective in controlling erosion and run-off, including reducing nutrients in waterways. Nutrients will not be introduced through artificial feeds or chemicals, as traditional practices will be used to maintain healthy aquaculture and habitat. Fishpond restoration is expected to have a cumulative positive impact on water quality in active program areas because maintenance of good water quality is critical to pond function.

There has been considerable discussion regarding the potential for fishpond restoration to have negative impacts on water quality (Pacific American Foundation, 2003b). There is little published research on documented effects of fishpond restoration on water quality, but Pan American Foundation (2003b) and Cie (n.d.) provide reports on preliminary work to document such effects. Pan American Foundation (2003b) points out that many ponds fail State water quality standards before any restoration work has even occurred. This suggests that even ponds for which water quality improves after restoration may remain below State standards. In 2001-2002, water quality testing was implemented in four fishponds on Molokaʻi every two months. These ponds included a control pond with an intact wall but no active aquaculture activity, a pond in which active restoration was occurring, a historical pond without a wall and without aquaculture activity, and a pond with a wall and active aquaculture activity. Water quality did not generally meet the State criteria for most parameters at any of the locations tested. The control pond had particularly poor water quality. The pond that underwent restoration activities during the study had higher water quality to start with and experienced no major changes throughout restoration activity, though levels of turbidity and nitrogen increased somewhat. There was some indication that aquaculture resulted in poorer values for dissolved oxygen, chlorophyll-a and total phosphorus, but two homes were built in front of the pond that showed these values, so the results may be confounded by development-related pollution. Although this is a somewhat limited study in sample size, it seems to suggest that water quality may be related to many factors unrelated to fishponds and likely would vary across ponds regardless of activities

related to the repair, restoration, maintenance and operation of fishponds . There was nothing to suggest that reconstruction activities decreased water quality significantly, but there was also no specific support for improvement of water quality as a result of aquaculture activities (Pacific American Foundation, 2003b). Pond circulation seemed to be a factor, so in cases of improved circulation because of fishpond restoration, there may be improvements to water quality.

Cie (n.d.) conducted a study of water quality on 11 active and inactive fishponds across Maui, Molokaʻi, and Oʻahu. Comparisons between interior and exterior pond areas differed between intact active and inactive ponds. Active ponds had lower concentrations of algal growth and bacteria. Salinity seemed to vary depending on levels of freshwater input and rainfall.

Despite the scientific uncertainty for or against water quality enhancement or degradation resulting from fishpond restoration, it appears that loko iʻa restoration activities could have long-term and cumulative benefits to water quality. This is because the preliminary studies conducted thus far suggest that water quality is impacted by a wide variety of factors possibly unrelated to the presence of fishponds. Moreover, reconstruction of fishponds has not been shown to result in significant water quality impacts; and inactive/unmanaged ponds with structures remaining may limit water circulation in ways that encourage undesirable algal and bacterial growth. BMPs to maintain or improve water quality are described below in Section 4.2.1, and additional BMPs, monitoring, and other conditions may be placed on permits through review by OCCL and the interagency/advisory group established through the PEA and Programmatic Agreement, to further protect water quality. No projects that are expected to cause significant negative, long-term impacts to water quality will be permitted under this PEA. Therefore, the proposed action will not lower water quality. Any incremental changes to nutrient levels, dissolved oxygen, turbidity or other parameters that may result from the restoration of structures or removal of invasive species for the purpose of restoring functional integrity and ecosystem services will be short-term and have negligible impact on the cumulative water quality of the pond systems.

Water Effects: Minor or negligible adverse effects

4.2.1 Best Management Practices Relating to Water Quality

In addition to the BMPs set forth in this section, additional conditions, BMPs and monitoring are likely to be developed in consultation with USACE, USFWS, NOAA, DLNR and/or additional agencies and fishpond practitioners in the course of developing the Programmatic Agreement.

Prior to commencing with any programmatic activities that may potentially impact water quality, the following BMPs shall be implemented, adopted and adapted from the U.S. Army Corps of Engineers, 2012 Nationwide Permit Honolulu District Regional Conditions.

4.2.1.1 Site Identification

Prior to commencing with activities that may affect water quality, project limits of authorized sites must be clearly identified in the field (e.g., by staking, flagging, silt fencing, buoys) to ensure that impacts to waters of the United States (including wetlands) beyond project footprints are avoided. Such identification of project limits must be properly maintained until activities are completed and any displaced soils have been stabilized.

4.2.1.2 Standard Best Management Practices

To the extent applicable, the following BMPs must be implemented to minimize the degradation of water quality:

a. Turbidity and sediment from project-related work, including work relating to system structures, must be minimized and contained to the immediate vicinity of the authorized activity through the appropriate use of effective sediment containment devices.

b. To the extent practicable, the work must be conducted in the dry season or when any affected stream has minimal to no flow. The site must be stabilized to prevent erosion and runoff, and work must stop during flooding, intense rainfall, storm surge, or high surf conditions. To the extent practicable, work must be done during low tides.

c. No project-related materials (fill, revetment rock, pipe, etc.) shall be stockpiled in the aquatic environment (intertidal zones, reef flats, stream channels, wetlands, etc.) or in close proximity such that materials could be carried into waters by wind, rain, or high surf.

d. All debris and material removed from the marine/aquatic environment shall be disposed of at an approved upland or alternative disposal site.

e. No contamination (by trash, debris sediment, non-native species introductions, attractions of non-native pests, etc.) of adjacent waters of the United States, including special aquatic sites, shall result from project-related activities. Special attention must be paid to the fouling level on barges, vessels, and equipment whereas to minimize the transport and potential introduction and spread of aquatic non-native species. In addition, if dredged or excavated material or structural members are removed from the water or placed in the water, measures must be taken to prevent the spread or introduction of any aquatic non-native species. Additional conditions may be utilized to help meet this condition or related conditions.

f. Silt fences, silt curtains, or other appropriate containment structures shall be installed to contain sediment and turbidity at the work site (a) parallel to, and within 10 feet of, the toe of any fill or exposed soil which may introduce sediment to an adjacent aquatic site; and (b) adjacent to any fill placed or soil exposed within an aquatic site. All silt fences, curtains, and other structures shall be installed properly and permanently stabilized, be self-sustaining, and remain in place until any turbidity levels elevated due to construction have returned to ambient levels.

4.3 Biological Effects

This assessment of biological effects addresses potential impacts of implementing the fishpond system restoration program as required under Hawai‘i Revised Statutes Section 343 et seq. on biological resources, including species that are listed as endangered or threatened under the Endangered Species Act (ESA) and the Hawai‘i State Endangered Species Law (HRS 195D), on their designated critical habitat, and on other species. Part of this section is adapted from the

Biological Evaluation of Effects of Implementing Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES) on ESA-Listed Sea Turtles and Marine Mammals (U.S. Army Corps of Engineers Honolulu District, July 2010). A more comprehensive biological evaluation will be prepared by the USACE, Regulatory Branch, in compliance with Section 7(c) of the ESA of 1973 upon submission of a USACE general permit application.

As described in Lowe (2004), fishponds serve to sustain inshore fish abundance (including production for direct harvest), stock enhancement, community building, education, and conservation activities. As a system, this approach would be expected to improve fisheries resources and to provide sustainable harvest of resources from restored fishponds. For example, in part because of its more traditional resource management that allows for natural replenishment, including use of fishponds, Niʻihau enjoys more abundant inshore resources than the other inhabited Hawaiian Islands (Lowe, 2004), supporting the potential for positive biological effects of fishpond restoration elsewhere in the state. Lowe (2004) concluded that, aside from cultural change, no single factor can be found that explains the ecological problems of Hawaiʻi's nearshore fisheries today. She also states that community-based efforts and a revival of native Hawaiian practices associated with fisheries management offer new hope of restoring inshore habitats.

It has been determined that "[m]any of the old fishponds provide important habitat for Hawaiʻi's non-migratory waterbirds and shorebirds. Some of the fishponds best known for their waterbird habitats include: Kahana Pond on Maui; Loko-Waka (Loko-aka) Pond, Makalawena Fishpond (Opaeula), and ʻAimakapa Fishpond on Hawaiʻi Island; Nuʻupia Ponds, Kawai nui Marsh, and (prior to development) Kaʻelepulu Pond on Oʻahu" (Morin 1994). Despite the presence of waterbirds and shorebirds in some ponds, organizations and practitioners have successfully worked with USFWS through the development of BMPs and other conditions to minimize any impact on protected species and their habitats (e.g., Kuʻu Aliʻi Fishpond and ʻAimakapa Fishpond). It is also recognized that "[s]alinity modifications, siltation removal, alteration of water depth, the introduction of nutrients, human activities, and other practices that may optimize aquaculture are potential sources of disturbance or habitat degradation for waterbirds" (Morin 1994). Yet, there can be net benefits from system restoration, like the positive impacts from pest and rodent control and monitoring activities (Morin 1994). Revitalized fishponds, like loʻi, coexist with endangered native birds and can provide needed habitat and food in the restored operation of the loko iʻa.

Rauzon and Drigot (2002) report that removal of red mangroves and pickleweed (*Batis maritima*) in and near Nuʻupia Ponds resulted in Hawaiian stilt colonization on mudflats cleared of alien vegetation. They report that mangrove removal had an immediate and positive effect on Hawaiian stilts, and breeding success improved. They report that mangroves support night heron breeding. Night herons are not threatened or endangered, nor are they endemic to the Hawaiian Islands. Night herons have been known to feed on stilt eggs and chicks. Removal of mangroves also deterred breeding of cattle egrets, a pest in the Hawaiian Islands. Rauzon and Drigot (2002) go on to suggest that the principles of ecosystem management support maintaining the biodiversity and sustainability of native ecosystems over transplanted environments, such as those created by alien species like mangroves and pickleweeds.

In addition to waterbirds, fishpond restoration and maintenance has the potential to damage coral and live rock. Although traditionally, coral and live rock were sometimes used in construction of fishponds, the use of these materials is excluded from permitting under this assessment. It will be important that effort is made to avoid damaging coral and live rock through direct contact or other means during reconstruction and maintenance activities and to make sure pond walls and structures are unlikely to dislodge during storms or from other natural conditions to avoid damage to reefs and other natural structures near fishponds.

Another important biological consideration is the potential to introduce alien species. To avoid this, permits cannot be granted under this program if organisms will be collected for the pond outside of the pond's moku. A BMP to decrease the potential for exotic introduction further is dedicated tools and equipment that are not shared among fishponds or other activities. Also, care should be taken to follow DLNR BMPs for avoiding introductions through hull and equipment fouling. A positive biological impact associated with fishpond restoration and maintenance is the removal of invasive species, such as mangroves.

Another potential impact would result from use of chemicals to collect organisms or manage pests. Permits issued under this program do not include use of such chemicals. Further, pellets and other external feeds or supplements cannot be used under this program, limiting potential to cause pollution, eutrophication, or other negative impacts from substances not normally found in the natural environment of fishponds.

Herbivores are favored in fishpond systems. Apex predators may be harvested from these systems, but are subject to all the applicable laws associated with such harvest. Likewise, all applicable laws apply to harvest of cultivated fish and other organisms in fishponds.

It is possible that ESA and State listed endangered and threatened species may be affected by fishpond restoration and maintenance. BMPs for review and minimization of these effects are described in Section 4.3.1. Appropriate consultations and additional conditions may be required for permit applicants if deemed necessary by OCCL and/or the advisory panel. Fishponds also occur in areas of Essential Fish Habitat (EFH) as designated under the Magnuson-Stevens Fishery Conservation and Management Act. Coral Reef Ecosystem habitat would have the largest overlap with fishpond systems. The proposed action will not significantly negatively impact EFH, and may potentially improve this habitat through reduction of alien species, improved water flow and quality, and restoration of historical ecosystem balance.

In addition to the BMPs set forth in Section 4.3.1, additional conditions, BMPs and monitoring are likely to be developed in consultation with USACE, USFWS, NOAA, DLNR and/or additional agencies and fishpond practitioners in the course developing the Programmatic Agreement.

Biological Effects: Minor or negligible adverse effects

4.3.1 Best Management Practices Relating to Biological Resources

Prior to commencing with any programmatic activities that may potentially biological resources, the following BMPs shall be implemented, adopted and adapted from the U.S. Army Corps of Engineers, 2012 Nationwide Permit Honolulu District Regional Conditions and other similar projects.

4.3.1.1 Review and Evaluation

As part of the Program's application review and/or operational planning process:

1) The Corps will confirm whether or not a proposed project is within the present or historic range of an ESA-listed marine species or designated critical habitat, and make an effects determination;

2) If the Corps determines that the project may affect an ESA-listed marine species or critical habitat, the Corps will review the project for applicability under Pac-SLOPES based on the following criteria: a) The proposed project conforms with all applicable requirements and limitations described herein; b) that the general conditions below can be applied to the project; and c) all potential effects on ESA-listed marine species or critical habitats are within the range of effects considered in the programmatic consultation with NMFS PRD for the implementation of Pac-SLOPES. Actions that do not initially comply with Pac-SLOPES may be brought into compliance through technical assistance between the applicant, the Corps, NMFS, FWS and/or DLNR OCCL; and

3) NMFS PRD and FWS will confirm with DLNR OCCL and the Corps that the given action complied with Pac-SLOPES or other application authorization.

4.3.1.2 Standard Best Management Practices (General Conditions)

The Program's administrating agency (DLNR OCCL) will work with the Corps as deemed necessary and appropriate to apply the following set of general conditions to each action authorized under Pac-SLOPES or other applicable authorization.

a. Each applicable condition, BMP, and conservation measure will be included as an enforceable part of the authorization document.

b. State and/or federal agencies, including but not limited to the Corps will retain the right of reasonable access to projects authorized under the program to monitor compliance with and effectiveness of authorization conditions.

c. All on-site personnel shall be apprised that they are working in an environmentally sensitive area and that endangered or threatened Hawaiian waterbirds, turtles, and monk seals may be in the vicinity of the project. Note: It may prudent to assist the applicants by providing a qualified biologist on site for one day to identify any birds in the area and/or to train the applicants to recognize birds of concern. DLNR OCCL may be able to coordinate with FWS and NOAA to be able to assist in this effort.

d. Each authorization will contain the requirement that the authorized entity document and report to DLNR OCCL (and thereby the Corps, NMFS and FWS) all interactions with listed species, including the disposition of any listed species that are injured or killed. Should an ESA-listed species be adversely affected, all work must stop pending re-initiation and completion of consultation between DLNR OCCL, the Corps, NMFS PRD and/or FWS for that action.

e. Constant vigilance shall be kept for the presence of ESA-list species during all aspects of the permitted and/or authorized action(s)

1. A responsible party, i.e., site manager / project supervisor, shall designate a competent observer to survey work sites and the areas adjacent to the authorized work area for ESA-listed marine species;
2. Surveys shall be made prior to the start of the work each day, including prior to resumption of work following any break of more than one-half hour. Periodic additional surveys throughout the work day are strongly recommended;
3. If any federally protected waterbird species appears within 100 feet (30.5 meters) of ongoing, in-water work, work activity shall be temporarily suspended until bird leaves the area of its own accord.
4. If a waterbird nest, turtle nest, or monk seal pup or pregnant monk seal is discovered, all work shall cease and DLNR OCCL should be contacted immediately, who shall then notify FWS and/or NOAA immediately.
5. All in-water work will be postponed or halted when ESA-listed marine species are within 50 yards of the proposed work, and will only begin/resume after the animal(s) have voluntarily departed the area, with the following exemption: if ESA-listed marine species are noticed within 50 yards after work after already begun, that work may continue only if, in the best judgment of the responsible party, the activity is unlikely disturb or harm the animal(s); and
6. No one shall attempt to feed, touch, ride, or otherwise intentionally interact with any protected species.

f. Project footprints must be limited to the minimum area necessary to complete the project.

g. The project area must be flagged to identify sensitive resource areas, such as seagrass beds, coral resources, listed terrestrial plants, and turtle nests.

h. Work located makai of the Mean Higher High Tide Line of a navigable water or makai of the upward limits of adjacent wetlands must be timed to minimize effects on ESA-listed species and their habitats.

i. Project operations must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.

j. A stormwater management plan, commensurate to the size of the project, must be prepared and carried out for any project that will produce any new impervious surface or a land cover conversion that will slow the entry of water into the soil to ensure that effects to water quality and hydrology are minimized.

k. A pollution and erosion control plan for the individual project site(s) and adjacent areas must be prepared and carried out. As a minimum, this plan shall include:

1. Proper installation and maintenance of silt fences, sausages, equipment diapers, and/or drippans;

2. A contingency plan to control and clean spilled petroleum products and other toxic materials;
3. Appropriate materials to contain and clean potential spills will be stored at the work site, and be readily available;
4. All project-related materials and equipment placed in the water will be free of pollutants;
5. Daily pre-work inspections of heavy equipment for cleanliness and leaks, with all heavy equipment operations postponed or halted until leaks are repaired and equipment is cleaned;
6. Fueling of project-related vehicles and equipment will take place at least 50 feet away from the water, preferably over an impervious surface;
7. A plan will be developed to prevent trash and debris from entertain the marine environment during the project; and
8. All construction discharge water must be treated before discharge.

l. Erosion controls must be properly installed before any alteration of the area may take place.

m. All disturbed areas must be immediately stabilized following cessation of activities for any break in work longer than 4 days.

n. Additional conditions may be required based on a site-specific analysis of potential biological resources in the area and potential impacts.

4.4 Socioeconomic Effects

It has been noted that "[f]ishponds in a high state of disrepair may never become profitable if the capital required for restoration, including the extraordinary complex permitting process, is excessive" (Fleming et al., 1995). This program has the potential to substantially improve "the extraordinary complex permitting process" and thereby significantly reduce the expenses required for restoring traditional fishpond systems in Hawai‘i.

Once this issue is resolved through this program, startup costs of fishpond activities will be considerably reduced. Economic studies on the value of traditional fishponds have concluded, "Functioning traditional Hawaiian fishponds have cultural, environmental, educational, aesthetic, and economic benefits … Fishpond production provides a highly desirable food source for the community and offers an income for the fishpond operator" (Fleming et al., 1995).

The Proposed Action would enhance the productivity and efficiency of the existing aquaculture operations and would support the longevity of the fishpond system operations across the state.

<u>Socioeconomic Effects</u>: Negligible adverse effects

4.5 Cultural Effects

When HRS § 6E was first promulgated in 1976, the express goal of the statute was to "provide leadership in preserving, restoring, and maintaining historic and cultural property, to ensure the administration of such historic and cultural property in a spirit of stewardship and trusteeship for future generations, and to conduct activities, plan, and programs in a manner consistent with the preservation and enhancement of historic and cultural properties."[6]

This project is designed exclusively to support the preserving, restoring and maintaining of traditional Hawaiian fishponds, which are critically important historic properties,[7] many of which have been named to the National Register or may be eligible for inclusion in the National Register. The program is limited to activities that have no potential to adversely impact environmental or cultural resources, conversely the entire intent of the program is to restore fishponds and help prevent their further deterioration.

The state controls dozens of fishponds that continue to regularly fall into disrepair in direct result of a permitting process the State Legislature declared to be "time consuming, complicated, and confusing and varies depending upon the circumstances of party applying for the permit" (S.R. 86 (2012)). The Legislature continued: "the existing regulations and permit requirements preclude community organizations and Native Hawaiian aquaculturalists from repairing and maintaining Hawaiian fishponds."

This program is an opportunity for the State Historic Preservation Division to receive support from other state and federal agencies in fulfilling the State's statutory commitment under HRS § 6E to "provide leadership in preserving, restoring, and maintaining historic and cultural property." Specific application requirements and additional conditions can be developed for the Program between OCCL and SHPD for inclusion in the interagency PA. Additionally, conditions can be developed during the CDUA process, prior to final approval of the Board of Land and Natural Resources.

---

[6] **[§6E-1] Declaration of intent.** The Constitution of the State of Hawaii recognizes the value of conserving and developing the historic and cultural property within the State for the public good. The legislature declares that the historic and cultural heritage of the State is among its important assets and that the rapid social and economic developments of contemporary society threaten to destroy the remaining vestiges of this heritage. The legislature further declares that it is in the public interest to engage in a comprehensive program of historic preservation at all levels of government to promote the use and conservation of such property for the education, inspiration, pleasure, and enrichment of its citizens. The legislature further declares that it shall be the public policy of this State to provide leadership in preserving, restoring, and maintaining historic and cultural property, to ensure the administration of such historic and cultural property in a spirit of stewardship and trusteeship for future generations, and to conduct activities, plans, and programs in a manner consistent with the preservation and enhancement of historic and cultural property. [L 1976, c 104, pt of §2]

[7] As defined under NHPA Section 106 § 800.16 (l)(1) "Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria."

The Proposed Action would not be expected to have significant adverse impacts on cultural, historical and archaeological resources, as OCCL looks to work with SHPD to develop conditions and BMPs during the development of the CDUA to mitigate and/or negate any potential impacts. Conversely, OCCL is confident that with the full support and cooperation of SHPD, and potential NPS, the program would yield tremendous educational and cultural benefits to affected communities and organizations, as it aims to restore the structural integrity and functional integrity of these historic and cultural properties. BMPs would help to ensure all restoration occurred in a manner consistent with state and federal law.

Cultural Effects: Minor or negligible adverse effects

4.5.1 Best Management Practices Relating to Cultural Resources

The restoration and maintenance resulting from the program will have a positive impact on the environmental, cultural, and archaeological resources of the area, and the activities will have no effect on historic properties, as defined under §106 of the National Historical Preservation Act.[8] Over 20 in-depth interviews about fishpond activities were conducted in preparation of this document. Over 100 fishpond practitioners and the Office of Hawaiian Affairs were engaged and consulted. There is strong and wide consensus that this program would have a positive impact on fishponds, their associated historic properties and cultural features. This position is evidenced by the declaration of support from fishpond practitioners and letter of support from the Office of Hawaiian Affairs, both of which are included in this document. Practitioners were particularly committed to reaffirming that fishpond restoration is closely associated with traditional and cultural rights, as reaffirmed and protected under Article XII, Section 7 of the Hawai‘i State Constitution.

In order to ensure that the known archaeological and cultural sites are not inadvertently adversely impacted by program activities, OCCL will work with the State Historic Preservation Officer and the State Historic Preservation Division to develop conditions and BMPs that will be integrated into the program that address specific concerns related to the preservation of the sites.[9]

This fPEA speaks to a process by which practitioners would have opportunity to apply to conduct activities that would have no significant cultural or environmental impacts. The listing of fishponds provided in the dPEA has been removed to reduce confusion as to the overall process being conducted. The next step in the process is the submission of an application for a general permit to the U.S. Army Corps of Engineers. Section 106 consultation and compliance will take place under that application process as prescribed by law. A programmatic agreement between the SHPO and USACE would be negotiated through that process, as set forth under application regulations. This is a different programmatic agreement than the interagency programmatic agreement that would result from this process. HRS Chapter 6E analysis and

---

[8] Under NHPA Section 106 § 800.16(i), "*Effect* means alternation to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register."

[9] Some of the common terminology used throughout the program (as directed under the applicable statute of regulation) may have caused confusion as to how the program would develop. It should be noted that OCCL reached out to SHPD on multiple occasions to engage in the development of this EA. Despite these efforts, SHPD provided no input prior to their comments received in response to the dPEA.

consultation will take place during the CDUA process. This would offer SHPD a second opportunity to provide input for conditions and BMPs. As previously noted in this document, SHPD will be an invited signatory to the interagency programmatic agreement that will govern this process, giving the SHPO a third opportunity to provide input into this process.

Should any concerns regarding specific sites or activities arise, site specific conditions may be developed and a qualified archaeological monitor will meet with the applicant and program staff to discuss the procedures for monitoring. It will be explained that the monitoring archaeologist has the authority to halt activities in the event that cultural resources are in danger of being adversely impacted. If program activities may damage, or appear to have the potential to damage, a known archaeological feature, or if previously unidentified cultural resources are discovered during monitoring, and are deemed significant (and thus Historic Properties), the monitoring archaeologist will immediately notify the SHPO and coordinate consultation as appropriate with any groups or organizations. Additionally, the SHPO will be notified in writing upon the on-set and completion of the monitoring activities.

Additional conditions, BMPs and monitoring are likely to be developed in consultation with USACE, SHPD, DLNR OCCL and/or additional agencies and fishpond practitioners in the course of developing the additional permits, concurrences, authorization and agreements required under this process.

All activities that take place under this program shall strictly adhere to the following standards and guidelines:

- The Secretary of the Interior's Standards for the Treatment of Historic Properties, 1995, as amended or updated: Standards for Preservation;
- The Secretary of the Interior's Standards for the Treatment of Historic Properties, 1995, as amended or updated: Standards for Rehabilitation;
- The Secretary of the Interior's Standards for the Treatment of Historic Properties, 1995, as amended or updated: Standards for Restoration;
- The Secretary of the Interior's Standards for the Treatment of Historic Properties, 1995, as amended or updated: Standards for Reconstruction;
- Guidelines for the Treatment of Cultural Landscapes, 1996, as amended or updated; and
- Guidelines for the Treatment of Historic Properties, 1992, as amended or updated.

4.6 Effects on Natural Hazards

A study by the Coastal Geology Group at the University of Hawai‘i has identified that natural hazards, specifically coastal hazards including, but not limited to erosion, waves from large swell, hurricanes, tsunamis and sea-level rise pose a threat to fishponds and other cultural resources. This program would significantly improve the ability to maintain and restore cultural resources impacted by natural and coastal hazards by allowing for practitioners to immediately restore structures impacted by natural disasters.

<u>Effects on Natural Hazards</u>: Negligible Effects

4.7 Effects on Other Environmental Elements

The Proposed Action would not result in significant long-term impacts to native vegetation, aesthetics, traffic, utilities, population and demographics, public access to the coastline, and/or air quality. It also will not generate noise that would cause significant damage.

4.8 Summary of Evaluation of Significance Criteria

1. The Proposed Action does not involve an irrevocable commitment or loss or destruction of any natural or cultural resource. Any permit application that is determined to result in significant negative, long-term impacts to natural or cultural resources will not be accepted under this PEA and Programmatic Agreement process, such determination will be made by OCCL and the multi-agency advisory panel. If additional BMPs or other conditions are necessary to limit impacts to negligible levels, these will be applied to permits on a site- and project-specific basis. Restored fishponds can be deconstructed in the future if desired so are not irrevocable structures.

2. The Proposed Action does not curtail the range of beneficial uses of the environment. It increases this range of use to include renewal of cultural practices and sustainable aquaculture activities. It also allows for removal of alien species which currently inhibit the breeding of endangered birds such as the Hawaiian stilt, resulting in environmental benefits.

3. The Proposed Action does not conflict with the State's long-term environmental policies, goals, or guidelines as expressed in chapter 344 HRS.

4. The Proposed Action does not substantially affect the economic welfare, social welfare, and cultural practices of the community or State. The restoration and maintenance of fishponds will support economic and social welfare and further restore an important cultural practice.

5. The Proposed Action will not substantially affect public health. Fishpond restoration and maintenance under this PEA and Programmatic Agreement will not allow activities that could significantly negatively impact long-term health of ecosystems that support public health.

6. The Proposed Action does not involve substantial secondary impacts, such as population changes or effects on public facilities. There is no expectation that populations or the public will be negatively impacted by reviving cultural fishpond practices.

7. The Proposed Action does not involve a substantial degradation of environmental quality. Studies cited within the PEA indicate that water quality is likely more affected by factors like development than by fishpond restoration and active fishpond aquaculture. Water quality may be improved by fishpond restoration, particularly in cases in which old remaining structures are limiting local water circulation, resulting in increased algal and bacterial growth. The best available information does not indicate any significant toxins are expected to be present in sediments that may be disturbed by fishpond restoration and maintenance. Strict requirements will be implemented, including BMPs described in this PEA and any additional BMPs, monitoring, or other conditions necessary to assure that any activities permitted within this program do not cause any significant negative, long-term impacts to

biological or cultural resources. Only traditional approaches to stocking and harvesting fish are approved; no chemicals or pellet/artificial feeds are allowed; and mechanized equipment is limited to that which will not significantly impact the environment. Alien species removal has been shown to improve environmental quality in fishponds. No alien species may be introduced or cultured under this permitting process. Fishponds also have the potential to benefit fisheries and fish production.

8. The Proposed Action does not have considerable cumulative effect upon the environment or involve commitment for larger actions. The effects of fishpond restoration and maintenance will be negligible under this permitting process and cumulatively will likely have neutral or beneficial effects on the environment for the reasons described in #7. No commercial activity is allowed under this process, limiting fishpond use to traditional subsistence and sharing practices which do not require long-term profit to be successful. The PEA also does not cover any activity that would expand the original footprint of the fishpond, limiting restoration to areas formally used by traditional practitioners.

9. The Proposed Action does not substantially affect rare, threatened, or endangered species or their habitats. Removal of invasive mangroves has been shown to benefit the endangered Hawaiian stilt. BMPs are required which call for stoppage of work if endangered or threatened birds, turtles, or monk seals (or nests or pupping sites) are within a given distance of the project. No critical habitat has been designated in the programmatic area, and fishponds have been specifically excluded by NOAA from critical habitat consideration for monk seals. Additional BMPs may be required if other organisms become listed or critical habitat designated. The PEA specifically excludes highly damaging activities (like blasting and pile-driving) and activities that are likely to result in take of endangered, threatened, or otherwise protected species or significant damage to special aquatic sites such as wetlands, vegetated shallows, mudflats, coral reefs, and seagrass beds. It also prohibits introduction or culture of alien species, limiting that threat to any existing protected species. Improvements to water quality and fisheries may benefit protected species.

10. The Proposed Action does not detrimentally affect air or water quality or ambient noise levels. Use of mechanized equipment may be permitted under this PEA, but the PEA specifically prohibits damaging and loud activities such as blasting and pile-driving and activities that are likely to have significant, long-term negative impacts on marine life and water quality (e.g. activities excluded from authorization under section 2.3.3). Air quality is not expected to have any negative impacts, and noise is expected to be minimal and will occur only periodically.

11. The Proposed Action will not affect or suffer damage by being located in environmentally sensitive areas, geologically hazardous land, estuaries, freshwater, or coastal water. Under this PEA and permitting scheme, only fishponds that previously existed can be restored and maintained. These ponds do occur in estuarine and coastal water, but as described in the prior criteria, they are expected to have no significant negative, long-term environmental impacts, and may result in positive environmental impacts. They will likely suffer some damage as a result of natural events and potentially be impacted by coastal development, pollution, and other anthropogenic impacts to the environment, but by nature and cultural practice, they cannot be placed elsewhere. Part of this permitting

process is to allow for restoration from prior destruction or disrepair and future maintenance of fishpond structures that may suffer damage.

12. The Proposed Action does not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.

13. The Proposed Action does not require substantial energy consumption. Much of the labor associated with fishpond restoration and maintenance will be physical in nature.

5.0 Environmental Regulations and Permits

5.1 Environmental Regulations

As mentioned in Section 1.2.1, there are many different permits and regulatory requirements involved in loko iʻa restoration actions. The intent of this section is to articulate regulations that may be applicable to the program.

5.1.1 Clean Water Act

Section 301(a) of the Clean Water Act prohibits the discharge of pollutants into "navigable waters" except in compliance with sections 402, 404, and certain other provisions. Navigable waters are defined in section 502(7) as "waters of the United States, including the territorial seas." "Waters of the United States" are in turn defined as regulation to include wetlands which are adjacent to water bodies which are themselves waters of the United States (e.g., wetlands adjacent to tidal waters, wetlands adjacent to traditionally navigable waters, wetlands adjacent to tributaries of those waters, etc.) and isolated wetlands whose use, destruction, or degradation could affect interstate commerce (40 CFR §230.3(s)). The term "wetlands" is defined by regulation to mean "those areas which are inundated or saturated at a sufficiency and duration to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions" (40 CFR §230.3(t)).

In addition to the prohibition of section 301(a), other Clean Water Act requirements application to "navigable waters," like the development of water quality standards under section 303, water quality management planning under sections 208 and 303(e), enforcement under section 309, etc., also apply to those wetlands which are "waters of the United States."

Section 101(a) of the Clean Water Act defined the national goal of restoring and maintaining the chemical, physical and biological integrity of the Nation's waters. Section 303(a)(4) of the Clean Water Act explicitly refers to satisfaction of the antidegradation requirements of 40 CFR 131.21 prior to taking various actions, which would lower water quality. The EPA Region 9 antidegradation guidance specifies: "The first step in any antidegradation analysis is to determine whether or not the proposed action will lower water quality… If the action will not lower water quality, no further analysis is needed and EPA considers 40 CFR 131.12 to be satisfied."

5.1.1.1 Section 401

The purpose of § 401 of the Clean Water Act (CWA) is for states to use its process to ensure that no federal license or permit authorizes an activity that would violate the state's water quality

standards or become a future source of pollution. A § 401 Water Quality Certification (WQC) covers construction, operation, maintenance and decommissioning of a proposed project, and conditions of the WQC become conditions of the federal license or permit.

5.1.1.2 Section 404

CWA Section 404 establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers (USACE) and EPA share responsibility for administering and enforcing Section 404. USACE administers the day-to-day program, including individual permit decisions and jurisdictional determinations; develops policy and guidance; and enforces Section 404 provisions. EPA develops and interprets environmental criteria used in evaluating permit applications, identifies activities that are exempt from permitting, reviews/comments on individual permit applications, enforces Section 404 provisions, and has authority to veto USACE permit decisions.

Section 404 requires a DA permit, issued by the Corps on behalf of the Office of the Secretary of the Army, prior to the discharge of dredged or fill material into any waters of the United States, including wetlands. Discharges of fill material generally include, but are not limited to: placement of fill necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; dams and dikes; artificial islands; property protection or reclamation devices such as riprap, groins, sea walls, breakwaters, and revetments; beach nourishment; levees, fill for intake and outfall pipes and subaqueous utility lines; fill associated with the creation of ponds; and other work involving the discharge of dredged or fill material. A DA permit is required irrespective of whether the work is permanent or temporary.

5.1.2 Endangered Species Act

The Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531-1544, 87 Stat. 884, as amended) requires the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to identify plant and animal species that are threatened or endangered since "…various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation; other species of fish, wildlife, and plants have been so depleted in numbers that they are in danger of or threatened with extinction; these species of fish, wildlife, and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people; the United States has pledged itself as a sovereign state in the international community to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction…" Federal agencies are required to assess the effect of any project on threatened and endangered species under Section 7 of the ESA.

Nearly all marine waters, as well as the lower reaches of many freshwater streams, within the Corps' jurisdiction are occupied by ESA-listed marine species. Because the Proposed Action will occur within, near, or upstream of the marine environment, it has the potential to impact ESA-listed marine animals and their habitats across the Program's geographic area.

5.1.2.1 Section 7

Section 7 of the Endangered Species Act (ESA) requires Federal agencies to ensure that actions they authorize, fund, or carry out do not jeopardize the existence of any species listed under the ESA, or destroy or adversely modify designated critical habitat of any listed species. Thus, Section 7 requires consultation by the Federal 'action agency' (the agency authorizing, funding, or carrying out the action) with the appropriate regulatory agency, either the National Marine Fisheries Service (NMFS) for marine species, or the U.S. Fish & Wildlife Service (USFWS) for terrestrial and freshwater species.

5.1.3 Rivers and Harbors Act

The Rivers and Harbors Act address projects and activities in navigable waters and harbor and river improvements. Several of these Acts provided a number of regulatory authorities, the implementation of which has evolved over time. This profile addresses only those sections that relate to the Corps Regulatory program.

The activities identified and authorized under the Proposed Action and program are likely to trigger the need for authorization by the U.S. Army Corps of Engineers Honolulu District, which is responsible for overseeing and permitting certain activities regulated under Section 10 of the Rivers and Harbors Act of 1899 (Section 10). Structures or work in, above, or beneath navigable waters of the United States require a Department of the Army (DA) permit under Section 10 prior to the commencement of work. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures, from the smallest floating dock to the largest commercial undertaking.

5.1.3.1 Section 10

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The Secretary's approval authority has since been delegated to the Chief of Engineers.

5.1.4 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C. 703-712) protects many species of migratory birds. Specifically, the act prohibits the pursuit, hunting, taking, capture, possession, or killing of such species or their nests and eggs. An activity will be determined to have a significant adverse effect when it is found within a reasonable period of time to diminish the capacity of a population of a migratory bird species to maintain genetic diversity, to reproduce, and to function effectively in its native ecosystem.

5.1.5 Fish and Wildlife Coordination Act

The purpose of the Act is to recognize the contribution of wildlife resources to the Nation, the increasing public interest and significance thereof due to expansion of our national economy and other factors, and to provide that wildlife conservation receives equal consideration and be coordinated with other features of water-resources development programs (16 U.S.C. 661). The terms "wildlife" and "wildlife resources", as used in this Act, "include birds, fishes, mammals and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent" (16 U.S.C. 666(b)). The Secretary of the Interior, through the U.S. Fish and Wildlife Service (USFWS) is authorized to assist and cooperate with Federal, state and public or private agencies and organizations in the conservation and rehabilitation of wildlife. (The National Marine Fisheries Service (NMFS) provides similar assistance and cooperation for wildlife species under the management responsibilities of the Department of Commerce). 16 U.S.C. 662(a) provides that whenever the waters of any stream or other body of water are proposed to be impounded, diverted, the channel deepened or otherwise controlled or modified, the Corps shall consult with the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS) as appropriate, and the agency administering the wildlife resources of the state. The consultation shall consider conservation of wildlife resources with the view of preventing loss of and damages to such resources as well as providing for development and improvement in connection with such water resources development.

5.1.6 Federal Coastal Zone Management Act

The Federal Coastal Zone Management Act of 1972 (as amended 16 U.S.C. 1451, et seq.,) excludes Federal lands from the coastal zone. However, Federal agencies that conduct activities directly affecting the zone must ensure that the activity is consistent with the State's Coastal Zone Management Program. The Hawai‘i Coastal Zone Management Program (HRS Chapter 205A), which is administered by the Department of Business, Economic Development and Tourism, Office of Planning, regulates public and private uses in the coastal zone. The objectives and policies of the program consist of providing recreational resources; protecting historic and scenic resources and the coastal ecosystem; providing economic uses; reducing coastal hazards; and managing development in the coastal zone. The Hawai‘i Coastal Zone Management Program designates special management areas in the coastal zone, which are subject to special controls on development. These areas extend inland from the shoreline and are established by the county.

5.1.7 National Historical Preservation Act

The Act establishes preservation as a national policy and directs the Federal government to provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation. Preservation is defined as the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, or engineering. The Act authorizes the Secretary of the Interior to expand and maintain a national register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology and culture, referred to as the National Register.

Federal agencies having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking shall take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. Federal agencies shall afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on each undertaking (Section 106 (16 U.S.C. 470f). In addition, Federal agencies shall assume responsibility for the preservation of historic properties that are owned or controlled by the agencies. They also shall establish a program to locate, inventory, and nominate all properties under the agency's ownership or control that are eligible for inclusion on the National Register (Section 110(16 U.S.C. 470h-2)).

Cultural resources include prehistoric and historic artifacts, archaeological sites (including underwater sites), historic buildings and structures, and traditional resources (such as Native American and Native Hawaiian religious sites). Cultural resources of particular concern include properties listed in or eligible for inclusion in the National Register of Historic Places (National Register). Section 106 of the National Historic Preservation Act (16 U.S.C. 470 et seq.) requires Federal agencies to take into consideration the effects of their actions on significant cultural properties. Implementing regulations (36 CFR 800) specify a process of consultation to assist in satisfying this requirement. To be considered significant, cultural resources must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the National Register. The term "eligible for inclusion in the National Register" includes all properties that meet the National Register listing criteria specified in Department of Interior regulations at 36 CFR 60.4. Resources not formally evaluated may also be considered potentially eligible and, as such, are afforded the same regulatory consideration as listed properties. Whether prehistoric, historic, or traditional, significant cultural resources are referred to as historic properties.

5.1.8 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265) (16 U.S.C. 1801-1882, April 13, 1976, as amended) requires that Federal agencies consult with NMFS on activities that could harm Essential Fish Habitat (EFH) areas. EFH refers to "those waters and substrate (sediment, hard bottom) necessary to fish for spawning, breeding, feeding or growth to maturity."

In 1996, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) was reauthorized and amended by the Sustainable Fisheries Act (Public Law 104-267). The reauthorized MSA mandated numerous changes to the existing legislation designed to prevent overfishing, rebuild depleted fish stocks, minimize bycatch, enhance research, improve monitoring, and protect fish habitat. One of the most significant mandates in the MSA that came out of the reauthorization was the Essential Fish Habitat (EFH) provision, which provides the means to conserve fish habitat.

The EFH mandate requires that the regional Fishery Management Councils, through federal fishery management plans, describe and identify EFH for each federally managed species; minimize, to the extent practicable, adverse effects on such habitat caused by fishing; and identify other actions to encourage the conservation and enhancement of such habitats. Congress defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 United States Code (U.S.C.) §1802(10). The term "fish" is defined in the

MSA as “finfish, mollusks, crustaceans, and all other forms of marine animals and plant life other than marine mammals and birds.” The regulations for implementing EFH clarify that “waters” include all aquatic areas and their biological, chemical, and physical properties, while “substrate” includes the associated biological communities that make these areas suitable fish habitats (50 C.F.R. §600.10). Habitats used at any time during a species’ life cycle (i.e., during at least one of its life stages) must be accounted for when describing and identifying EFH (National Marine Fisheries Service 2002).

Authority to implement the MSA is given to the Secretary of Commerce through NMFS. The MSA requires federal agencies to consult with NMFS on activities that may adversely affect EFH or when NMFS independently learns of a federal activity that may adversely affect EFH. The MSA defines an adverse effect as “any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions” (50 C.F.R. §600.810).

5.1.9 Marine Mammal Protection Act

The Marine Mammal Protection Act (16 U.S.C. 1361, et seq.) gives the USFWS and NMFS co-authority and outlines prohibitions for the taking of marine mammals. A take means to attempt as well as to actually harass, hunt, capture, or kill any marine mammal. Subject to certain exceptions, the Act establishes a moratorium on the taking and importation of marine mammals. Exceptions to the taking prohibition allow USFWS and NMFS to authorize the incidental taking of small numbers of marine mammals in certain instances.

5.1.10 National Marine Sanctuaries Act

The National Marine Sanctuaries Act (NMSA) 16 U.S.C. § 1431 et seq. authorizes the Secretary of Commerce to designate as National Marine Sanctuaries areas of the marine environment that possess conservation, recreational, ecological, historical, research, and educational, or aesthetic resources and qualities of national significance, and to provide a comprehensive management and protection of these areas. To protect the area designated, any Federal action that is likely to destroy, cause the loss of, or injure a sanctuary resource must consult with the Secretary of Commerce prior to commencement of the action and adhere to reasonable and prudent alternatives set by the Secretary of Commerce. To the extent practicable, consultation may be consolidated with other consultation efforts under other Federal laws, such as the Endangered Species Act.

The NMSA allows the Secretary to issue regulations for each sanctuary designated and the system as a whole that, among other things, specify the types of activities that can and cannot occur within the sanctuary. The Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) was signed into law in November 1992. The Final EIS/Management Plan was released in March 1997, and the final rule was published in November 1999. The sanctuary includes specific areas from the coast of the Hawaiian Islands seaward to the 100-fathom isobath.

5.2 Permits and Consultations

The State Programmatic General Permit will seek to include a range of permitting requirements into a single program, thereby helping to facilitate program activities for communities and practitioners who may otherwise lack the financial resources necessary to complete the extensive permitting process.

5.2.1 U.S. Army Corps of Engineers Regional General Permit

Regional General Permits are used to authorize similar activities that cause only minimal individual and cumulative environmental impacts. Regional general permits are developed by individual districts to streamline project review by minimizing duplication of other federal, state and local review processes, while still protecting aquatic resources. Regional general permits may be restricted for use in areas as small as a single residential development, a county, a region of the state, or the entire district.

5.2.1.1 State of Hawai‘i, Department of Health, Clean Water Branch (DOH) Requirements

The State of Hawai‘i Department of Health's (DOH) Clean Water Branch (CWB) administers the Clean Water Act § 401 Water Quality Certification program. The State of Hawai‘i § 401 Water Quality Certification program is further administered by Hawai‘i Administrative Rules § 11-54. Under these administrative rules, activities like those proposed under this program that are minor and non-controversial are eligible for a waiver from water quality certification requirements. Specifically, HAR § 11-54-9.1.04 (b) states: “If the discharge resulting from an activity receives a determination to be covered under a nationwide permit authorization, thereby fulfilling specific conditions of that permit pursuant to 33 CFR Sections 330.4, 330.5, and 330.6 then the [State of Hawai‘i] [D]irector [of Health] will determine, on a case-by-case basis, which projects are considered minor and non-controversial. Certification requirements of section 11-54-9.1 shall be waived for minor and non-controversial activities within one year of receipt of a complete water quality certification application.”

5.2.1.2 National Historic Preservation Act (NHPA) Compliance

Section 106 of the National Historical Preservation Act addresses the need for federal agencies to take into account impacts, if any, that undertakings have on historic properties. Protection of Historic Properties and Section 106 analysis are regulated under 36 CFR Part 800. This part provides guidelines as to conducting an analysis in assessing when and how to undergo Section 106 review.

The first step in initiating the Section 106 process constitutes determining whether or not a proposed Federal action is an undertaking as defined in 36 CFR §800.16(y), which states: “*Undertaking* means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those required a Federal permit, license or approval.”

It is likely to be determined that this proposed action is an undertaking as defined in §800.16(y).

The proposed project areas include the coastal land areas, shoreline areas and nearshore ocean waters within the State of Hawaiʻi where existing Hawaiian fishponds are located. The specific geographic area of each individual fishpond system is defined by the type of fishpond.

NHPA Section 106 requires the agency to "take into account the effect of (an) undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register (of Historic Places.)" 16 U.S.C. § 470f. NHPA section 101(d)(6)(B) requires agency officials to consult with any Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by an undertaking, regardless of the location of the property. 36 CFR §800.16 provides the following definition of a "historic property":

(l)(1) *Historic property* means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

There may be sites within the geographic area that would meet this definition of historic properties, including, but not limited to: sites related to traditional Hawaiian navigation and other seafaring traditions, traditional Hawaiian fishponds, koʻa (traditional Hawaiian fishing shrines typically consisting of piles of coral or stone), Hawaiian heiau (religious structures), Native Hawaiian burial sites, leina (places from which spirits leapt into the spirit world), and other cultural heritage properties. NHPA section 106 requires an agency to make a reasonable and good faith effort to identify historic properties, determine whether identified properties are eligible for listing on the National Register, assess the effects of the undertaking on any eligible historic properties found, determine whether the effect will be adverse; and avoid or mitigate any adverse effects. To this end, NHPA regulations require an agency to provide a Native Hawaiian organization, as a consulting party, with "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects" 36 CFR § 800.2(c)(2)(ii)(A).

Section 106 of the National Historic Preservation Act (16 U.S.C. 470 et seq.) requires Federal agencies to take into consideration the effects of their actions on significant cultural properties. Implementing regulations (36 CFR 800) specify a process of consultation to assist in satisfying this requirement. To be considered significant, cultural resources must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the National Register. The term "eligible for inclusion in the National Register" includes all properties that meet the National Register listing criteria specified in Department of Interior regulations at 36 CFR 60.4. Resources not formally evaluated may also be considered potentially eligible and, as such, are afforded the same regulatory consideration as listed properties. Whether prehistoric, historic, or traditional, significant cultural resources are referred to as historic properties.

NHPA defines an historic property as follows:

…any Pre-European contact or historic district, site, building, structure, or object included in, or eligible for listing on the National Register, including artifacts, records, and material remains related to such a property or resource (46 CFR 800, as amended 2006, Title III, Section 301, #5).

The term "historic property" is used in the sense defined here throughout this document.

The criteria for evaluating eligibility for listing on the National Register of Historic Places (NRHP) are as follows:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may be likely to yield, information important in prehistory or history (National Parks Service [NPS] 1997).

To qualify for protection under NHPA, a cultural resource must meet the rigorous criteria for National Register eligibility, thereby qualifying as an historic property.

If a cultural resource can be demonstrated to meet the criteria for listing on the NRHP, it qualifies as an historic property, and impacts to that historic property must be avoided or mitigated appropriately. Historic properties are protected from both indirect and direct effects. Indirect effects diminish some significant aspect of the historic property, but do not physically alter it. Direct effects physically alter the historic property in some way. The Area of Potential Effect (APE) is the area within which the proposed undertaking has the potential to either directly or indirectly impact historic properties that may be present. If an effect on an historic property is identified within the APE, consulting parties must agree on whether the effect is adverse. If an effect is adverse, either avoidance of the effect or mitigation for the effect is required under NHPA.

5.2.1.3 Endangered Species Act, Section 7 Consultation

Federally funded programs at the state and local level, such as some habitat restoration projects, require a Section 7 consultation process, which includes a biological assessment. Each federal agency must ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species in the wild, or destroy or adversely modify its critical habitat.

5.2.1.4 Essential Fish Habitat

The PIRO NMFS Habitat Conservation Division coordinates with state and federal agencies to conserve EFH. As per the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Federal agencies which fund, permit, or undertake activities that may adversely affect EFH are required to consult with the NMFS.

5.2.1.5 Fish and Wildlife Coordination Act

Under the Fish and Wildlife Coordination Act, USACE would be required to first consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service, as well as with state fish and wildlife agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts.

5.2.2 Conservation District Use Permit

Conservation District Use Permits (CDUP) are required for all land uses taking place in the State Land Use Conservation District. This includes all submerged lands out to three miles. Conservation regulations and permitting procedures are covered in HAR § 13-5, as authorized under HRS § 183C-3. Pursuant to HAR § 13-5, Land Use means:

1. The placement or erection of any solid material on land if that material remains on the land more than thirty days, or which causes a permanent change in the land area on which it occurs;
2. The grading, removing, harvesting, dredging, mining, or extraction of any material or natural resource on land;
3. The subdivision of land; or
4. The construction, reconstruction, demolition, or alteration of any structure, building, or facility on land.

5.2.3 Coastal Zone Management Consistency Statement

The Hawai‘i Coastal Zone Management (CZM) Program intends to issue a CZMA federal consistency general concurrence for minor federal permit activities for Hawaiian fishpond restoration, repair, maintenance and reconstruction in the State of Hawai‘i. The general concurrence is being established in response to Senate Resolution No. 86, adopted by the Hawai‘i State Legislature on April 10, 2012, which urges the Department of Land and Natural Resources, Department of Health, and Office of Planning to streamline the permitting process for the restoration of Hawaiian fishponds. The resolution also requests the Office of Planning to consider “a coastal zone management program consistency statement for Hawaiian fishponds.”

Coastal Zone Management Act (CZMA) federal consistency regulations (15 CFR Part 930) establish procedures for States to issue general concurrences (15 CFR §930.53(b)) allowing similar minor work in the same geographic area to avoid repeated review of minor federal license or permit activities which, while individually inconsequential, cumulatively affect any coastal use or resource. Federal permit activities which satisfy the conditions of the general

concurrence are not subject to the consistency certification and review requirements of 15 CFR Part 930, Subpart D - Consistency for Activities Requiring a Federal License or Permit.

5.2.4 National Environmental Policy Act Compliance

The Corps' permit regulation (33 CFR 320-330) provides that general permits can be issued only for activities that are substantially similar in nature, and that cause only minimal individual or cumulative adverse environmental impact. Based on a preliminary assessment of the impacts of the general permit, the District Engineer may make a determination that issuance of the general permit would not result individually or cumulatively in a significant effect on the natural or human environment. Therefore, under the provisions of the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347) a Federal Environmental Impact Statement would not be prepared.

6.0 Conclusion

This program offers an extraordinary opportunity for the restoration and support of a critical traditional practice that would have significant benefit to Hawaiian biocultural resources and the public as a whole.

While there are likely to be minimal short-term impacts to water quality, the long-term cumulative benefits to coastal ecosystems and the State's responsibility to manage its natural resources, as set forth in Article XI of the Hawai‘i State Constitution, far outweigh any possible short-term negligible impacts.

The agency, in consideration of the sum effects on the quality of the environment and significant criteria set forth in HAR §11-200-12, therefore anticipates the issuance of a Finding of No Significant Impact for the proposed action.

7.0 List of Agencies Consulted

7.1 Federal Agencies

7.1.1 National Marine Fisheries Service, Pacific Islands Regional Office, Aquaculture Program

7.1.2 National Marine Fisheries Service, Pacific Islands Regional Office, Habitat Conservation Division

7.1.3 National Marine Fisheries Service, Pacific Islands Regional Office, Protected Resources Division

7.1.4 National Ocean Service, Hawaiian Islands Humpback Whale National Marine Sanctuary

7.1.5 U.S. Army Corps of Engineers, Honolulu District Office

7.1.6 U.S. Fish and Wildlife Service

7.2 State Agencies

7.2.1 Department of Health, Clean Water Branch

7.2.2 Office of Planning, Coastal Zone Management

7.2.3 Office of Hawaiian Affairs

7.2.4 Department of Land and Natural Resources, State Historic Preservation Division

7.3 Community Organizations

7.3.1 Hui Loko Iʻa Kuapā

7.3.2 Paepae o Heʻeia

7.3.3 Hui ʻĀina Momona

7.3.4 Kuaʻāina Ulu ʻAuamo

8.0 List of Preparers

Trisha Kēhaulani Watson, JD, PhD
Owner and Senior Consultant, Honua Consulting

Matthew Kawaiola Sproat
Consultant, Honua Consulting

Jamaica Osorio
Consultant, Honua Consulting

Damien Kahekili Cie, PhD
Consultant, Honua Consulting

Regina Hilo
Consultant, Honua Consulting

Sarah Courbis, Ph.D.
Consultant, Honua Consulting

9.0 Public Comments in Response to the dPEA

Thirteen (13) letters were received in response to the dPEA. A listing of individuals, organizations and agencies that submitted comments are listed below.

County of Hawai‘i, Department of Planning (West Hawai‘i Office)
County of Maui, Department of Planning
Department of Business, Economic Development and Tourism (DBEDT), Office of Planning State of Hawai‘i, Coastal Zone Management
Keala, Graydon (Individual)
Office of Hawaiian Affairs
State of Hawai‘i, Department of Land and Natural Resources, Commission on Water Resource Management
State of Hawai‘i, Department of Land and Natural Resources, State Historic Preservation Division
The Nature Conservancy of Hawai‘i
U.S. Department of the Interior, National Park Service, Pacific Islands Office
U.S. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Pacific Islands Regional Office, Habitat Conservation Division
U.S. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Pacific Islands Regional Office, Protected Resources Division
University of Hawaii, Mānoa, Water Resources Research Center
Western Pacific Regional Fisheries Council (WESPAC)

10.0 References

Allen, J.E. 1998. Mangroves as alien species: The case of Hawaii. Global Ecology and Biogeography Letters. 7(1):61-71.

Anonymous. 1989. Hawaiian fishpond: Islands of Oʻahu, Molokaʻi, and Hawaiʻi. By DHM, Inc. with Bishop Museum Applied Research Group, for Hawaiʻi Coastal Zone Management Program, Office of State Planning, Office of the Governor, Honolulu, HI.

Anonymous. 1993. Hawaiʻi's Birds. Fourth Edition. Hawaiʻi Audubon Society, Honolulu, HI. 112pp.

Apple, Russell Anderson and William Kenji Kikuchi. Ancient Hawaiʻi Shore Zone Fishponds: An Evaluation of Survivors for Historical Preservation. Honolulu: Office of the State Director, National Park Service, United States Department of the Interior, 1975.

Beckley, Emma Metcalf. Hawaiian Fisheries and Methods of Fishing with an Account of the Fishing Implements Used by The Natives of the Hawaiian Islands. Honolulu: Advertiser Steam Print, 1883.

Bigelow, Keith A. and others. Assessment of the Mangrove Ecosystem of West Moloka'i, Hawaiʻi, with Additional Site Surveys of Moanui Beach Park and Ualapuʻe Fishpond. Honolulu: University of Hawaʻi, Marine Option Program, 1989.

Bond, Jr., Stanley and Richard Gmirkin. "Restoring a Part of Hawaiʻi's Past: Kaloko Fishpond Restoration." Ecological Restoration 21, no. 4 (December 2003): 285-289. Available online from Academic Search Premier

Brainard RE, Birkeland C, Eakin CM, McElhany P, Miller MW, Patterson M, Piniak GA 2011. Status review report of 82 candidate coral species petitioned under the U.S. Endangered Species Act U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-27, 530 p. + 1 Appendix

Brainard, R.E., C. Birkeland, C.M. Eakin, P. McElhany, M.W. Miller, M. Patterson, and G.A. Piniak. 2011. Status review report of 82 candidate coral species petitioned under the U.S. Endangered Species Act. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-PIFSC-27, 530 p. + 1 Appendix.

Carlson, Norman K. Palaau and the Saltwater Fishponds of Molokaʻi. Honolulu: 1952.

Carpenter, K. E., Abrar M., Aeby G., Aronson R. B., Banks S., Bruckner A., Chiriboga A., Cortes J., Delbeek J. C., DeVantier L., Edgar G. J., Edwards A. J., Fenner D., Guzman H. M., Hoeksema B. W., Hodgson G., Johan O., Licuanan W. Y., Livingstone S. R., Lovell E. R., Moore J. A., Obura D. O., Ochavillo D., Polidoro B. A., Precht W. F., Quibilan M. C., Reboton C., Richards Z. T., Rogers A. D., Sanciangco J., Sheppard A., Sheppard C., Smith J., Stuart S., Turak E., Veron J. E. N., Wallace C., Weil E., and Wood E. 2008. One-third of reef-building corals face elevated extinction risk from climate change and local impacts. Science 321:560-563.

Chopin, T. 2006. Integrated multi-trophic aquaculture. What it is, and why you should care...and don't confuse it with polyculture. Northern Aquaculture 12.

Choy, Shelley, Norman K. Nakamura, Dwight H. Kondo, Michael H. Maruyama and Sherwood D. Maynard. "The Mokauea Fishpond Project: A Beginning" The History, the Accomplishments from September 1980 through March 1981. Honolulu: Marine Option Program, University of Hawai‘i at Manoa, 1981.

Choy, Shelley, William Piazzie, Brian Atchison and Sherwood Maynard. "The Mokauea Fishpond Project: Phase II" April 1981-March 1982. Honolulu: Marine Option Program, University of Hawai‘i, 1982.

Cie, D. n.d. Native Hawaiian Fishponds: Environmental and economic relevance. http://cmbc.ucsd.edu/Research/student_research/fishponds/

Clifford, Diana Malia. Loko I‘a O Hawai‘i: Ancient Hawaiian Fishponds and Their Changing Role in Society. B.A. thesis, Princeton, 1991.

Coastal Geology Group, 2009, Coastal Hazard Analysis Report, National Park Service, Available at http://www.soest.Hawai‘i.edu/coasts/nps/

Cobb, J.N. 1903. The commercial fisheries of the Hawaiian islands. Bulletin U.S. Fish Comm. 23: 717-765.

Cobb, John N. "The Commercial Fisheries." In Section III of The Aquatic Resources of the Hawaiian Islands, eds. David Starr Jordan and Barton Warren Evermann, 746-750. Washington: Government Printing Office, 1905.

Cobb, John N. The Commercial Fisheries of the Hawaiian Islands in 1903. Appendix to the report of the commissioner of fisheries to the secretary of commerce and labor for the year ending June 30, 1904. Washington: Government Printing Office, 1905, 473-478.

Costa-Pierce, B. A. 1987. Aquaculture in Ancient Hawai‘i. Bioscience 37:320-31.

Costa-Pierce, Barry A. "Aquaculture in Ancient Hawai‘i." Bioscience 37, no. 5 (May 1987): 320-331.

Dahiell, Eugene P. and others. Waikalua Loko Fishpond Preservation Plan: Kane‘ohe, O‘ahu, Hawai‘i. Honolulu: E.P. Dashiell, 1995.

Davis, Bertell D. "In Memory of Pearl Harbor: The Losses Gone Unsung, Environment Hawai‘i" 2 (6) (December 1991). Online e-journal

Davis, Bertell D. "In Memory of Pearl Harbor: The Losses Gone Unsung, Environment Hawai‘i" 2 (6) (December 1991). Online e-journal

Department of Commerce, National Oceanic and Atmospheric Administration, 50 CFR Part 226 [Docket No. 110207102-1136-01] RIN 0648-BA81 Endangered and Threatened Wildlife and Plants: Proposed Rulemaking To Revise Critical Habitat for Hawaiian Monk Seals, Federal

Register, Vol. 76, No. 106. June 2, 2011. Available at http://www.fpir.noaa.gov/Library/PRD/Critical%20Habitat/New_5.31.11/Hawaiian%20Monk%20Seal%20-%20Redesignation%20of%20CH,%20Jun%202,%202011.pdf

Department of Land & Natural Resources. 2011. The rain follows the forest: A plan to replenish Hawaii's source of water.

Devaney, Dennis M., Marion Kelly, Polly Jae Lee and Lee S. Motteler. Kaneʻohe: A History of Change. Honolulu: Bess Press, 1982.

DHM Planners Inc. and Bernice Pauahi Bishop Museum, Applied Research Group, Public Archaeology Section. Hawaiian Fishpond Study: Islands of Oʻahu, Molokaʻi and Hawaiʻi. Honolulu: DHM Planners, 1989.

DHM Planners Inc., Bernice Pauahi Bishop Museum, Applied Research Group, Public Archaeology Section and Moon, O'Connor, Tam & Yuen. Hawaiian Fishpond Study: Islands of Hawaiʻi, Maui, Lānaʻi and Kauaʻi. Honolulu: DHM Planners, 1990.

DHM Planners Inc., Bernice Pauahi Bishop Museum, Applied Research Group, Public Archaeology Section and Moon, O'Connor, Tam & Yuen. Hawaiʻi In-Depth Studies: Hawaiian Fishpond Study. Honolulu: DHM Planners, 1990.

DHM Planners Inc., Bernice Pauahi Bishop Museum, Applied Research Group, Public Archaeology Section and Moon, O'Connor, Tam & Yuen. Maui, Lānaʻi and Kauaʻi In-Depth Studies: Hawaiian Fishpond Study. Honolulu: DHM Planners, 1990.

Dieudonne, Fran ed. "The Pacific Islands and the Sea: 350 Years of Reporting on Royal Fishponds, Coral Reefs and Ancient Walled Fish Weirs in Oceania." Encinitas, Calif.: Neptune House, 2002.

Duarte, C. M. 2007. Rapid domestication of marine species. Science 316:382-83.

Engilis, A. and T.K. Pratt 1993 Status and population trends of Hawaiʻi's native waterbirds, 197701987 Wilson Bulletin 105: 142-158

Engilis, A., and F.A. Reid, Hawaiian Waterbirds Recovery Plan. 3rd Revision. US FWS, Region 1., 142pp

Estioko-Griffin, Agnes. An Inventory of Fishponds, Island of Molokaʻi. Honolulu : A. Estioko-Griffin, 1987.

FAO 2007. The state of world fisheries and aquaculture. 162.

Farber, Joseph M. "The Historic Fishponds of Molokaʻi, Hawaiʻi," Coastlines: Information about Estuaries and Near Coastal Waters 8, no. 2 (Spring 1998).

Farber, Joseph M. Ancient Hawaiian Fishponds: Can Restoration Succeed on Molokaʻi? Encinitas, Calif.: Neptune House, 1997.

Farber, Joseph. Community-Based Planning in the Coastal Zone: The Case of Molokaʻi Fishponds: Problems and Potential. Plan B paper, Master of Urban and Regional Planning,

University of Hawaiʻi at Manoa, 1996.

Fishpond "Ohana Restoration~Maui, Koʻieʻie Loko Iʻa, For Maui. Available Online

Fishponds of Hawaiʻi. Honolulu: State of Hawaiʻi, Department of Land and Natural Resources, 1993.

Fleming, Kent, Graydon Keala and William Monahan. "The Economics of Revitalizing Hawaiian Fishpond Production." Agribusiness, February 1995.

Forsman, Z. H., Concepcion G. T., Haverkort R. D., Shaw R. W., Maragos J. E., and Toonen R. J. 2010. Ecomorph or endangered coral? DNA and microstructure reveal Hawaiian species complexes: *Montipora dilatata/flabellata/turgescens* & *M. patula/verrilli*. PLoS One 5: e15021

Friedlander, A.M.(ed.). 2004. Status of Hawaiʻi's coastal fisheries in the new millennium, revised. Proceedings of the 2001 fisheries symposium sponsored by the American Fisheries Society, Hawaiʻi Chapter, Honolulu, Hawaiʻi.

Friedlander, A., Aeby G., Brown E., Clark A., Coles S., Dollar S., Hunter C., Jokiel P., Smith J., and Walsh W. 2008. The state of coral reef ecosystems of the main Hawaiian Islands. In The state of coral reef ecosystems of the United States and Pacific Freely Associated States: 2008 (J. E. Waddell, and A. M. Clarke, eds.), p. 219–257. NOAA/National Centers for Coastal Ocean Science, Silver Spring, MD.

Greene, Linda Wedel. A Cultural History of Three Traditional Hawaiian Sites on the West Coast of Hawaiʻi Island. Denver: United States Department of the Interior, National Park Service, Denver Service Center, 1993. Available online

Hammatt, Hallett H., Gerald Kamalu Ida and William H. Folk. Archaeological and Ethnohistorical Survey of Kamoʻomaikaʻi Fishponds, Hanalei, Haleleʻa, Kauaʻi Island. Lawaʻi: Archaeological Research Center Hawaiʻi, Inc., 1981.

Handy, E.S. Craighill and Elizabeth Green Handy. Native Planters in Old Hawaiʻi: Their Life, Lore and Environment. Honolulu: Bishop Museum Press, 1972.

Hawaiʻi Department of Health. 2012. 2008/2010 State of Hawaii water quality monitoring and assessment report.

Hawaiian Fishpond Revitalization Project. Hawaiian Fishpond Revitalization: Proceedings of Hana Symposium II September 22-24, 1993. Hawaiian Fishpond Revitalization Project, 1993.

Hawaiian Fishpond Revitalization Project. Hawaiian Fishpond Revitalization: A Manual. Hawaiian Fishpond Revitalization Project, 1993.

Henry, Bud. An Inventory and Status of Recognizable Fishponds Along the Kaneʻohe Bay Shoreline or "Where Have All the Fishponds Gone?" Lanikai, Hawaiʻi: 1975.

Henry, Lehman L. (Bud). Heʻeia Fishpond: Loko Iʻa O Heʻeia: An Interpretive Guide for the Heʻeia State Park Visitor. Kaneʻohe, HI: Friends of Heʻeia State Park, 1993.

Henshaw, H.W. 1902 Birds of the Hawaiian Islands, Thrum, Honolulu, HI.

Hiatt, Robert W. “Food Chains and the Food Cycle in Hawaiian Fish Ponds.” Transactions of the American Fisheries Society 74 (1944): 250-280.

Hlawati, Ian H., 2002. Loko I`a: a Legal Guide to the Restoration of Native Hawaiian Fishponds within the Western Paradigm, 24 University of Hawai‘i Law Review 657-692.

Huber, Dale R. Ancient Hawaiian Fishponds of O‘ahu: A Bibliography of Map Resources. Honolulu: 1986.

Jayappa, K. S., Mitra, D. & Mishra, A. K. 2006. Coastal geomorphological and land-use and land-cover study of Sagar Island, Bay of Bengal (India) using remotely sensed data. International Journal of Remote Sensing 27:3671-82.

Jokiel, P. L., Brown E. K., Friedlander A., Rodgers S. K., and Smith W. R. 2004. Hawai`i coral reef assessment and monitoring program: spatial patterns and temporal dynamics in reef coral communities. Pac. Sci. 58:159-174.

Jokiel, P. L., Brown E., Rodgers K., and Smith W. 2007. Reef corals and the coral reefs of south Moloka'i. In The coral reef of south Moloka'i, Hawai`i--portrait of a sediment-threatened fringing reef (M. Field, S. Cochran, J. Logan, and C. Storlazzi, eds.), p. 43-50. US Geological Survey, Reston, VA.

Kam, Lotus E., Francisco J. Martinez-Cordero, Pingsun Leung and Anthony C. Ostrowski. “Economics of Milkfish (Chanos Chanos) Production in Hawai‘i.” In Aquaculture Economics & Management 7 (1-2) (2003): 95-123.

Kamakau, Samuel Manaiakalani. The Works of the People of Old: Na Hana a ka Po‘e Kahiko. Honolulu: Bishop Museum Press, 1976.

Kane, Herb Kawainui. Ancient Hawai‘i. Captain Cook, HI: The Kawainui Press, 1997.

Kelly, Marion. “Dynamics of Production Intensification in Precontact Hawai‘i.: In What‘s New? A Closer Look at the Process of Innovation, ed.” Sander van der Leeuw and Robin Torrence, 82-106. London ; Boston : Unwin Hyman, 1989.

Kelly, Marion. Background History of Huilua Fishpond, Kahana Bay, Ko‘olauloa. Honolulu: Bernice Pauahi Bishop Museum, Department of Anthropology, 1979.

Kelly, Marion. Brief History of Kawainui Fishpond and Associated Sites. Honolulu: Bishop Museum, Dept. of Anthropology, 1979.

Kelly, Marion. He‘eia Fishpond, a Testament to Hawaiian Fish-Farming Technology. Honolulu: Bernice P. Bishop Museum, Dept. of Anthropology, 1976.

Kelly, Marion. Loko I‘a O He‘eia: He‘eia Fishpond, 2nd ed. Honolulu: Bernice Pauahi Bishop Museum, Department of Anthropology, 2000.

Kelly, Marion. Some Legendary and Historical Aspects of He‘eia Fishpond, Ko‘olau, O‘ahu. Honolulu: Bernice P. Bishop Museum, Dept. of Anthropology, 1973.

Kikuchi, W. K. 1976. Prehistoric Hawaiian fishponds. Science 193:295-99.

Kikuchi, W.K. 1976. Prehistoric Hawaiian fishponds. Science 193: 295-299.

Kikuchi, William K. “Prehistoric Hawaiian Fishponds.” Science 193, no. 4250 (23 July 1976): 295-299.

Kikuchi, William K. and John C. Belshe. Examination and Evaluation of Fishponds on the Leeward Coast of the Island of Hawaiʻi. Honolulu: 1971.

Kikuchi, William K. The Chronology and Palynology of Kamoʻomaikaʻi Fishpond: Ahupuaʻa of Hanalei, Haleleʻa District, Island of Kauaʻi. Omaʻo, Kauaʻi: ARCHAIOS, 1991.

Hixon, M.A. and W.N. Brostoff. 1996. Succession and herbivory: Effects of differential fish grazing on Hawaiian coral-reef algae. Ecological Monographs. 66(1): 67-90.

Kikuchi, William. “Hawaiian Aquacultural System.” Ph.D. dissertation., University of Arizona, 1973.

Kittenger, J., J.M. Pandolfi, J.H. Blodgett, T.L. Hunt, H. Jiang, K. Maly, A.E. McClenachan, J.K. Schultz, B.A. Wilcox. 2011. Historical reconstruction reveals recovery in Hawaiian coral reefs. PLoS ONE. 6(10):e25460.

Leber, Kenneth M., Robert Nishimoto and Mark Brooks. Investigation of Mullet Net Pen Stocking Densities in Coastal Fishponds For a Stock Enhancement Nursery Program: Final Report. Waimanalo: The Oceanic Institute, 1994.

Lopez-Rodas, V., Maneiro, E., Martinez, J., Navarro, M. & Costas, E. 2006. Harmful algal blooms, red tides and human health: Diarrhetic shellfish poisoning and colorectal cancer. Anales de la Real Academia Nacional de Farmacia 72:391-408.

Lowe, M.K. 2004. The status of inshore fisheries ecosystems in the Main Hawaiian Islands at the down of the millennium: Cultural impacts, fisheries trends and management challenges in *Status of Hawaiʻi’s coastal fisheries in the new millennium, revised*. Friedlander, A.M.(ed.). Proceedings of the 2001 fisheries symposium sponsored by the American Fisheries Society, Hawaiʻi Chapter, Honolulu, Hawaiʻi p12-107.

Maciolek, John A. and Richard E. Brock. Aquatic Survey of the Kona Coast Ponds, Hawaiʻi Island. Honolulu: University of Hawaiʻi Sea Grant Program, 1974.

Madden, William D. and Craig L. Paulsen. The Potential for Mullet and Milkfish Culture in Hawaiian Fishponds. Honolulu: Department of Planning and Economic Development, 1977.

Malone, Thomas C. “Community Metabolism in a Hawaiian Fishpond and Its Relationship to Selected Environmental Factors.” Master’s Thesis, University of Hawaiʻi, 1968.

Manu, Moke and others. Hawaiian Fishing Traditions. Edited by Dennis Kawaharada. Honolulu: Kalamaku Press, 1992.

Maragos, J. E. 1993. Impact of coastal construction on coral reefs in the US-affiliated Pacific

islands. Coast. Manage. 21:235-269.

Maragos, J. E., Potts D. C., Aeby G., Gulko D., Kenyon J., Siciliano D., and VanRavenswaay D. 2004. 2000-2002 Rapid ecological assessment of corals (Anthozoa) on shallow reefs of the Northwestern Hawaiian Islands. Part 1: Species and distribution. Pac. Sci. 58:211-230.

Martinez-Cordero, Francisco J., Pingsun Leung, Anthony C. Ostrowski and Michael D. Chambers. "Profitability Analysis of the Commercial Growout of Pacific Threadfin (Polydactylus sexfilis) in Hawai'i Under Different Production Systems." Journal of Aquaculture in the Tropics 16 (1) (February 2001): 101-112.

Maso, M. & Garces, E. 2006. Harmful microalgae blooms (HAB); problematic and conditions that induce them. Mar. Pollut. Bull. 53:620-30.

McAllister, J. Gilbert. Archaeology of O'ahu. Honolulu: Bernice P. Bishop Museum, 1933.

Miller, Grace M. "America, Hawai'i and the Sea: The Impact of America on the Hawaiian Maritime Mode of Production 1778-1850." Ph.D. dissertation, University of Hawai'i, 1986.

Miller, Tara L. and Charles H. Fletcher. Fall 2003. Waikiki: A Historical Analysis of an Engineered Shoreline. Journal of Coastal Research 19:4, 1026-1043

Moloka'i: Fishponds. Honolulu: Dept. of Education, Office of Instructional Services/General Education Branch, 1986.

Monroe, B.L., Jr. R.C. Banks, J.W. Fitzpatrick, T.R. Howell, N.K. Johnson, H. Ouellet, J.V. Remsen, and R.W. Storer. 1993 39th Supplement to the American Ornithologists' Union Checklist of North American Birds. Auk 110: 675-682.

Morin, M.P. 1994. Hawaiian Fishponds and Endangered Waterbirds on the Kona Coast, Transactions of the Western Section of the Wildlife Society 30: 66-71.

Newman, T. Stell. "Man in the Prehistoric Hawaiian Ecosystem." In A Natural History of the Hawaiian Islands: Selected Readings, ed. E. Alison Kay, 559-603. Honolulu: University Press of Hawai'i, 1972.

Oceanic Institute. A Proposal for the Establishment of a Brackish-Water Fish Culture Laboratory in Hawai'i. Makapu`u Point, O'ahu: Oceanic Institute, 1965

Pacific American Foundation. 2003a. Project Kahea Loko: "The Call of the Pond": A Teacher's Guide to Hawaiian Fishponds Grades 4-12. Honolulu: Pacific American Foundation.

Pacific American Foundation. 2003b. Resolving water quality and permitting issues for Native Hawaiian fishponds: Project Loko I'a Final Report September 1999-August 2003.

Paton, P.W.C, J.M. Scott and T.A. Burr. 1985. American Coot and Black-necked Stilt on the Island of Hawai`i. Western Birds 16: 175-181.

Paton, P.W.C. and Scott J.M. 1985. Water birds of Hawai'i Island. `Elepaio 45: 69-76.

Paulay, G and C. Meyer. 2002. Diversification in the tropical Pacific: Comparisons between marine and terrestrial systems. Integrative and Comparative Biology. 42(5):922-934.

Pergent-Martini, C., Boudouresque, C.-F., Pasqualini, V. & Pergent, G. 2006. Impact of fish farming facilities on Posidonia oceanica meadows: a review. Marine Ecology 27:310-19

Pyle, R.L., and P. Pyle. 2009. The Birds of the Hawaiian Islands: Occurrence, History, Distribution, and Status. B.P. Bishop Museum, Honolulu, HI, U.S.A. Version 1 (31 December 2009) http://hbs.bishopmuseum.org/birds/rlp-monograph.

Randall, J.E., 1998. Zoogeography of shore fishes of the Indo-Pacific region. Zoological Studies. 37:227-268.

Rauzon, M.J. Drigot, D.C. 2002. Red mangrove eradication and pickleweed control on a Hawaiian wetland, waterbird responses, and lessons learned in Veitch, C.R. and Clout, M.N. (eds.) Turning the tide: The eradication of invasive species. IUCN SSC Invasive Species Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK. p.240-248.

Sapkota, A. R., Lefferts, L. Y., McKenzie, S. & Walker, P. 2007. What do we feed to food-production animals? A review of animal feed ingredients and their potential impacts on human health. Environmental Health Perspectives 115:663-70.

Sea Grant College Program. "Hawaiian Fishponds." Available online

Shulker, A. 2003. State of Hawaiʻi aquatic invasive species (AIS) management plan.

Sinoto, Aki. Archaeological Pre-Stabilization Assessment of Huilua Fishpond, Kahana, Oʻahu Island. Honolulu: Bernice Pauahi Bishop Museum, Department of Anthropology, 1979.

Smith, J.E., C.L. Hunter, C.M. Smith. 2002. Distribution and reproductive characteristics of nonindigenous and invasive marine algae in the Hawaiian Islands. Pacific Science 56(3): 299-315.

Smith, J.E., C.M. Smith, C.L. Hunter. 2001. The effects of herbivory and nutrient enrichment on the benthic community composition of a Hawaiian reef. Coral Reefs. 19:332-342.

State of Hawaiʻi. 2010. Hawaiʻi coral reef strategy: Priorities for management in the main Hawaiian islands 2010-2020.

State of Hawaiʻi, State Historic Preservation Division. 2001. Statewide Historic Preservation Plan.

Sterling, Elspeth P. and Catherine C. Summers. Sites of Oʻahu. Honolulu: Bishop Museum Press, 1978.

Summers, Catherine C. Hawaiian Fishponds. Honolulu: Bishop Museum Press, 1964.

Summers, Catherine C. Molokaʻi: A Site Survey. Honolulu: Bernice Pauahi Bishop Museum, Department of Anthropology, 1971.

Sundararagharavan, H. and R.C. Ertekin. Tidal-Jet Redirection and Temporal Gate Opening in a Hawaiian Fishpond. Honolulu: University of Hawaiʻi Sea Grant College Program, 1997. Online PDF

Tait, R. V. and F. A. Dipper. 1998. Elements of Marine Ecology. Fourth edition. Clays Ltd, Great Britain.

Takahashi, Chie. Restoration of Huilua Fishpond. Honolulu: Marine Option Program, University of Hawaiʻi, 1999.

Tamaru, Clyde S. and Christine Carlstrom-Trick. "Hawaiian Coastal Fishponds, an Ancient System for Sustainable Aquaculture." In Aquaculture Resource Development in Pacific Islands: Cultural and Community Influences, Sustainability, Technological Applications and Commercial Opportunities, 49-54. Honolulu: University of Hawaiʻi Sea Grant College Program, 1998.

Tamaru, Clyde S., Christine Carlstrom-Trick and Charles Helsley. "Aquaculture in Hawaiʻi: Past, Present and Future." In Open Ocean Aquaculture '97: Charting the Future of Ocean Farming: Proceedings of an International Conference, edited by Charles E. Helsley, 257-280. Honolulu: University of Hawaiʻi Sea Grant College Program, 1997.

Titcomb, Margaret. Native Use of Fish in Hawaiʻi. Honolulu: University Press of Hawaiʻi, 1972.

Troell, M., Halling, C., Neori, A., Chopin, T., Buschmann, A., Kautsky, N. & Yarish, C. 2003. Integrated mariculture: asking the right questions. Aquaculture 226:69-90.

U.S. Department of Commerce. 2012. National Oceanic and Atmospheric Administration. NOAA Fisheries. Hawaiʻi Species Identification of the 59 Indo-Pacific coral species being proposed for listing under the Endangered Species Act. Available at www.fpir.noaa.gov/Library/PRD/Coral/Corals_factsheet_Hawaiʻi_species.pdf

Ualapuʻe, Molokaʻi: Oral Histories from the East End. Honolulu: Center for Oral History, 1991.

University of Hawaiʻi, Dept. of Urban & Regional Planning, Practicum Class. Molokaʻi Fishpond Master CDUA Project. Honolulu: 1993.

Vasas, V., Lancelot, C., Rousseau, V. & Jordan, F. 2007. Eutrophication and overfishing in temperate nearshore pelagic food webs: a network perspective. Marine Ecology Progress Series 336:1-14.

Veron, J. E. N. 2000. Corals of the World. Australian Institute of Marine Science. Townsville, Australia 3 volumes.

Vockeroth, David. The Hawaiian Fishpond (Loko Kuapa): Past and Present. University of Hawaiʻi at Manoa, 1981.

Walker, R.L. E. Kridler, J.S. Medeiros, R.S. Saito, P. Sekora, G. Swedberg, T.Telfer, D. Woodside, and C.F. Zeillemaker. 1977. Hawaiian Waterbirds Recovery Plan. U.S. FWS Endangered Species Program, Portland, OR.

Weidenbach, M.E. "Fishpond Study Reveals Ancient Know-How." Makai, July 1997, 2-3.

Western Pacific Regional Fishery Management Council. 2009. Fisheries Ecosystem Plan for the Hawaiʻi Archipelago.

Wyban, C.A. 1992. Tide and Current: fishponds of Hawaiʻi. University of Hawaiʻi Press, Honolulu, HI

Wyban, Carol Araki, ed. Proceedings of the Governor's Molokaʻi Fishpond Restoration Workshop, September 6, 1991, Mitchell Pauoli (sic) Center, Kaunakakai, Molokaʻi. Honolulu: Office of Hawaiian Affairs, 1991. UHM Call No: SH35.H3 .G68 1991

Wyban, Carol Araki. Interpretive Materials for Huilua Fishpond, Kahana Valley State Park. Honolulu: State Parks Division, Department of Land and Natural Resources, 1992.

Wyban, Carol Araki. Master Plan for Uʻalapuʻe Ahupuaʻa: Blending Tradition & Technology. Kaunakakai: Department of Business and Economic Development, 1990.

Wyban, Carol Araki. Tide and Current: Fishponds of Hawaiʻi. Honolulu: University of Hawaiʻi Press, 1992.

Yang, Liqun, H. Sundararagharavan and R.C. Ertekin. Hawaiian Fishpond Studies: Web Page Development and the Effect of Runoff From the Streams on Tidal Circulation. Honolulu: University of Hawaiʻi Sea Grant College Program, 1999. Online PDF

Yang, Liqun. A Circulation Study of Hawaiian Fishponds. Honolulu: 2000. Online PDF

Yent, Martha. Field Inspection of Eroding Cultural Deposit at Huilua Fishpond, Kahana Valley State Park, Ko`olauloa, Oʻahu. Honolulu: State of Hawaiʻi, Dept. of Land and Natural Resources, Division of State Parks, 1981.

DECLARATION OF HUI MALAMA LOKO IA

NOVEMBER 2-4, 2012

To express support for the development of an interagency programmatic agreement and related documents for the purpose of obtaining a state programmatic general permit and streamlining the permitting process for the restoration, protection, preservation, perpetuation, traditional and customary use, and/or maintenance of loko i'a (traditional Hawaiian fishpond systems) and their related biocultural resources and habitats across the paeaina o Hawaii.

WHEREAS, loko i'a are wholly unique sustainable aquaculture systems found nowhere else in the world; and

WHEREAS, loko i'a have many important lessons for modern aquaculture; and

WHEREAS, traditional loko i'a are an essential tool in the restoration of depleted coastal fish populations and fisheries;

WHEREAS, loko i'a are essential features of healthy and sustainable ahupuaa based ecosystems throughout Hawaii; and

WHEREAS, loko i'a can significantly contribute to healthy and sustainable food security and food sovereignty in Hawaii; and

WHEREAS, the restoration and reuse of loko i'a provide an opportunity to increase community-based sustainable economic development opportunities; and

WHEREAS, traditional Hawaiian fishponds are critical and essential sites of learning, traditional and ancestral knowledge, STEM (science, technology, engineering and math) education, cultural practice, healthy physical activity, and community fellowship; and

WHEREAS, traditional Hawaiian fishponds offer important opportunities for communities to engage in the sustainable management of cultural and natural resources; and

WHEREAS, traditional Hawaiian fishponds and their surrounding environments are habitats for native species and significantly contribute to biodiversity and natural resource conservation in Hawaii; and

WHEREAS, traditional Hawaiian fishponds provide significant ecological services to coastal and terrestrial environments; and

WHEREAS, traditional Hawaiian fishponds can play a role in mitigating the local impacts of sea level rise and coastal inundation; and

to begin a comprehensive initiative to streamline the permit process for restoration of Hawaiian fishponds;

WHEREAS, representatives from these same agencies attended the 5th conference of Hui Malama Loko Ia to obtain support, guidance, data and input from traditional fishpond practitioners for this comprehensive initiative;

NOW, THEREFORE, WE, THE TRADITIONAL HAWAIIAN FISHPOND PRACTITIONERS AND MEMBERS OF HUI MALAMA LOKO I'A, express support for the development of an interagency programmatic agreement and related documents for the purpose of obtaining a state programmatic general permit and streamlining the permitting process for the restoration, protection, preservation, perpetuation, traditional and customary use, and/or maintenance of loko i'a (traditional Hawaiian fishpond systems) and their related biocultural resources and habitats across the paeaina o Hawaii.

DECLARED, in the ahupuaa of Waipa, on the island of Kauai, in the paeaina o Hawaii, this second, third and fourth day of November, 2012.

Signature	Printed Name	Fishpond / Organization
	FRED CACHOLA	MAKAHI, HOI O KALOKO-HONOKOHAU
	Gilbert P. Kea	Hoai, Kuala, Koloa, Kauai; ROOKIZ #3
	Makaala Kaaumoana	Hanalei Watershed Hui
	Keli'i Kotubetey	Paepae o He'eia
	Kama Hoe	Alii Kaiwua Momona
	L. Neil Frazer	School of Ocean & Earth Science Technology University of Hawaii at Manoa
	Royce Pinkerton	Paepae o He'eia
	Kawika Winters	Loko Ke'e
	Ted Blake	Malama Koloa

Signature	Printed Name	Fishpond / Organization
	Ilima Ho-Last	Moa Godis Country Waianae
	Pua O Eleili Pinto	Pae Pae o He'eia
	Cheryse Sana	MA'O Organic Farms
	Lea Wetton	Halulu / Waipā Foundation
	A. Chandler	Waipa
	Noah Kawamoto	HUI MAKAINANAO O MAKANA
(att a)	Chandler Forrest	Waipā / Hui Makainana o Makana
	PELEKE FUNES	PAEPAE O HEEIA
	Kevin KJ Chang	Kuaāina Ulu 'Auamo
	Kahiau Wallace	Huilua / Hoala Āina Kūpono
	Kekaulike P Tomich	Kiholo / TNC
	Chris Cramer	Maunalua Fishpond Heritage Cntr
	Kealaulakamamo Leota	Huilua, Kahana
	KINOHI PIZARRO	Heeia Fishpond
	Ewaliko Leota	Huilua, Kahana

72403

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

RECEIVED
'12 NOV 36 A9:04
DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

November 27, 2012

RECEIVED
OFFICE OF CONSERVATION
AND COASTAL LANDS
2012 DEC -7 A 10:06
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

William J. Ailā, Jr.
Chairperson
Department of Land & Natural Resources
1151 Punchbowl Street
Honolulu, Hawai'i 96813

Re: OHA Support of Hui Mālama Loko I'a Declaration of November 2-4, 2012

Dear Chairperson Ailā:

I write on behalf of the Office of Hawaiian Affairs (OHA) to express our strong support of the Declaration of Hui Mālama Loko I'a dated November 2-4, 2012 (Declaration), regarding a streamlined, programmatic state permitting process for the restoration, preservation, perpetuation, traditional and customary use, and/or maintenance of loko i'a (Hawaiian fishpond systems) and their associated resources and habitats. OHA affirms the findings contained within the Declaration and likewise urges all appropriate state and federal agencies to facilitate the development of a streamlined permitting process for loko i'a restoration and stewardship activities.

As background, OHA is a unique, quasi-independent state agency established by the Hawai'i State Constitution and state statutes. Our purpose is to better the conditions of all Native Hawaiians, regardless of blood quantum. Guided by nine trustees elected by the voters of Hawai'i, OHA advances the interests of Native Hawaiians and serves as a fiduciary for Native Hawaiian public trust funds and other resources.

Loko i'a contributed substantially to the local food supply prior to Western contact and are recognized as a truly unique accomplishment of the Native Hawaiian people. The variety of loko i'a designs and construction methods reflects an unparalleled understanding of engineering, ecology, and agriculture. Loko i'a required hundreds if not thousands of hands working in unity for their construction and were indications of the great wealth of the ahupua'a in which they were located. Loko i'a also held significant spiritual significance, and were considered places of

spiritual power where akua and ʻaumakua often gathered. Today, the restoration of loko iʻa provides an opportunity to not only perpetuate the cultural beliefs and understandings that enabled their creation, but to also explore the potential for achieving food security and self-sufficiency in Hawaiʻi nei.

OHA has been and continues to remain committed to supporting the restoration, use, and maintenance of traditional loko iʻa as an important component of cultural perpetuation, environmental stewardship, and food self-sufficiency in Hawaiʻi. OHA has engaged in a number of efforts to support loko iʻa practitioners and community groups in recent years. This includes the submission of recommendations for Office of Conservation and Coastal Lands rule revisions to facilitate loko iʻa restoration and maintenance; the sponsorship of the Paepae o Heʻeia executive director's attendance at a U.S. Senate Committee on Indian Affairs oversight hearing in Washington, D.C., to share her manaʻo on the challenges loko iʻa practitioners face in their work; the submission of testimony in support of Senate Resolution 86 and Senate Concurrent Resolution 151 of the 2012 Hawaiʻi Legislature, urging the streamlining of state permits for the restoration of loko iʻa; and OHA staff meetings and discussions with numerous beneficiaries regarding loko iʻa restoration and stewardship activities. Over the past ten years, OHA has also invested more than $475,000 in community-based restoration, education, and outreach projects for loko iʻa throughout the state. OHA will continue to support efforts to restore Hawaiʻi's loko iʻa, and urges our state and federal agencies to do the same.

Please do not hesitate to contact Sterling Wong, Public Policy Manager, at (808)594-1908 or via e-mail at sterlingw@oha.org should you have any questions regarding this matter.

ʻO au nō, me ka ʻoiaʻiʻo,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KMC;wt

CC:
Department of Agriculture, State of Hawaiʻi
Department of Health, State of Hawaiʻi
U.S. Fish & Wildlife Service
U.S. Environmental Protection Agency
U.S. National Oceanic & Atmospheric Administration
U.S. Army Corps of Engineers

NEIL ABERCROMBIE
GOVERNOR
RICHARD C. LIM
DIRECTOR
MARY ALICE EVANS
DEPUTY DIRECTOR
JESSE K. SOUKI
DIRECTOR
OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-13784

RECEIVED
OFFICE OF CONSERVATION
AND COASTAL LANDS
2012 NOV 20 A 11: 10
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

November 15, 2012

Lieutenant Colonel Thomas D. Asbery
District Engineer
U.S. Army Corps of Engineers, Honolulu District
Building 230
Fort Shafter, Hawaii 96858

Attention: Mr. George P. Young, Chief
Regulatory Branch

Dear Lt. Colonel Asbery:

Subject: Coastal Zone Management Act (CZMA) Federal Consistency General Concurrence for Minor Federal Permit Activities for Hawaiian Fishpond Restoration, Repair, Maintenance and Reconstruction

The Hawaii Coastal Zone Management (CZM) Program intends to issue a CZMA federal consistency general concurrence for minor federal permit activities for Hawaiian fishpond restoration, repair, maintenance and reconstruction in the State of Hawaii. The general concurrence is being established in response to Senate Resolution No. 86, adopted by the Hawaii State Legislature on April 10, 2012, which urges the Department of Land and Natural Resources, Department of Health, and Office of Planning to streamline the permitting process for the restoration of Hawaiian fishponds. The resolution also requests the Office of Planning to consider "a coastal zone management program consistency statement for Hawaiian fishponds."

Coastal Zone Management Act (CZMA) federal consistency regulations (15 CFR Part 930) establish procedures for States to issue general concurrences (15 CFR §930.53(b)) allowing similar minor work in the same geographic area to avoid repeated review of minor federal license or permit activities which, while individually inconsequential, cumulatively affect any coastal use or resource. Federal permit activities which satisfy the conditions of the general concurrence are not subject to the consistency certification and review requirements of 15 CFR Part 930, Subpart D - Consistency for Activities Requiring a Federal License or Permit.

The U.S. Army Corps of Engineers permit is the relevant federal permit for Hawaiian fishpond restoration activities. The Hawaii federal permit list includes the following U.S. Army Corps of Engineers permit authorities:

Rivers and Harbors Act of 1899, Sections 9, 10 and 11
Marine Protection, Research and Sanctuaries Act of 1972, Section 103
Federal Water Pollution Control Act of 1972 and amendments, Section 404

Federal consistency general concurrence procedures (15 CFR §930.53(b)) require that the applicable federal permit activities and the relevant conditions be included in the Hawaii list of federal permits subject to federal consistency review. Therefore, we are amending our federal permit list to include the general concurrence provisions for Hawaiian fishponds. The amended Hawaii CZM Program federal permit list is enclosed for your review.

We would appreciate receiving your comments within 30 days of receipt of this letter. If you have any questions, please contact John Nakagawa of our CZM Program at 587-2878.

Sincerely,

Mary Lou Kobayashi for
Jesse K. Souki
Director

Enclosure

c: Mr. David Kaiser, OCRM (w/ enclosure)
Mr. Steve Frano, OCRM (w/ enclosure)
Department of Health, Clean Water Branch (w/ enclosure)
Department of Land and Natural Resources
✓Office of Conservation and Coastal Lands (w/ enclosure)
Historic Preservation Division (w/ enclosure)

Hawaii Coastal Zone Management Program
General Concurrence for Minor Federal Permit Activities for
Hawaiian Fishpond Restoration, Repair, Maintenance and Reconstruction

Senate Resolution No. 86 (SR86), which was adopted by the Hawaii State Legislature on April 10, 2012, urges the Department of Land and Natural Resources, Department of Health, and Office of Planning to streamline the permitting process for the restoration of Hawaiian fishponds. The resolution also requests the Office of Planning to consider "a coastal zone management program consistency statement for Hawaiian fishponds." Hawaiian fishponds are aquaculture structures, which include man-made and natural enclosures of water in which fish and other aquatic organisms are raised and harvested. Hawaiian fishponds have historic, cultural and economic significance for the State of Hawaii.

In response to SR86 and in accordance with federal regulations, the Hawaii Coastal Zone Management (CZM) Program is issuing a general concurrence for minor federal permit activities for Hawaiian fishpond restoration, repair, maintenance and reconstruction. Coastal Zone Management Act federal consistency regulations (15 CFR Part 930) establish procedures for States to issue general concurrences (15 CFR §930.53(b)) allowing similar minor work in the same geographic area to avoid repeated review of minor federal license or permit activities which, while individually inconsequential, cumulatively affect any coastal use or resource. Federal permit activities which satisfy the conditions of the general concurrence are not subject to the consistency certification and review requirements of 15 CFR Part 930, Subpart D - Consistency for Activities Requiring a Federal License or Permit.

The U.S. Army Corps of Engineers permit is the relevant federal permit for Hawaiian fishpond restoration activities. The Hawaii federal permit list includes the following U.S. Army Corps of Engineers permit authorities:

Rivers and Harbors Act of 1899, Sections 9, 10 and 11
Marine Protection, Research and Sanctuaries Act of 1972, Section 103
Federal Water Pollution Control Act of 1972 and amendments, Section 404

Federal consistency general concurrence procedures (15 CFR §930.53(b)) require that the applicable federal permit activities and the relevant conditions be included in the Hawaii list of federal permits subject to federal consistency review. Therefore, the Hawaii CZM Program is amending the federal permit list to include the general concurrence provisions for Hawaiian fishponds.

Hawaii List of Federal Licenses and Permits Subject to Federal Consistency Review

U.S. Army Corps of Engineers permits required under:

Rivers and Harbors Act of 1899, Sections 9, 10 and 11
Marine Protection, Research and Sanctuaries Act of 1972, Section 103
Federal Water Pollution Control Act of 1972 and amendments, Section 404

General Concurrence for Federal Permit Activities for Hawaiian Fishpond Restoration, Repair, Maintenance and Reconstruction

I. Federal Permit Activities

CZM federal consistency general concurrence applies to the following Federal permit activities for the restoration, repair, maintenance and reconstruction of existing Hawaiian fishponds, subject to the applicable geographic area and the relevant conditions listed below. Federal permit activities which satisfy the conditions of the general concurrence are not subject to the consistency certification and review requirements of 15 CFR Part 930, Subpart D - Consistency for Activities Requiring a Federal License or Permit.

(a) Restoration, reconstruction, repair and maintenance of fishpond walls and sluice gates, including but not limited to the placement, movement, manipulation and temporary stockpiling of necessary materials.

(b) Placement, movement, manipulation and temporary stockpiling of small stones or rubble for interior wall fill (`ili`ili).

(c) Silt removal by hand and/or mechanized equipment from within fishponds.

(d) Vegetation removal by hand and/or mechanized equipment from within fishponds and from fishpond walls.

(e) Periodic post-restoration maintenance activities required to facilitate the long-term use, management and operation of fishponds.

(f) Use of hand and/or mechanized equipment to conduct fishpond restoration activities.

(g) Placement of temporary structures within fishponds which are necessary to conduct restoration activities.

(h) Placement and use of aquaculture pens, nets, and/or cages within fishponds.

(i) Use of harvesting equipment within fishponds.

II. Geographic Area

The geographic areas covered by this general concurrence include coastal land areas, shoreline areas, and nearshore ocean waters within the State of Hawaii where existing Hawaiian fishponds are located. The specific geographic area is defined by the type of fishpond.

Fishponds are categorized into six main types according to the "Hawaiian Fishpond Study" (DHM Planners, Inc. and Public Archaeology Section, Applied Research Group, Bernice Pauahi Bishop Museum, June 1989; based on information by William K. Kikuchi, 1973, Hawaiian Aquacultural System). Each fishpond type is specific to a particular geographic area. Refer to Figure 1, which provides a conceptual diagram and geographic area of each type of fishpond.

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

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

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

Type IV - Loko i`a kalo: An inland fishpond utilizing irrigated taro plots.

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

Type VI - Kaheka and Hapunapuna: A natural pool or holding pond.

III. Conditions

1. Copies of U.S. Army Corps of Engineers permit applications for activities covered by this general concurrence must be sent by the applicant to the Hawaii CZM Program for the purpose of monitoring adherence to the required conditions.

2. Fishpond restoration activities shall be conducted in compliance with applicable State of Hawaii water quality standards and requirements of Hawaii Revised Statutes (HRS) Chapter 342D Water Pollution and Hawaii Administrative Rules (HAR) Chapter 11-54 Water Quality Standards, which are federally approved enforceable policies of the Hawaii CZM Program.

3. Fishpond restoration activities shall be conducted in compliance with applicable State of Hawaii water pollution control requirements of HRS Chapter 342D Water Pollution and HAR Chapter 11-55 Water Pollution Control, which are federally approved enforceable policies of the Hawaii CZM Program.

4. Best management practices, such as silt containment devices and turbidity control measures, shall be implemented during fishpond restoration activities to minimize impacts on surface and ocean water quality. This condition is necessary to ensure consistency with Hawaii CZM Program coastal ecosystems policies established in HRS Chapter 205A Coastal Zone Management (HRS §205A-2(b)(4)(A) and HRS §205A-2(c)(4)), which is a federally approved enforceable policy.

5. Materials used for fishpond restoration, reconstruction and repair may be from on-site and/or off-site, and shall be clean and free of waste products, debris, or any potentially hazardous materials. This condition is necessary to ensure consistency with Hawaii CZM Program coastal ecosystems policies established in HRS Chapter 205A Coastal Zone Management (HRS §205A-2(b)(4)(A) and HRS §205A-2(c)(4)), which is a federally approved enforceable policy.

6. Whenever active fishpond restoration activities are occurring, work areas shall be monitored for endangered, threatened or indigenous species protected by the State of Hawaii under HRS Chapter 195D Conservation of Aquatic Life, Wildlife, and Land Plants, and HAR Chapter 13-24 Indigenous Wildlife, Endangered and Threatened Wildlife, and Introduced Wild Birds, which are federally approved enforceable policies of the Hawaii CZM Program. If any protected endangered, threatened or indigenous species are present in the vicinity of the restoration area, work shall cease until the animal has left the area.

7. Fishpond restoration activities shall be conducted in compliance with applicable State of Hawaii conservation district requirements established in HRS Chapter 183C Conservation District and HAR Chapter 13-5 Conservation District, which are federally approved enforceable policies of the Hawaii CZM Program.

8. The State Historic Preservation Division (SHPD) shall be consulted prior to beginning fishpond restoration and any requirements of SHPD shall be complied with. This condition is necessary to ensure consistency with HRS Chapter 6E - Historic Preservation, which is a federally approved enforceable policy of the Hawaii CZM Program.

9. Fishpond restoration activities shall be conducted in compliance with special management area and shoreline setback area requirements of the respective county in which the fishpond restoration occurs. This condition is necessary to ensure consistency with HRS Chapter 205A Coastal Zone Management (HRS Chapter 205A, Part II and Part III), which is a federally approved enforceable policy of the Hawaii CZM Program.

10. Public access along the shoreline shall not be precluded by any fishpond restoration activities. If restoration work involves an area used for public shoreline access and if safe public access cannot be maintained during restoration, then provisions shall be made to

ensure that public access is provided by alternative routes and/or means. This condition is necessary to ensure consistency with federally approved Hawaii CZM Program enforceable policies for ensuring and managing public access established in HRS Chapter 205A Coastal Zone Management (HRS §205A-2(b)(1)(A) and HRS §205A-2(c)(1)(B)) and HRS Chapter 115 Public Access to Coastal and Inland Recreational Areas.

IV. General Concurrence Procedures

(a) Federal permit activities which satisfy the conditions of the general concurrence are not subject to the consistency certification and review requirements of 15 CFR 930, Subpart D - Consistency for Activities Requiring a Federal License or Permit.

(b) Copies of federal license and permit applications for activities subject to the general concurrence must be sent by the applicant to the Hawaii CZM Program for the purpose of monitoring adherence to the required conditions.

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

Graydon 'Buddy' Keala
Loko I'a Consulting
PO Box 1428
Kilauea, Hawaii 96754

Original Comment Sent Via Email

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear Mr. Keala,

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

Comment: Most modern aquaculture systems in Hawaii, and traditional lo'i and loko i'a will aggregate protected Hawaiian bird species and therefore, most loko i'a would fall into Tier III even though it should fulfill Tier I standards.

Response: We agree with this comment, as wetland birds, monk seals, and turtles all occur in most areas where fishponds exist, and we do not necessarily want to exclude these fishponds from the program. Thus, to allow for the possibility of a fishpond repair, restoration, maintenance, and operation to to occur is most environmental settings, and to eliminate the possibility for confusion, we have deleted from Tier III "Any activities that take place in areas where endangered species and/or protected resources (including, but not limited to, wetland birds) are present or activities that take place in "special aquatic sites" (wetlands, coral reefs, sea grass beds)." However, the intent of fishpond restoration activities is not to take or harass protected species. In order to address this, we have added the following to activities not covered under this PEA "Any activities that are likely to result in take of endangered, threatened, or otherwise protected species or significant damage to special aquatic sites such as wetlands, vegetated shallows, mud flats, coral reefs, and seagrass beds." We have also added monk seals and turtles to Section 4.3.1.2 "Standard Best Management Practices (General Conditions)."

Honua Consulting
www.honuaconsulting.com

Comment: The 'additional information required' of the SPGP application under this regime translates into increased time and money, which is counter to the target group of practitioners hoping to benefit by streamlining. Additional research, studies or monitoring quickly adds up beyond what desires people have for restoring a pond. This doesn't promote use and it further reduces the ability for grass-roots groups to complete and comply with application requirements.

Response: It will be up to the interagency review group to determine what additional information is required for approval of an SPGP application. Rather than several separate agencies requesting different types of information, this will streamline the process to allow response to one permitting organization. The intent of this streamlined permit process is not to allow activities that will cause significant damage to the environment or cultural/biological resources. Depending on the activities to be conducted under the SPGP, there may be little or much additional information required. For activities that have minimal impacts, this should improve the permitting process by consolidating it under OCCL.

Comment: I would caution SPGP/A supporters that much of the regulatory oversight seems 'open ended' and up for further determination. Language such as, 'All activities will adhere to standard and additional site specifics BMPs as appropriate to minimize, mitigate, monitor and manage any short-term impacts during restoration activities'. BMPs and conditions are not clearly defined 'as appropriate' and therefore subject to further compliance conditions not mentioned, adding to cost, time and departmental red tape.

Response: The use of language such as "as appropriate" allows for case-by-case consideration of applications. To protect biological and cultural resources, it is important to allow for activity- and site-specific BMPs to be required. Currently, many separate permit applications with restrictions determined independently by multiple agencies are necessary. The intent is not to reduce the effort to protect the environment during fishpond restoration; it is to create a single permitting process with a single review team that makes requirements on the permittee as appropriate to the individual permit application. Some general BMPs are included in the PEA, but if there are instances in which additional or different BMPs are warranted, it must be within the scope of the permitting agency to make those requirements.

Comment: With regards to native bird protection, it should be noted this SPGP identifies 26 species of waterfowl that may reside in the loko i'a geographic area. Of those 26 only 4 are native and endangered. This leaves 22 species and up to 40 that are alien, non-native. It has also been recorded that some non-native species are carriers of bird diseases' that infect native birds and cause large die-offs.

Response: In Section 3.2.2 "Endangered Species" five native endangered birds are listed as potentially occurring in the project area. Section 3.2.3 "Wetland Birds" has been edited to state "Hawai'i's wetlands are important habitat for wetland birds. There are five main species of wetland waterbirds that potentially use areas within the programmatic geographic area. These include four of the birds listed above as endangered: Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, and Hawaiian duck, as well as the black-crowned night heron ('auku'u, *Nycticorax nycticorax hoactli*). Migratory waterfowl and shorebirds also periodically occur in the programmatic geographic area. For an exhaustive list of Hawai'i's birds and their occurrence, history, distribution, and status, please refer to Pyle and Pyle (2009)."

Honua Consulting

Comment: While there is a need for endangered species habitat, there is also a proper need to put loko i'a back into the working ahupua'a system.

www.honuaconsulting.com

Response: The purpose of this project is to support putting loko i'a back into the working ahupua'a system. However, this need not be at cross purposes with protecting endangered species and their habitats. Using the BMPs in the PEA and other requirements as determined by the review panel during the permitting process, fishpond restoration and endangered species recovery should remain compatible.

Recommendations and Issues to consider:

- Exempt fishponds from the listed BMPs when work activities are conducted using manual labor without heavy mechanized equipment.

  Table 1 "Fishpond Restoration Activities" indicates that "Routine maintenance of existing fishpond by hand or with hand-tools and utilizing existing traditional materials" are activities not subject to regulation. Other activities are subject to applicable BMPs. Although an important goal of the SPGP is to reduce complexity of the permitting process for fishpond restoration and maintenance, the objective is not to do so at the expense of environmental protection. The BMPs described in the PEA are to be implemented "to the extent applicable." Plans for pollution control and stormwater management appropriate to a given action are important to maintaining water quality. Likewise, minimizing potential harm and harassment of protected species and important habitats, like coral reefs, and avoiding alien introductions should be compatible with fishpond restoration. Plans and actions to minimize damage associated with fishpond restoration activities would be commensurate to the scope of the activities and their potential for negatively impacting environmental and cultural resources. So, for example, projects limited to manual labor would likely have less applicable BMPs. Exemption from BMPs could cause more damage to resources than necessary.

- Revitalized fishponds, like lo'i, coexist with endangered native birds and will provide needed habitat and food in the restored operation of the loko i'a.

  We agree and have included this statement in Section 4.3 "Biological Effects" with "will" changed to "can."

- Hawaiians have a clear tradition of environmental stewardship.

  Section 1.0 "Purpose and Need for Action" states "Hawaiian fishpond systems, loko iʻa, are some of Hawaiʻi's most significant traditional cultural resources. They are biocultural articulations of Hawaiian innovation in the areas of engineering, education, hydrology, aquaculture and biology. Further, they demonstrate traditional Hawaiʻi's excellence in sustainability, food sovereignty and natural resource management." Further, Section 3.3 "Biological Setting" now states "In addition to other factors, the degradation of fishpond systems has led to the diminishment of the quality of the ecosystem services and biological functioning that were supported by fishponds in the past. Fishponds were a component of a larger social system of ecosystem management traditionally practiced by Hawaiians, and records indicate abundance of reef organisms in these systems was high in the late 1700's (at the time of initial western contact) under local management regimes (Kittenger et al. 2011)."

- Turbidity curtains imply turbidity impacts and may be subject to WQ monitoring. This is a temporary condition of the repair and should be exempt based on the long term positive benefits.

  Section 4.2.1.2 "Standard Best Management Practices" states that BMPs associated with water quality must be applied "to the extent applicable." Part f of Section 4.2.1.2 states "Silt fences, silt curtains, or other appropriate containment structures shall be installed to contain sediment and turbidity at the work site (a) parallel to, and within 10 feet of, the toe of any fill or exposed soil which may introduce

sediment to an adjacent aquatic site; and (b) adjacent to any fill placed or soil exposed within an aquatic site. All silt fences, curtains, and other structures shall be installed properly and permanently stabilized, be self-sustaining, and remain in place until any turbidity levels elevated due to construction have returned to ambient levels." This is standard practice to reduce the impacts of turbidity during temporary increases in turbidity caused by human activity. The purpose of the SPGP is to streamline the permitting process but not at the expense of environmental protection. Causing insignificant changes in turbidity are allowed under the SPGP but appropriate BMPs should be used to minimize negative effects of such changes.

- Aquaculture of non-native species should be added to Tier III

  Non-native species have the potential to cause damage to local species, to become invasive, and to spread to areas outside of fishponds. "Introduction or culture of alien species" is considered an activity with potentially significant environmental impacts not covered under this PEA. Appropriate separate permitting should be obtained to introduce and/or cultivate non-native species. These species could not be traditionally part of fishponds, so their use as food fish, pest control, or other uses is not traditionally supported. Section 3.3.1 "Introduced and Invasive Species" details information about alien and invasive species in the programmatic geographic area. See the State of Hawai‘i Aquatic Invasive Species Management Plan (2003) for more information regarding potential damage associated with invasive species in aquatic and marine environments in Hawai‘i.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com.

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

Jesse K. Souki, Director
Office of Planning State of Hawai‘i
235 South Baretania Street, 6 Floor
Honolulu Hawaii 96813

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear Jesse K. Souki:

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

We have made the recommended changes in the FEA.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

William M. Tam, Deputy Director
Commission on Water Resource Management
PO Box 621 Honolulu, HI 96809

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear William M. Tam:

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

We have noted the potential applicability of provisions under the Water Code in the FEA.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

Gerry Davis
Assistant Regional Administrator
Habitat Conservation Division
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Pacific Islands Regional Office
1601 Kapiolani Blvd., Suite 1110
Honolulu, Hawai'I 96814-4700

Dear Gerry Davis:

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

Comment: Consider that the activities as proposed have the potential to adversely affect EFH including coral reef recourses. Construction activities, particularly using mechanized equipment, may result in sedimentation and turbidity within but also outside of the fish ponds; dredging activities may result in re-suspension and release of contaminants potentially stored within sediment into the pond and nearshore environment; construction activities may result in direct abrasion to corals present within the fishponds, growing on walls of the fishpond, or on substrate adjacent to these; and, reconstruction of walls and gates may result in changes to water flow dynamics which may indirectly affect sessile benthic organisms that have settled in the project area.

Response: Section 4.3 "Biological Effects" now includes the statement "In addition to waterbirds, fishpond restoration and maintenance has the potential to damage coral and live rock. Although traditionally, coral and live rock were sometimes used in construction of fishponds, the use of these materials is excluded from permitting under this assessment. It will be important that effort is made to avoid damaging coral and live rock through direct contact or other means during reconstruction and maintenance activities and to make sure pond walls and structures are unlikely to dislodge during storms or from other natural conditions to avoid damage to reefs and other natural structures near fishponds." It also states "It is possible that ESA and State listed endangered and threatened species may be affected by fishpond restoration and maintenance. BMPs for review and minimization of these effects are described in Section 4.3.1. Appropriate consultations and additional mitigation may be required for the applicant if deemed necessary. Fishponds also occur in areas of Essential Fish Habitat (EFH) as

designated under the Magnuson-Stevens Fishery Conservation and Management Act. Coral Reef Ecosystem habitat would have the largest overlap with fishpond systems. The proposed action will not significantly negatively impact EFH, and may potentially improve this habitat through reduction of alien species, improved water flow and quality, and restoration of historical ecosystem balance." Sedimentation and turbidity are also discussed in more detail in both the setting under Section 3.2 "Water Quality" and effects Section 4.2 "Water Effects."

Section 4.3.1.2 "Standard Best Management Practices (General Conditions)" includes BMPs that protect threatened and endangered species, minimize resource damage, plan stormwater, pollution and erosion management, and require proper installation and maintenance of silt fences, sausages, equipment diapers, and/or drippans, inspection of equipment, prevention of introduction of trash & debris, and stabilization of disturbed areas. Part n of this section states "Additional conditions may be required based on a site-specific analysis of potential biological resources in the area and potential impacts," allowing additional conditions to be required by OCCL (e.g. to protect EFH and coral reefs) if deemed necessary through the review process.

Section 4.2.1.2 "Standard Best Management Practices" includes seven BMPs for minimizing effects of fishpond restoration and maintenance to water quality, including minimizing effects of turbidity, sediments, alien introductions, and debris.

Section 5.2.1.4 "Essential Fish Habitat" states "Consultation requirements for both federal and state agencies are required under the Magnuson-Stevens Fishery Conservation and Management Act. USACE will undergo these consultations after DLNR OCCL submits a permit to cover these programmatic activities. An essential fish habitat assessment will be prepared as part of the Corps permit requirement for this project, which includes consultation with NMFS regarding potential impacts to EFH."

Section 3.3.6 "Essential Fish Habitat" describes EFH and now states the following as part of describing the Biological Setting "EFH has been described for pelagic organisms, bottomfish & groundfish, crustaceans, precious corals, and coral reef ecosystems (Western Pacific Regional Fishery Management Council, 2009). Pelagic and bottomfish & groundfish EFH starts at the shoreline, but these fishes are typically not found in fishpond systems. Spiny and slipper lobsters (*Panulirus* spp., *Scyllarides haanii*, and *Parribacus antarcticus*) and Kona crab (*Ranina ranina*) have EFH as larvae in the water column from the shoreline to a depth of 150m and as juveniles and adults, on bottom habitat from the shoreline to a depth of 100m. Specific locations in the Hawaiian Islands have been designated as EFH for precious corals (see Western Pacific Regional Fishery Management Council (2009) for specific details). In the Hawaiian Islands, precious corals have only been found in deep inter-island channels, and off promontories at depths 300-1,500 meters and 30-100m (Western Pacific Regional Fishery Management Council, 2009). The shallow EFH for precious corals consists of three areas: between Milolii and South Point on Hawai‘i Island, The ‘Au‘au Channel in Maui Nui, and the southern border of Kaua‘i. The ‘Au‘au Channel area is a Habitat Area of Particular Concern (HAPC) for the shallower precious corals. Coral reef ecosystem EFH includes the water column and all benthic substrate to a depth of 100m. A variety of areas have been designated as HAPC for coral reef ecosystems throughout the inhabited Hawaiian Islands. These are described in depth by Western Pacific Regional Fishery Management Council (2009)."

Honua Consulting
www.honuaconsulting.com

Activities not covered under this PEA now include "Fishpond reconstruction or repair requiring expansion of footprint and/or height; New fishpond construction; Activities that could have significant negative long-term impacts on marine life and water quality (e.g. activities excluded from authorization under section 2.3.3);

Any activities that are likely to result in take of endangered, threatened, or otherwise protected species or significant damage to special aquatic sites such as wetlands, vegetated shallows, mud flats, coral reefs, and seagrass beds; Introduction or culture of alien species." Section 2.3.3 categorically excludes 14 activities, including "Actions determined to have a significant environmental impact," "Use of live rock or coral to construct or repair fishpond walls or other features," and "Actions that would cause extreme turbidity, purposeful damage to live rock or coral, extreme eutrophication, or long-term impairment to water quality."

Although there is potential for minor damage to EFH to occur during fishpond restoration and maintenance, a permit can only be issued under this project and PEA if damage would not be significant and an essential fish habitat assessment will be prepared as part of the Corps permit requirement for this project, which includes consultation with NMFS regarding potential impacts to EFH. Additional requirements can be added to permits beyond the BMPs included in the PEA per Section 2.3.4 "Explanation of Program" which states that "All authorized activities will be subject to conditions set forth in the State Programmatic General Permit and conditions proposed in this PEA and potentially additional site specific conditions based on the information provided during the application process." Section 2.3 "Alternative C: Statewide Programmatic General Permit (Proposed Action and Preferred Alternative)" describes the permitting process, which includes review by an advisory panel that includes NMFS PIRO. These consultations and the potential for additional permit conditions and BMPs provide NMFS and other agencies with sufficient ability to protect EFH and coral reef resources.

Comment: The above-described potential impacts to EFH and coral reef resources can be avoided and effectively minimized by implementing a range of Best Management Practices (BMP's). NMFS PIRO HCD hence recommends that marine resources within and also adjacent to the fishponds be characterized, impacts to these fully considered, and the potential effects mindfully managed.

Response: We agree that a range of BMPs will effectively minimize potential impacts to EFH and coral reef resources. BMPs are described in detail in Sections 4.2.1.2 "Standard Best Management Practices" and 4.3.1.2 "Standard Best Management Practices (General Conditions)." Also, permits cannot be issued under this process if it is determined that the actions would have a significant environmental impact (see Section 2.3.3), and activities that "… are likely to result in take of endangered, threatened, or otherwise protected species or significant damage to special aquatic sites such as wetlands, vegetated shallows, mud flats, coral reefs, and seagrass beds" (Table 1) are not covered by this PEA.

The BMPs and consideration of permits by an advisory panel made up of multiple agencies, fishpond practitioners, and other experts will allow impacts to be fully considered and potential effects mindfully managed. If little information is available about resources in and/or near a fishpond, additional information can be required by OCCL and/or the advisory panel, potentially including a formal site characterization if needed.

Honua Consulting
www.honuaconsulting.com

Comment: Provide additional marine biological information: Currently, the biological section in the DPEA provides limited characterization of the marine biota, including EFH and coral reef resources, in the entire project area, specifically the environment outside of but adjacent to the fishponds. Consider also summarizing this information and providing it in the tables provided in Appendix A.

Response: Section 3.3 "Biological Setting" has been expanded to consider a broader characterization of marine biota, including algae, fish, corals, and other invertebrates.

A paragraph was added regarding fisheries: "Hawaiiʻi's coastal fisheries have undergone major changes over the last 100 years, with a shift away from traditional management and subsistence to commercial fishing and tourism (Friedlander, 2004). The fisheries for akule (*Selar crumenopthalmus*) and opelu (*Decapterus* spp.) account for close to 80% of coastal catch by weight (Friedlander, 2004). Other commercial species include a variety of reef species, such as surgeonfish and goatfish (Friedlander, 2004). Nearshore recreational and subsistence catch is likely similar to commercial catch levels, and intense fishing pressure has led to declines in some fisheries and concern about sustainability (Friedlander, 2004). Marine protected areas with a wide variety of place-based rules exist throughout the state to help restore and manage Hawaiʻi's fisheries. All fisheries regulations occurring in the programmatic geographic area will be followed as part of any application for permits under this PEA. For an extensive description of historical fisheries and modern impacts to fisheries by island area see Lowe (2004)."

Section 3.3.3 "Food Webs and Functional Groups" was added to generally describe the system in which fishpond exist (inside and outside of actual ponds). It states "Nearshore and intertidal areas are home to a variety of species that function at different trophic levels. The food web associated with these areas is a subset of the larger oceanic food web. Organisms in this food web act as both predators and prey. This can vary with different life stages. Primary productivity (the energy created by organisms that photosynthesize or chemosynthesize) is the basic building block. Beyond primary production, there is secondary production from zooplankton and other small creatures that feed upon the primary producers. Tertiary production results from dead predators (Tait and Dipper 1998). There are also detritivores and decomposers (such as bacteria) that cycle dead organisms back into the elements that feed primary production. In the programmatic area, the main functional groups include producers, such as plankton and algae, herbivores, filter feeders, detritivores/burrowers, predators, including grazers, coralivores, and shallow water predators (both benthic and in the water column), and apex predators like birds and seals. Both rocky and coral dominated nearshore habitats help to support a variety of organisms that include plants, fish, invertebrates, turtles, and seals."

The other Sections of the Environmental Setting have been considerably edited and expanded as well.

Section 3.3.6 "Essential Fish Habitat" was expanded to explain and describe EFH for pelagic organisms, bottomfish & groundfish, crustaceans, precious corals, and coral reef ecosystems.

A summary of biological information has not been added to Appendix A. Appendix A is "Documented Fishponds Across the Archipelago" and is meant to provide information on fishpond locations. The new version of the PEA considers the variety of habitats and organisms that may be present in any area in which fishponds covered under the PEA are found. As individual applicants engage in the SPGP process, additional BMPs and other conditions will be established on a site-specific basis to assure that actions will not cause significant negative, long-term impacts to the environment. Actions that cannot meet this standard cannot be permitted under this program and could potentially be subject to Chapter 343 separate from the SPGP PEA.

Comment: Provide an enhanced marine impacts analysis: Suggest not only identifying the potential source and general types of impacts that may occur to the marine resources described as per above, but specifically analyzing and predicting the specific changes that may occur to the marine biota, including any positive effects. Also describe how the restoration of fishponds may positively affect the nearshore environment.

Response: The following was added to the marine impact analysis:
"As described in Lowe (2004), fishponds serve to sustain inshore fish abundance (including production for direct harvest), stock enhancement, community building, education, and conservation activities. As

a system, this approach would be expected to improve fisheries resources and to provide sustainable harvest of resources from restored fishponds. For example, in part because of its more traditional resource management that allows for natural replenishment, including use of fishponds, Ni‘ihau enjoys more abundant inshore resources than the other inhabited Hawaiian Islands (Lowe, 2004), supporting the potential for positive biological effects of fishpond restoration elsewhere in the state. Lowe (2004) concluded that, aside from cultural change, no single factor can be found that explains the ecological problems of Hawai‘i’s nearshore fisheries today. She also states that community-based efforts and a revival of native Hawaiian practices associated with fisheries management offer new hope of restoring inshore habitats…

…Rauzon and Drigot (2002) report that removal of red mangroves and pickleweed (*Batis maritima*) in and near Nu‘upia Ponds resulted in Hawaiian stilt colonization on mudflats cleared of alien vegetation. They report that mangrove removal had an immediate and positive effect on Hawaiian stilts, and breeding success improved. They report that mangroves support night heron breeding. Night herons are not threatened or endangered, nor are they endemic to the Hawaiian Islands. Night herons have been known to feed on stilt eggs and chicks. Removal of mangroves also deterred breeding of cattle egrets, a pest in the Hawaiian Islands. Rauzon and Drigot (2002) go on to suggest that the principles of ecosystem management support maintaining the biodiversity and sustainability of native ecosystems over transplanted environments, such as those created by alien species like mangroves and pickleweeds.

In addition to waterbirds, fishpond restoration and maintenance has the potential to damage coral and live rock. Although traditionally, coral and live rock were sometimes used in construction of fishponds, the use of these materials is excluded from permitting under this assessment. It will be important that effort is made to avoid damaging coral and live rock through direct contact or other means during reconstruction and maintenance activities and to make sure pond walls and structures are unlikely to dislodge during storms or from other natural conditions to avoid damage to reefs and other natural structures near fishponds.

Another important biological consideration is the potential to introduce alien species. To avoid this, permits cannot be granted under this program if organisms will be collected for the pond outside of the pond’s moku. A BMP to decrease the potential for exotic introduction further is dedicated tools and equipment that are not shared among fishponds or other activities. Also, care should be taken to follow DLNR BMPs for avoiding introductions through hull and equipment fouling. A positive biological impact associated with fishpond restoration and maintenance is the removal of invasive species, such as mangroves.

Another potential impact would result from use of chemicals to collect organisms or manage pests. Permits issued under this program do not include use of such chemicals. Further, pellets and other external feeds or supplements cannot be used under this program, limiting potential to to cause pollution, eutrophication, or other negative impacts from substances not normally found in the natural environment of fishponds.

Honua Consulting
www.honuaconsulting.com

Herbivores are favored in fishpond systems. Apex predators may be harvested from these systems, but are subject to all the applicable laws associated with such harvest. Likewise, all applicable laws apply to harvest of cultivated fish and other organisms in fishponds.

It is possible that ESA and State listed endangered and threatened species may be affected by fishpond restoration and maintenance. BMPs for review and minimization of these effects are described in Section 4.3.1. Appropriate consultations and additional conditions may be required for permit applicants if deemed necessary by OCCL and/or the advisory panel. Fishponds also occur in areas of Essential Fish Habitat (EFH) as designated under the Magnuson-Stevens Fishery Conservation and Management Act. Coral Reef Ecosystem habitat would have the largest overlap with fishpond systems. The proposed action will not significantly negatively impact EFH, and may potentially improve this habitat through reduction of alien species, improved water flow and quality, and restoration of historical ecosystem balance."

Comment: Provide clear and practicable marine resource mitigation measures: For avoidance/minimization of impacts to marine biota and water quality outside of the fishponds are better developed and implemented.

Response: Section 4.2.1.2 "Standard Best Management Practices" itemizes seven BMPs for minimizing impacts to water quality, including inside and outside of fishponds. Part f specifically calls out adjacent aquatic sites and part e references "adjacent waters of the United States, including special aquatic sites." Section *4.3.1.1* "Review and Evaluation" describes the process by which ESA species and critical habitat impacts will be evaluated. Section 4.3.1.2 "Standard Best Management Practices (General Conditions)" describes BMPs for protecting biological resources, including requirements for a stormwater management plan and a pollution and erosion control plan. Part n of this section also states "Additional conditions may be required based on a site-specific analysis of potential biological resources in the area and potential impacts." This gives the OCCL and advisory panel the discretion to require additional BMPs or other conditions to minimize and avoid biological impacts of fishpond restoration and maintenance under this permitting process.

Comment: Section 2.3 (p. 23): Identify better the points of contacts within agencies identified that will be asked to be on the advisory group

Given potential for personnel changes at agencies, we have determined that listing the specific individuals that would comprise the panel is not appropriate, as membership may vary over time. DLNR DAR has been added as an agency to have representation on the interagency advisory group because this agency has expertise specific to marine resource management. The list includes "Additional members as necessary, appropriate and/or practicable" to give OCCL the flexibility to enlist appropriate experts for specific issues that may arise regarding a given permit application.

Comment: Section 2.3.2 (p. 23): Describe the various activities proposed under the program in greater detail within the EA, including predicting frequency and duration of proposed activities.

Response: Given that frequency and duration of fishpond-related activities will vary by applicant, it is difficult to make specific predictions about them in the PEA. It should be noted that the action under review is providing a single application process for multiple agency review for activities related to fishpond restoration and maintenance that are considered to have insignificant effects on cultural and biological resources. The activity of the PEA is the issuance of permits under this scheme, and we estimate that no less than ten 10 and no more than 30 loko i'a would participate in this permitting program over a five year period.

Comment: Section 2.3.3 (p. 24): Identify whether also maintenance dredging activities of certain character, e.g. that propose to remove material above a certain volumetric threshold will be excluded.

Honua Consulting
www.honuaconsulting.com

Response: Any activity that "could have significant negative long-term impacts on marine life and water quality (e.g. activities excluded from authorization under section 2.3.3)" or "that are likely to result in take of endangered, threatened, or otherwise protected species or significant damage to special aquatic sites such as wetlands, vegetated shallows, mudflats, coral reefs, and seagrass beds" are excluded from this permitting process. If a dredging activity of a certain character or volumetric threshold is deemed to have a likelihood of a significant negative impact, it could not be authorized under this process and PEA. Setting a threshold suggests that OCCL would approve permits under that threshold, which is not necessarily the case. Thresholds may be site- or project-specific, so it is important to allow OCCL and the advisory panel to set appropriate limits as conditions on permits or to reject permits if the proposed dredging activity could have significant impacts.

Comment: Section 2.3.4, Table 1, (p. 25): Clarify why these percentage thresholds have been applied, e.g. why 50% and not 5%? These thresholds currently appear arbitrary to the reader; they should be based on defined criteria. Also, provide a rationale for need to conduct activities that involve expansion beyond original footprint.

Response: We have removed the example of 50%. Note that Table 1 now shows that activities that include expansion beyond the original footprint are in the category of activities not covered under this PEA, so a rationale for such activities would not be necessary because permits cannot be issued for this type of activity using the proposed process.

Comment: Section 3.3 (p. 29): The "biological environment" section should be further developed to be more comprehensive

Response: As described above, this section is now more comprehensive.

Comment: Section 3.3.1, (p. 29): Also include and describe the aquatic/marine introduced and invasive species present in and adjacent to fish ponds as these may be affected by water flow and hence subject to water quality impacts.

Response: This section has been further developed to include broader invasive species issues. It now reads:

"There is a range of invasive species found in loko kuapā. A common and highly problematic invasive species is the red mangrove (*Rhizophora mangle*). Red mangrove was introduced to Molokaʻi in 1902 for the purpose of stabilizing mud flats (Allen1998). Two other species of mangrove have also established in the Hawaiian Islands: *Bruguiera gymnorrhiza* and *Conocarpus erectus* (Allen 1998). Although mangroves provide important habitats in their native areas, introduction of mangroves to the Hawaiian Islands has caused negative impacts such as reduction in habitat quality for the Hawaiian stilt, (*Himantopus mexicanus knudseni*) and colonization and overgrowth of important cultural sites and biological habitats (such as anchialine ponds) (Allen 1998), Mangroves, known for their thick and extensive root systems, have proven destructive to kuapā. They enhance sediment deposition and decrease oxygen circulation in the ponds.

A variety of invasive algae also occur in nearshore areas. Smith et al. (2002) conducted surveys to evaluate distribution and impacts of invasive algae occurring in the Hawaiian Islands. Habitat characteristics can make certain areas more susceptible to invasion. In healthy coral reef ecosystems, corals and coralline algae dominate with macroalgae and turf algae growth mainly in areas that are difficult for herbivores to access (Smith et al. 2001). Phase shifts of coral reefs to algal dominance (from both invasive and native algae) can result in changes in reef community structure and decreased

biodiversity (Smith et al. 2001).

At least 19 species of macroalgae have been introduced to Hawai‘i since the mid 1950’s (Shluker, 2003). At least five have established and dispersed around the Hawaiian Islands. Three species, *Gracilaria saliconia*, *Hypnea musciformis*, and *Kappaphycus* spp., form extensive destructive blooms.

In addition to algae and mangroves, 34 marine fish species have been introduced to Hawai‘i’s waters and at least 20 have become established (Shluker, 2003). Of these species, 13 were purposeful releases and seven were accidental introductions. For example, ta‘ape (blueline snapper, *Lutjanus kasmira*) and Roi (peacock grouper, *Cephalopholis argus*) were introduced by the State of Hawai‘i as food fishes in the late 1950’s.

With respect to invertebrates, it is estimated that 201 marine and brackish invertebrate species have been introduced to Hawai‘i, and 86 additional species cannot be determined to be native or introduced (Shluker, 2003). Of these species, 248 have become established.

Various introduced bird species associated with fishpond systems include common (Indian) mynah (*Acridotheres tristis*), zebra dove (*Geopelia striata*), spotted dove (*Spilopelia chinensis*), northern cardinal (*Cardinalis cardinalis*), mannikins (*Lonchura* spp), and the Japanese white-eye (*Zosterops japonicas*).

The Indian mongoose (*Herpestes edwardsii*), various rats and mice, and occasional feral goats and pigs, in additional to other terrestrial introduced species, are common in fishpond systems.”

Comment: Section 3.3.5, (p. 33): Consider moving the first three paragraphs to section 5.1.8. Furthermore, the EFH description that is provided is not complete.

Response: The paragraphs described have been moved into Section 5.1.8 “Magnuson-Stevens Fishery Conservation and Management Act.”

The following was added to section 3.3.6 “Essential Fish Habitat” in the Biological Setting: “Traditional Hawaiian fishponds exist exclusively in waters located within three miles from shore. EFH has been described for pelagic organisms, bottomfish & groundfish, crustaceans, precious corals, and coral reef ecosystems (Western Pacific Regional Fishery Management Council, 2009). Pelagic and bottomfish & groundfish EFH starts at the shoreline, but these fishes are typically not found in fishpond systems. Spiny and slipper lobsters (*Panulirus* spp., *Scyllarides haanii*, and *Parribacus antarcticus*) and Kona crab (*Ranina ranina*) have EFH as larvae in the water column from the shoreline to a depth of 150m and as juveniles and adults, on bottom habitat from the shoreline to a depth of 100m. Specific locations in the Hawaiian Islands have been designated as EFH for precious corals (see Western Pacific Regional Fishery Management Council (2009) for specific details). In the Hawaiian Islands, precious corals have only been found in deep inter-island channels, and off promontories at depths 300-1,500 meters and 30-100m (Western Pacific Regional Fishery Management Council, 2009). The shallow EFH for precious corals consists of three areas: between Milolii and South Point on Hawai‘i Island, The ‘Au‘au Channel in Maui Nui, and the southern border of Kaua‘i. The ‘Au‘au Channel area is a Habitat Area of Particular Concern (HAPC) for the shallower precious corals. Coral reef ecosystem EFH includes the water column and all benthic substrate to a depth of 100m. A variety of areas have been designated as HAPC for coral reef ecosystems throughout the inhabited Hawaiian Islands. These are described in depth by Western Pacific Regional Fishery Management Council (2009).”

Comment: Section 3.3.6, (p. 33): Consider changing title to "Coral and other organisms" or "Coral Reef Organisms". All organisms, including coral reef organisms such as fish, corals and non-coral invertebrates should be included in the biological environment section. It's stated … "Some research is currently emerging from past system restoration efforts that given reason to believe that coral regeneration may result from restoration of fishpond systems." Elaborate on how, and cite the study/work.

Response: The Biological Setting now includes sections on Introduced and Invasive Species, Endangered and Threatened Species, Food Webs and Functional Groups, Wetland Birds, Fish, Essential Fish Habitat, Corals, Other Invertebrates, and Algae. The statement "Some research is currently emerging from past system restoration efforts that given reason to believe that coral regeneration may result from restoration of fishpond systems" has been removed.

Comment: Section 4.2, (p. 41): Identify if and how dredging potentially re-suspending such contaminants may come to affect not only water quality within the fishpond but also the nearshore environment outside of this from the release and discharge of contaminants via water flow

Response: As stated in Section 1.3.2 **"**Resource Issues within the Geographic Scope of Analysis**" "**The proposed action does not include constructing any new permanent infrastructure in submerged lands, significant discharges of fill material, significant dredging, or using any hazardous materials that could be released into the environment**."** Section 2.3.3 "Activities Categorically Excluded from the Program" #3 is "New construction or dredging or in-water trenching not related to original fishpond structure/function;" #8 is "Actions determined to have a significant environmental impact;" and #13 is "Actions that would cause extreme turbidity, purposeful damage to live rock or coral, extreme eutrophication, or long-term impairment to water quality." Section 4.2 "Water Effects" now states "Dredging sediments can result in release of accumulated toxins in the benthos. Major dredging activities are not to be considered as part of the programmatic activities, and if there is reason to believe that significant pollutants would exist in benthic habitat in or near dredging activities, BMPs, monitoring, or other conditions may be required for issuance of a permit that includes disturbing the benthos." "Major dredging" has been removed from Table 1 "Fishpond Restoration Activities."

The purpose of the streamlined permitting process is not to allow activities that will cause long-term or permanent damage to reefs or other biological resources nor to exempt permittees from BMPs or processes necessary to minimize and avoid damage to resources. This PEA examines consolidating the permitting process for fishponds under OCCL with an advisory panel of multiple agencies with jurisdiction and expertise that will require appropriate BMPs and mitigations under applicable statutes. Any activity, including major dredging, deemed to be beyond the scope of this permitting process will not be approved. The proposed action examined in this PEA is not to conduct dredging but rather to consider applications that would conduct activities like dredging under a consolidated permitting process. The proposed action will not cause significant negative environmental effects because it does not allow projects to be permitted under those circumstances. BMPs and other conditions may be used to reduce and avoid damage, but if this cannot be achieved, permits cannot be issued under the proposed process.

Honua Consulting
www.honuaconsulting.com

Comment: Section 4.2.1, (p. 42): Clarify when and the process for this occurring. Consider adding/including EPA

Response: Section 4.2.1 "Best Management Practices Relating to Water Quality" indicates when this process will occur in the sentence "Prior to commencing with any programmatic activities that may potentially impact water quality…" The BMPs described are from the U.S. Army Corps of Engineers,

2012 Nationwide Permit Honolulu District Regional Conditions. The Hawai‘i Department of Health Clean Water Branch administers the Clean Water Act for the State of Hawai‘i. This agency is included in the advisory panel that will provided review and additional BMPs and conditions for fishpond projects proposed for permitting. The advisory panel will also include "Additional members as necessary, appropriate and/or practicable," so the EPA can be officially included as needed.

Comment: Section 4.2.1.2 (p. 43): Consider deleting or modifying BMP # (g) as this BMP does not seem to be relevant to the programmatic activities

Response: Section 4.2.1.2 Part g has been deleted.

Comment: Section 4.3 (p. 44): The biological impacts analysis section is unclear in intent and content. Also, consider removing or modifying language about the Corps permit as it seems a poor fit in this section.

Response: The language of the biological impacts section has been changed as described in response to your comment regarding EFH resources. The language regarding the Corps permit has been moved to Section 5.0 "Environmental Regulations and Permits."

Comment: Section 4.3.1.1/ 4.3.1.2, (p. 45-46): Expand to focus on resources beyond ESA

Response: Section 4.3.1.2 "Standard Best Management Practices (General Conditions) includes the following non-ESA BMPs:

"f. Project footprints must be limited to the minimum area necessary to complete the project.

g. The project area must be flagged to identify sensitive resource areas, such as seagrass beds, coral resources, listed terrestrial plants, and turtle nests…

i. Project operations must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.

1. A stormwater management plan, commensurate to the size of the project, must be prepared and carried out for any project that will produce any new impervious surface or a land cover conversion that will slow the entry of water into the soil to ensure that effects to water quality and hydrology are minimized.

2. A pollution and erosion control plan for the individual project site(s) and adjacent areas must be prepared and carried out. As a minimum, this plan shall include:

1. Proper installation and maintenance of silt fences, sausages, equipment diapers, and/or drippans;

2. A contingency plan to control and clean spilled petroleum products and other toxic materials;

3. Appropriate materials to contain and clean potential spills will be stored at the work site, and be readily available;

4. All project-related materials and equipment placed in the water will be free of pollutants;

Honua Consulting
www.honuaconsulting.com

5. Daily pre-work inspections of heavy equipment for cleanliness and leaks, with all heavy equipment operations postponed or halted until leaks are repaired and equipment is cleaned;
6. Fueling of project-related vehicles and equipment will take place at least 50 feet away from the water, preferably over an impervious surface;
7. A plan will be developed to prevent trash and debris from entertain the marine environment during the project; and
8. All construction discharge water must be treated before discharge.
9. Erosion controls must be properly installed before any alteration of the area may take place.
10. All disturbed areas must be immediately stabilized following cessation of activities for any break in work longer than 4 days.
11. Additional conditions may be required based on a site-specific analysis of potential biological resources in the area and potential impacts."

The OCCL and/or the advisory panel may require additional conditions and BMPs, as stated in Part n. These will be developed on a site- and project-specific basis to minimize and avoid damage to cultural and biological resources.

Comment: Section 4.7, (p. 49): Since permanent removal of vegetation such as invasive mangroves and/or dry-land vegetation is proposed, there will in fact be long term effects to vegetation. Address fully the negative and positive effects that may be associated with these vegetation changes

Response: To clarify the situation with dry-land vegetation, Section 2.0 "Proposed Management Alternatives" now states "The majority of activities reported are restoration, maintenance and educational activities. These activities include: 1) manual replacement of wall stones dislodged as a result of heavy surf action or natural disrepair, 2) manual removal of wave-deposited sand and rock from the fishpond basin to maintain pond depths, 3) manual removal of mangrove and other invasive species from the fishpond wall and basin to prevent damage to wall, and 4) educational and research activities. It is anticipated that these are the types of activities that will be covered under the SPGP. There is no expectation that native dry-land vegetation would be removed in significant quantities as part of fishpond restoration and maintenance, but any such removal proposed would undergo the full scrutiny of the OCCL and advisory group and could be denied or require additional permit conditions. In some cases, contemporary construction methods may be utilized to repair, maintain and restore Hawaiian fishponds."

Permanent removal of invasive mangroves is likely to have positive rather than negative impacts on the environment. Section 3.3.1 "Introduced and Invasive Species" now states the following regarding mangroves "There is a range of invasive species found in loko kuapā. A common and highly problematic invasive species is the red mangrove (*Rhizophora mangle*). Red mangrove was introduced to Molokaʻi in 1902 for the purpose of stabilizing mud flats (Allen1998). Two other species of mangrove have also established in the Hawaiian Islands: *Bruguiera gymnorrhiza* and *Conocarpus erectus* (Allen 1998). Although mangroves provide important habitats in their native areas, introduction of mangroves to the Hawaiian Islands has caused negative impacts such as reduction in habitat quality for the Hawaiian stilt, (*Himantopus mexicanus knudseni*) and colonization and overgrowth of important

cultural sites and biological habitats (such as anchialine ponds) (Allen 1998), Mangroves, known for their thick and extensive root systems, have proven destructive to kuapā. They enhance sediment deposition and decrease oxygen circulation in the ponds"

Section 4.3 Biological Effects now states "The proposed action…may potentially improve this habitat through reduction of alien species, improved water flow and quality, and restoration of historical ecosystem balance." Section 4.7 "Effects on Other Environmental Elements has been edited to state "native vegetation" rather than "vegetation" and now states "The Proposed Action would not result in significant long-term impacts to native vegetation, aesthetics, traffic, utilities, population and demographics, public access to the coastline, and/or air quality. It also will not generate noise that would cause significant damage." Section 1.0 "Purpose and Need for Action" states "Restoring functional integrity to ponds, through restoration of historic wall structures and removal of invasive vegetation encroaching on the pond ecosystem, could have significant cumulative benefits to Hawai'i's environment and coastal resources. The program could help restore valuable ecosystem services and human capital to coastal areas, which have been degraded due to overpopulation and urbanization." Section 4.3 "Biological Effects" now includes the following paragraph "Rauzon and Drigot (2002) report that removal of red mangroves and pickleweed (*Batis maritima*) in and near Nu'upia Ponds resulted in Hawaiian stilt colonization on mudflats cleared of alien vegetation. They report that mangrove removal had an immediate and positive effect on Hawaiian stilts, and breeding success improved. They report that mangroves support night heron breeding. Night herons are not threatened or endangered, nor are they endemic to the Hawaiian Islands. Night herons have been known to feed on stilt eggs and chicks. Removal of mangroves also deterred breeding of cattle egrets, a pest in the Hawaiian Islands. Rauzon and Drigot (2002) go on to suggest that the principles of ecosystem management support maintaining the biodiversity and sustainability of native ecosystems over transplanted environments, such as those created by alien species like mangroves and pickleweeds."

Comment: Section 5.1.1/5.1.1.2, (p. 50): Clarify that "special aquatic sites" under the Clean Water Act include not only wetlands, but vegetated shallows, mudflats and coral reefs.

Response: The term "special aquatic sites" does not appear in section 5.1.1/5.1.1.2, but this has been clarified in Table 1, which now states "Any activities that are likely to result in take of endangered, threatened, or otherwise protected species or significant damage to special aquatic sites such as wetlands, vegetated shallows, mudflats, coral reefs, and seagrass beds."

Comment: Section 5.2 (p. 54): Consider adding to title "and Consultations."

Response: "Consultations" has been added to the title of Section 5.2.

Comment: Section 5.2.1.2 (p. 58): Consider deleting and replacing the first statement in this section with this statement: "The PIRO NMFS Habitat Conservation Division coordinates with state and federal agencies to conserve EFH. As per the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Federal agencies which fund, permit, or undertake activities that may adversely affect EFH are required to consult with the NMFS"

Response: The requested change has been made.

Comment: Section 6.0 (p. 60): The conclusion of the DPEA states that "While there are likely to be minimal short-term impacts to water quality..." . While this statement is not inaccurate per se, it is difficult to support as there is currently limited marine biological information and an insufficient marine impacts analysis included in the DPEA.

Honua Consulting
www.honuaconsulting.com

Response: The language of the biological impacts section has been changed as described in response to your comment regarding EFH resources. Section 3.3 "Biological Setting" has been expanded to consider a broader characterization of marine biota, including algae, fish, corals, and other invertebrates. As mentioned in a previous response, this PEA covers a streamlined permitting process, not an exemption from BMPs, and will not cover activities that will significantly impact long-term water quality. Table 1 "Fishpond Restoration Activities" now specifically states that "Activities that could have significant, long-term negative impacts on marine life and water quality (e.g. activities excluded from authorization under section 2.3.3)" are not covered under this PEA. Further, Section 4.2 "Water Effects" has been expanded to include information from two unpublished studies that examined water quality in relationship to fishpond restoration and use.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

Dear BJ Leithead Todd, Planning Director
County of Hawai‘i Department of Planning
West Hawai‘i Office
74-5044 Ane Keohokalole Hwy
Kailua-Kona, Hawaii 96740
Phone (808)323-4770
Fax (808)327-3563

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear BJ Leithead Todd,

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

Comment: Tier III of Table 1 gives no upper limit for the percentage of a structure that is damaged and not considered destroyed that can be repaired. Appropriate interpretation could benefit from clarification on this distinction

Response: Tier III of Table 1 states “Fishpond reconstruction or repair within the original fishpond footprint, but involving reconstruction or repairs to more than 50 percent of the original fishpond structure.” An upper limit of 100% is implied by this statement.

Comment: Both tier II & Tier III contain “major dredging with the use of mechanized equipment” with no distinction about what degree or intensity of dredging makes one a tier II activity and one a Tier III activity

Response: “Major dredging” has been removed from both Tier III and Tier II. Tier II now includes “Fishpond dredging involving the use of mechanized equipment.” No activities that “are likely to have significant, long-term negative impacts on marine life and water quality (e.g. activities excluded from authorization under section 2.3.3)” can be considered under this PEA. Whether dredging is considered “major” or not is somewhat unclear, so we have placed dredging activities

with mechanized equipment in Tier III and such activities will need to be evaluated as to whether they would cause significant long-term negative impacts.

Comment: Section 2.3.2: Under "activities eligible for application under the program" needs clarification

Response: Activities eligible for application under the program include "

a. Repair, restoration, maintenance, and operation of fishpond walls and sluice gates, including but not limited to the placement, movement, manipulation and temporary stockpiling of necessary materials.
b. Placement, movement, manipulation and temporary stockpiling of small stones or rubble for interior wall fill (ʻiliʻili).
c. Silt removal by hand and/or mechanized equipment from within fishponds to restore original fishpond depth.
d. Vegetation removal by hand and/or mechanized equipment from within fishponds and from fishpond walls.
e. Periodic post-restoration maintenance activities required to facilitate the long-term use, management and operation of fishponds.
f. Use of hand and/or mechanized equipment to conduct fishpond restoration activities.
g. Use of harvesting equipment within fishponds.
h. Stocking of fishponds in a traditional manner

Comment: Section 2.3.3: Under "activities categorically excluded from the program" needs clarification

Response: Activities categorically excluded from the program include:

1. Blasting
2. Pile-driving, pre-drilling for pile-driving
3. New construction or dredging or in-water trenching not related to original fishpond structure/function.
4. Construction of new or expanded effluent discharge systems
5. Construction of new bank stabilization structures
6. Exploration or construction within estuaries or the marine environment that cannot be conducted from a work vessel or an existing bridge, dock, or wharf
7. Any use of treated wood in marine or aquatic habitats (other than pressure-treated)
8. Actions determined to have a significant environmental impact
9. Use of pellets or other external or artificial feeds
10. Introduction of organisms from outside the moku of the fishpond
11. Use of chemicals inside or outside the fishpond to control or capture organisms
12. Use of live rock or coral to construct or repair fishpond walls or other features
13. Actions that would cause extreme turbidity, purposeful damage to live rock or coral, extreme eutrophication, or long-term impairment to water quality

Honua Consulting
www.honuaconsulting.com

Comment: Would non filter-feeding organisms cultured in pens, nets or cages within loko iʻa purposed as an eligible used under 2.3.2(h) require artificial feeds? – The determination that functional loko iʻa would have minor or negligible adverse effects on water quality, specifically nutrients, would be supported by non-intrusive (no artificial feed) traditional aquaculture practices.

Response: Artificial feeds are not eligible for permitting under this process. See Section 2.3.3.

We acknowledge your request to include a county specific Planning Department representative on the review or advisory panel that can speak to Special Management Area (SMA) regulations and shoreline public access issues that may be applicable in the proposed restoration area. While we are unlikely to add a county representative at this time for the reasons specified in the FEA, we will take your request under advisement and consider it as this process moves forward.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

William Spence, Planning Director
County of Maui Department of Planning
One Main Plaza Building
2200 Main Street, Suite 315
Wailuku, Maui, Hawaii 96793

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear William Spence,

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

Comment: Section 4.2: Please fully explore these potential negative short term impacts (in conclusion) to water quality and to the ecosystem and describe how these impacts can be mitigated so as to support your conclusion of "minor or negligible adverse effects"

Response: Section 4.2.1 "Standard Best Management Practices" describes BMPs that will reduce and avoid impacts to water quality. Further BMPs or permit conditions can be required by the OCCL and advisory group that reviews permit applications. Section 4.2. describes a wide variety of potential impacts, including impacts to salinity, nutrient loads, and turbidity. The following sentence has been added to this section for clarification "Nutrients will not be introduced through artificial feeds or chemicals, as traditional practices will be used to maintain healthy aquaculture and habitats." Also, Table 1 now explicitly states that activities that "Activities that are likely to have significant, long-term negative impacts on marine life and water quality (e.g. activities excluded from authorization under section 2.3.3)" are not covered under this PEA. Section 2.3.3 excludes the following from authorization:

1. Blasting
2. Pile-driving, pre-drilling for pile-driving
3. New construction or dredging or in-water trenching not related to original fishpond structure/function.
4. Construction of new or expanded effluent discharge systems
5. Construction of new bank stabilization structures
6. Exploration or construction within estuaries or the marine environment that cannot be conducted from a work vessel or an existing bridge, dock, or wharf
7. Any use of treated wood in marine or aquatic habitats (other than pressure-treated)
8. Actions determined to have a significant environmental impact
9. Use of pellets or other external or artificial feeds

Honua Consulting
www.honuaconsulting.com

10. Introduction of organisms from outside the moku of the fishpond
11. Use of chemicals inside or outside the fishpond to control or capture organisms
12. Use of live rock or coral to construct or repair fishpond walls or other features
13. Actions that would cause extreme turbidity, purposeful damage to live rock or coral, extreme eutrophication, or long-term impairment to water quality

Further, two unpublished studies on effects of fishpond restoration and use on water quality are included in the discussion in Section 4.2 "Water Effects."

Comment: Section 6: To reach this conclusion the agency at minimum must specifically address and analyze each of the 13 listed significant criteria set forth in the HAR §11-200-12 to reach its conclusion of an anticipated FONSI. However the draft EA does not specifically addressed the significance criterion as required by HAR §11-200-12- Please specifically address each of the 13 significance criteria.

Response: The significance criteria are now individually addressed in Section 4.8 "Summary of Evaluation of Significance Criteria."

Also, the purpose of the streamlined permitting process is not to allow activities that will cause long-term or permanent damage to resources or habitats nor to exempt permittees from BMPs or processes necessary to minimize and avoid damage. This PEA examines consolidating the permitting process for fishponds under OCCL with an interagency advisory group of multiple agencies with jurisdiction and expertise that will require appropriate BMPs and mitigations under applicable statutes. Any activity deemed to be beyond the scope of this permitting process will not be approved. The proposed action examined in this PEA is to consider applications that would conduct fishpond activities under a consolidated permitting process. The proposed action will not cause significant negative environmental effects because it does not allow projects to be permitted under those circumstances. BMPs and other conditions may be used to reduce and avoid damage, but if this cannot be achieved, permits cannot be issued under the proposed process.

We have added additional information on typical land base activities required to support fishpond rehabilitation, the potential impacts on the land, and how the adjacent land should be managed and mitigated to minimize environmental impacts.

We have provided confirmation that Special Management Area (SMA) Permit may be required for land based activities (e.g. activities located landward of the shoreline). We have included a list of the potential permits required to restore a fishpond. We have included additional description of the different types of fishponds.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Honua Consulting
www.honuaconsulting.com

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

M. Melia Lane Kamahele
Manager, Pacific Islands Office – Honolulu
United States Department of the Interior
National Park Service
300 Ala Moana Blvd., Box 50165 Room 6-226
Honolulu, Hawai‘i 96850

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear M. Melia Lane Kamahele:

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

We believe that there is confusion as to the processes that will culminate in an interagency PA. A number of your comments related to consultation and applicability of the National Historic Preservation Act, which will occur between the U.S. Army Corps of Engineers and the State Historic Preservation Officer once a permit applicable is accepted by U.S. ACE. We have provided an expanded section on the processes being undertaken by OCCL in order to better explain the role of various state agencies, including SHPD. We also would like to note that SHPD was regularly notified and informed of the preparation of this document in an effort to consult with the agency at the earliest possible time. Representatives from SHPD did not engage in the process until after the dPEA was published. Other comments provided which related to state provisions will be addressed by OCCL in the Conservation District Use Application (CDUA), at which time OCCL will continue to make every effort to work with the SHPD in moving this Program forward.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com.

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

Kamana‘opono M. Crabbe, Ph.D
Ka Pouhana, Chief Executive Officer
Office of Hawaiian Affairs
711 Kapi‘olani Boulevard, Suite 500
Honolulu, Hawai‘i 96813

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear Dr. Crabbe,

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

We have sincerely appreciated OHA’s assistance in facilitation communication with the Hawaiian community on this issue. We recognize the valuable contributions OHA has made to the Program in this regard.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com.

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Honua Consulting
www.honuaconsulting.com

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

Alecia Van Atta, Assistant Regional Administrator
Protected Resources Division
National Marine Fisheries Service, Pacific Islands Regional Office
1601 Kapiolani Blvd., Suite 1110
Honolulu, Hawai‘i 96814-4700

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear Alecia Van Atta,

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

Comment 1: …important to note that Hawaiian monk seal critical habitat has been proposed for areas in the Main Hawaiian Islands (MHI) that could potentially overlap with proposed project areas.

Response 1: The Federal Register notice proposing critical habitat for monk seals states that "…terrestrial areas with manmade structures (*e.g.*, docks, fishponds, seawalls, piers, roads, pipelines), and the land on which they are located, in existence prior to the effective date of the rule are not essential to the conservation of the species and do not meet the definition of critical habitat." It also states "Critical habitat does not include manmade structures (*e.g.*, docks, seawalls, piers, roads, pipelines) and the land on which they are located existing within the boundaries of the effective date of this rule." (FR 2011 Vol 76, No 106 p.32026-32063). Fishponds that could undergo restoration activities under the proposed action do not include any new fishponds, so all fishponds covered by this action would be those that existed prior to the effective date of the monk seal critical habitat rule. Section 3.3.2 "Endangered Species" of the PEA now states "There is no designated critical habitat within the action area. Although there is a proposed rule to revise the critical habitat for Hawaiian monk seals to include areas in the inhabited Hawaiian Islands, manmade structures, such as fishponds, and the land on which they located are specifically excluded from the proposed designation area (Fed. Reg. Vol. 76, No. 106. June 2, 2011)."

To further address concerns about monk seals, Section 4.3.1.2 "Standard Best Management Practices (General Conditions)" letter c now reads "All on-site personnel shall be apprised that they are working in an environmentally sensitive area and that endangered or threatened Hawaiian waterbirds, turtles, and

monk seals may be in the vicinity of the project..." In the same section, letter e.4. reads "If a waterbird nest, turtle nest, or monk seal pup or pregnant monk seal is discovered, all work shall cease and DLNR OCCL should be contacted immediately, who shall then notify FWS and NOAA immediately."

Comment 2: Section 3.3.6 Coral Species (pg. 34): Confusion as to the proposed threatened ESA coral Species listing—*Acropora paniculata* are only found in the NWHI and therefore would not be a concern at fishpond sites in MHI.

Response 2: Section 3.3.7 "Corals" no longer discusses these species. They are described in Section 3.2.2 "Endangered Species," which states "In addition to the species above, three coral species with ranges overlapping the Hawaiian Islands have been proposed for "threatened" status under the ESA. Two of the three species are found in the programmatic geographic area, ringed rice coral (puna kea) and Hawaiian reef coral. These are lumpings of several previously recognized species—*Montipora patula/verrili* and *Montipora dilitata/flabellata/turgescens* respectively. The third species proposed for listing, staghorn coral (*Acropora paniculata*), is found only at French Frigate Shoals. Additional ESA petitions are at various stages of review by NOAA, including petitions to list blue-green damselfish (*Chromis viridis*) and Hawaiian damselfish (*Dascyllus albisella*)."

Comment 3: Section 3.3.2 Endangered Species (pg. 30): The term "Green Sea Turtle" should be used instead of Hawaiian Sea Turtle**.**

Response 3: This name has been corrected to Green Sea Turtle.

Comment 4: Section 4.2 Water Effects (pg. 41): This section states that "restoration activities are likely to have minor, short term impacts to turbidity" but "major dredging" is listed under tears II & III. If major dredging does occur it will likely cause more than minor, short term impacts.

Response 4: We agree with this comment and have taken "major" dredging out of Tier II and have changed Tier III to "Fishpond dredging involving the use of mechanized equipment." This Tier requires Section 10 and Section 404 Permits, Additional and Site Specific Conditions, and General Conditions, Monitoring, and BMPs. The process for review of a Tier III activity includes review of the application by an interagency advisory group that can seek additional review/consultation from cooperating agencies or subject matter area experts and/or identify additional and/or site-specific conditions, monitoring and BMPs required (see Table 2. Description of Review Process).

Further, we have added the following to Table 1 with respect to activities not covered under this EA: "Activities that are likely to have significant negative impact on marine life and water quality (e.g. activities excluded from authorization under section 2.3.3)." If an activity were to be determined to have a significant negative impact on marine life or water quality, then it could not be considered to fall under this PEA, so any major dredging that would result in significant negative impacts could not be issued a permit through the process covered by this PEA. Section 2.3.3 categorically excludes various activities, including "New construction or dredging or in-water trenching not related to original fishpond structure/function," "Actions that would cause extreme turbidity, purposeful damage to live rock or coral, extreme eutrophication, or long-term impairment to water quality," and "Actions determined to have a significant environmental impact."

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

William J. Ailā Jr., State Historic Preservation Officer
State Historic Preservation
Kakuhihewa Building
601 Kamokila Blvd., Suite 555
Kapolei, HI 96707

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear Chairman Ailā:

Thank you for your comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

From the response received from the State Historic Preservation Division, we believe that there is confusion as to the processes that will culminate in an interagency PA. A number of your comments related to consultation and applicability of the National Historic Preservation Act, which will occur between the U.S. Army Corps of Engineers and the State Historic Preservation Officer once a permit applicable is accepted by U.S. ACE. We have provided an expanded section on the processes being undertaken by OCCL in order to better explain the role of various state agencies, including SHPD. We also would like to note that SHPD was regularly notified and informed of the preparation of this document in an effort to consult with the agency at the earliest possible time. Representatives from SHPD did not engage in the process until after the dPEA was published.
Other comments provided will be addressed by OCCL in the Conservation District Use Application (CDUA), at which time OCCL will continue to make every effort to work with the SHPD in moving this Program forward.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

The Nature Conservancy of Hawai‘i
923 Nu‘uanu Avenue Honolulu, HI 96817

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear The Nature Conservancy,

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

David Penn
Assistant Specialist
University of Hawaii, Mānoa
Water Resources research Center
2540 Dole St., Holmes Hall 283
Honolulu, Hawai‘i 96822

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear Mr. Penn:

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

Comment: Section 1.1: Mention that coastal degradation, water impairment, and the destruction of fishpond systems may also be caused by other natural and human factors, including earthquake, tsunami, storm waves, and lack of maintenance.

Response: The following statement has been added to Section 1.1 “In addition, coastal degradation, water impairment, and the destruction of fishpond systems may also be caused by other natural and human factors, including earthquake, tsunami, storm waves, and lack of maintenance.”

Comment: Section 2.1: What specific types of heavy machinery would be authorized to move existing foundation rock within a fishpond basin and perform other dredging activities? Under what SPGP conditions and BMPs would such authorizations occur?

Response: The specific types of heavy machinery are not specified in the PEA. The reason for this is that actions undertaken through an SPGP cannot include actions that are explicitly prohibited under this permitting scheme, which include actions that would cause extreme turbidity, purposeful damage to live rock or coral, extreme eutrophication, or other long-term impairment to water quality and other actions determined to have a significant environmental impact (See Section 2.3.3). Table 2 now goes on to specify that actions not covered under this PEA include activities that are likely to have significant, long-term negative impacts on marine life and water quality (e.g. activities excluded from authorization under section 2.3.3) and activities that are likely to result in take of endangered, threatened, or otherwise protected species or significant damage to special aquatic sites such as wetlands, vegetated shallows, mudflats, coral reefs, and seagrass beds. Mechanized equipment is allowed in restoration and

maintenance of fishponds, but use of such equipment must meet these standards for consideration. Therefore, we have not specified types of heavy machinery, with the exception that blasting, pile-driving, and pre-drilling for pile-driving are categorically excluded (see Section 2.3.3 "Activities Categorically Excluded from the Program").

BMPs that are considered generally applicable across fishpond restoration and maintenance projects are described in Sections 4.2.1 "Best Management Practices Relating to Water Quality" and 4.3.1 "Best Management Practices Relating to Biological Resources." Additional BMPs, monitoring, or other conditions may be determined to be necessary on a site- or project-specific basis and be required as part of permits. This will be determined by OCCL and the advisory panel made up of multiple agency and expert reviewers. If BMPs and other conditions cannot result in avoidance and minimization of negative impacts to levels that are considered by OCCL and the panel to be insignificant in the long-term, a permit cannot be issued under this PEA and process.

Comment: Section 3.2: It would be helpful for the DEA to cite some references that support these assumptions and to more carefully distinguish the range of water quality conditions that exist and the circumstances under which they occur. Indicate each fishpond in which water quality is impaired, and to identify the larger, listed waterbody that is the basis for the impairment designation.

Response: Section 3.2. "Water Quality" has been expanded to include more information about water quality issues and DOH monitoring. Further discussion of potential impacts to water quality are now in Section 4.2 "Water Effects," including citation of some preliminary studies not referenced before.

In section 2.3.1 "Systems Eligible for Application Under the Program" it states "Any traditional Hawaiian fishpond system built prior to 1968 is eligible for application under this program. Although numerous ponds would be eligible, it is estimated that less than 50 ponds are in a condition eligible for program activity. DLNR OCCL estimates than no less than ten (10) and no more than thirty (30) loko iʻa would participate in the program over a five (5) year period." This PEA is meant to cover basic fishpond restoration and maintenance activities without significant negative, long-term impacts to water quality. Exhaustively listing water quality of the 50 ponds estimated to be eligible for the program is extreme and goes beyond the scope of the activities that are expected to occur under this PEA. For each permit application, this information can be easily obtained from DOH reports and OCCL and the advisory panel can request the information necessary to determine if water quality will be adversely affected by specific proposed actions. BMPs in addition those specified in the PEA and other conditions may be required on a case-by-case basis. Applicants will be rejected if projects do not meet the standard of insignificant negative, long-term impacts to water quality. It should also be noted that current water quality may be improved by fishpond restoration activities as well.

Comment: Section 3.3.6: Provide citations to the research results that are emerging from past system restoration efforts (p. 34).

Response: This statement has been removed from the PEA.

Comment: Section 3.4: What % of Hawaii marine resources are exploited beyond sustainability? What is the level of commercial aquaculture development in Hawaii, and how much of it is focused on marine species? To what extent have aquaculture techniques harmed the local environment and human health?

Response: It would be difficult to determine what % of Hawaiʻi's marine resources is exploited beyond sustainability. The scope of this question would likely require additional research not yet conducted or published. This PEA is examining the impacts of a streamlined fishpond permitting system for activities

Honua Consulting
www.honuaconsulting.com

that will not cause significant damage to biological resources, so larger questions about resource exploitation are not directly relevant to the proposed action (though of course, they are an issue of broader concern beyond this PEA). From a cumulative perspective, culture of fish within fishpond systems should have a positive impact on overall resource availability. The cultural history of fishponds suggests that they were sustainable systems, and Section 3.3 "Biological Setting" now states "Fishponds were a component of a larger social system of ecosystem management traditionally practiced by Hawaiians, and records indicate abundance of reef organisms in these systems was high in the late 1700's (at the time of initial western contact) under local management regimes (Kittenger et al. 2011)."

The level of commercial aquaculture development in the Hawaiian Islands is not directly relevant to fishpond restoration and maintenance. Fishponds under this PEA will not be used for commercial purposes and comparison to industries like large, offshore aquaculture or shrimp ponds, would likely not tell us much about the impacts of fishponds. The historical and cultural significance of fishponds and their success as a system of sustainable marine resource management prior to western contact makes them very different from modern aquaculture techniques. Modern aquaculture is mainly designed to generate profit and cannot be sustained otherwise (the owner would go out of business). This is not the case with Hawaiian fishponds. Harm to the environment and human health as a result of modern aquacultural practices would not be particularly relevant to examining the impacts of traditional fishponds.

Comment: Section 4.1: In situations where sediment would be excavated from loko i`a, where would it be disposed, and what effects would that generate (p. 40)? What data are available on fishpond sediment quality that would indicate (1) the potential range and concentration of constituents that would be encountered, and (2) the associated disposal options?

Response: Section 4.2.1.2 "Standard Best Management Practices" part d states "All debris and material removed from the marine/aquatic environment shall be disposed of at an approved upland or alternative disposal site." Exact locations have not been determined for sediment disposal and would be evaluated on a case-by-case basis for approval. This is language used by USACE for the Honolulu District Regional Conditions for the Nationwide Permit process associated with activities conducted with USACE approval in Hawai'i. Similar language is also used by other states to better protect resources that could be damaged by activities authorized under Nationwide Permits. We feel the process by which these criteria were vetted was appropriate and is applicable to the PEA for fishpond activities.

We did not find any data that indicated there are substantial toxic or hazardous materials trapped in sediments in fishponds. Unfortunately, little information appears to be available on this subject. An ongoing study (Cie, n.d. http://cmbc.ucsd.edu/Research/student_research/fishponds/) collected some sediment cores in fishponds, but these have not yet been analyzed. The following language has been added to Section 4.2 "Water Effects" "Dredging sediments can result in release of accumulated toxins in the benthos. Major dredging activities will not be considered as part of the programmatic activities, and if there is reason to believe that significant pollutants would exist in benthic habitat in or near dredging activities, BMPs, monitoring, or other conditions may be required for issuance of a permit that includes disturbing the benthos. We are aware of no evidence to suggest that there are significant amounts of toxins trapped in the sediments that would be disturbed by fishpond restoration, but each site applying for permits will be considered on a case-by-case basis with regard to potential for release of sediment pollutants."

Honua Consulting
www.honuaconsulting.com

Comment: Section 4.2: Important elements of this discussion are (1) the exploration of how an upstream, contributing-area focus on fishpond revitalization could be used to leverage more aggressive watershed protection, water pollution control, water quality management planning, and land use practices that would help reverse the trend of anthropogenic degradation noted in the DEA, and (2) how

changes to the existing water quality standards might facilitate permitting and approval processes. For example, as observed in the final report for Project Loko I`a (Resolving Water Quality and Permitting Issues for Native Hawaiian Fishponds, Pacific American Foundation, undated, page 35)

Response: These issues are beyond the scope of the PEA but are definitely important issues to address. At the moment, this PEA seeks to evaluate the impacts of using a streamlined permitting system, based on existing laws and standards, to allow fishpond restoration and maintenance activities that do not significantly impact water quality to be permitted more efficiently and effectively. The long-term goals of use of fishponds to leverage protection for waters and changing existing water quality standards are not addressed by the proposed action or alternatives being considered.

Comment: Section 4.2: IMPACT ANALYSIS: Provide citations for references that support the conclusions that (1) "[l]oko i`a restoration activities have been shown to have a long term and cumulative benefit to water quality" (p. 42); (2) "activities associated with traditional aquaculture . . . have no potential to be a significant source of pollutants or toxins" (p. 41); (3) "BMPs are effective . . [and] will have a positive impact on water quality" (p. 42); and (4) "the proposed action will not, nor does it have the potential, to lower water quality."

Response: Section 4.2. "Water Effects" has been significantly expanded to include more references and information. The statements specified above have been edited and additional information provided in this section.

Comment: Section 4.2: TURBIDITY: Provide more detailed explanation of the biological, chemical, and physical factors affecting turbidity, their links with fishpond activities and surrounding environments, and their effects on fishpond processes and productivity (p. 41).

Response: Turbidity is discussed in Section 4.2 "Water Effects," and further information from two unpublished studies of effects of fishpond restoration and fishpond use on water quality is now cited. We were unable to find any published studies on this specific question. The larger factors affecting turbidity are interesting, but the main issue for the PEA is how fishpond activities would affect turbidity. Section 3.2 "Water Quality" now states "In addition to chemical and biological pollutants, sediment can pollute nearshore waters from run-off and development, potentially damaging coral reefs and causing stress to nearshore organisms that reduce their resiliency to other threats, such as climate change. The Department of Land & Natural Resources (2011) states in its the Rain Follows the Forest plan that sedimentation from erosion harms the once-pristine near-shore marine waters and coral reef ecosystems of Hawai'i, and Friedlander et al. (2008) report that sediment is likely the leading land-based pollutant causing alteration of reef community structure."

Comment: Section 4.2: ANTIDEGRIDATION: The discussion of antidegradation requirements would be better placed within section 5.2.1.1, Department of Health Requirements. It may be useful to move the last paragraph in this section to the next section on "Best Management Practices Relating to Water Quality."

Response: The antidegredation language and discussion of Section 101 of the Clean Water Act has been moved to Section 5.1.1 "Clean Water Act."

The last paragraph of the section has been moved as suggested.

Honua Consulting
www.honuaconsulting.com

Comment: Section 4.2.1: Specify the scope of the additional conditions, BMPs, and monitoring requirements that would be developed, and to identify the additional agencies that would likely be involved (Section 4.2, p. 42).

Response: The scope of BMPs, aside from those enumerated in the PEA, is discretionary to the OCCL and advisory panel. If BMPs and other permit conditions are not sufficient to result in only insignificant negative impacts to long-term water quality, a permit will not be authorized under this PEA and Programmatic Agreement.

Section 4.2 now states "All activities will adhere to standard and additional site specific BMPs as appropriate to minimize, monitor and manage any short-term impacts during restoration actions. These specific BMPs and other permit conditions will be determined by the OCCL and advisory panel made up of agency representatives and others as described in Section 2.3." The agencies are identified in Section 2.3 "Alternative C…"

Comment: (3) greater documentation and more rigorous analysis of datasets and research findings that support the conclusions advanced about existing and potential environmental and cultural impacts of the proposed program

Response: Additional documentation and research has now been cited in appropriate sections of the document. In particular, see the setting & effects related sections.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL

Honua Consulting
www.honuaconsulting.com

Honua Consulting

4348 Wai`alae Ave #254
Honolulu, Hawai`i 96816
Phone: (808) 392-1617 Fax: (888) 392-4941
E-Mail: admin@honuaconsulting.com
Web: www.honuaconsulting.com

October 11, 2013

Kitty Simonds, Executive Director
Western Pacific Fisheries Council
1164 Bishop Street
Honolulu, HI 96813

Subject: Comment Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i

Dear Kitty Simonds,

Thank you for your Comments on the Draft Programmatic Environmental Assessment (DPEA-AFONSI) for a Statewide Programmatic General Permit and Programmatic Agreement that facilitates the restoration, repair, maintenance and reconstruction of traditional Hawaiian fishpond systems across Hawai`i dated April 23, 2013.

The comments seem to be mainly policy related and they seem antithetical to the concept of streamlining the permitting process. By not including activities that could cause significant long-term damage to resources under this permit process, we have effectively made it a process that applies only to those doing activities that can be mitigated through BMPs or are so minor as to have little environmental impact.

We appreciate your comments and your participation in the environmental review process. Should you have any comments please contact Honua Consulting at 8083921617 or at admin@honuaconsulting.com

We anticipate the publication of the Final Environmental Assessment in the Environmental Notice on October 23, 2013. Once published, it will also be available at our website www.honuaconsulting.com/lokoia.

Mahalo,

Honua Consulting
www.honuaconsulting.com

Trisha Kehaulani Watson, J.D., Ph.D.
Senior Consultant Honua Consulting

cc: DLNR, OCCL