Lessons Learned From Loko I‘a Culture: How Hawaiian Ecological Knowledge Influences Environmental Polices

Jillian M. Lyles

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Reading Committee:

Edward H. Allison

Brenda Asuncion

John N. Kittinger

David Fluharty

Program Authorized to Offer Degree:

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University of Washington

Abstract

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Jillian M. Lyles

Chair of the Supervisory Committee:
Professor Edward H. Allison, Ph.D.
School of Marine and Environmental Affairs

The goal of this thesis is to better understand effective community-based governance initiatives through a case study of *loko i‘a* management in the State of Hawai‘i. *Loko i‘a*, or fishponds, are traditional aquaculture systems developed by ancient Hawaiians to sustainably farm and harvest finfish, invertebrates, and other nearshore marine species. An organization of *loko i‘a* practitioners, Hui Mālama Loko I‘a (HMLI) has been highly active in the management of *loko i‘a* and nearshore environment, having played a major role in the recent adoption of a more streamlined permitting system, implementing cultural best management practices, and advocating for fresh water rights for traditional and customary practices. Through an analysis of HMLI’s organizational culture, this study examines how the organization influences environmental policies. The study attributed HMLI’s effectiveness to the organization’s dominant culture (clan culture), the members shared history, the role of facilitation played, support of partner groups, and the organizations enriched understanding of the environment. Based on these factors, it is recommended that HMLI be involved in a formal role in order to sustainably manage the coastal environment in Hawai‘i.

TABLE OF CONTENTS

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Chapter 1. INTRODUCTION

Stakeholder engagement and community-based management geared toward ocean and coastal governance issues have proven beneficial to finding effective solutions (Cooke et al. 2014, Cohen et al. 2012, Bundy and Davis 2012, Jokiel et al. 2010). More specifically, customary management systems[1] have been found to have positive environmental and social outcomes for fisheries resources (Friedlander et al. 2013, McClenachan and Kittinger 2012, Aswani 2011, Cinner et al. 2005) and there has been growing interest in seeking ways to effectively bridge traditional and modern systems (Kittinger et al. 2014, Aswani and Ruddle 2013, Poepoe et al. 2007, Cinner and Aswani 2007, Foale 2006). In order to do this, it remains important to understand how stakeholders engage effectively in community-based management and governance organizations. In the State of Hawai‘i, many communities are strengthening their local influence on local marine resources by revitalizing customary management systems, offering significant promise to improve the management of fisheries and condition of the Hawaiian nearshore marine environment (Ayers and Kittinger 2014; Friedlander et al. 2013; Poepoe et al. 2007).

1.1 LOKO I‘A

In Hawai‘i, a prevalent example of customary management systems can be found in *loko i‘a* (traditional fishponds). *Loko i‘a* are an ancient form of Hawaiian aquaculture and six types have been identified (Figure 1). These systems rely mostly on the passive recruitment of fish inside the pond walls. Once trapped within the walls, fish are sustainably grown and harvested (Costa-Pierce 1987). Traditionally, these fishponds were responsible for feeding entire communities and

[1] “practices that are historically designed to regulate the use, access, and transfer of resources through sociocultural

in modern-day Hawai‘i, these approaches are being revived as part of cultural practice and traditional modes of production (Costa-Pierce 1987).

The primary components that make up a fishpond are the *mākāhā* and *kuapā*. *Mākāhā*, or sluice gates, are the technology that make these ponds unique to Hawai‘i. When open these gates allow water and organisms to flow freely between the ocean and the *loko* (pond), but when closed large fish are trapped inside the pond walls while smaller fish can escape through the gate door. Traditionally *kuapā*, or rockwalls, were built from basaltic rock, commonly sourced from miles away and transported using a human chain. These rocks were intricately laid to ensure maximum wall strength and integrity.

Figure 1: Types of *Loko i‘a*

There are six types of loko i‘a: “**Type I** – Loko I‘a Kuapā: A fishpond of littoral water whose side or sides facing the sea consist of a stone or coal wall usually containing one of more sluice gates; **Type II** – Loko I‘a 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 of more ditches and sluice gates; **Type III** – Loko I‘a 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 I‘a ‘Ume‘iki: A fishtrap which is similar to a Type I – loko i‘a kuapā and has various combinations of inward and outward leading lanes; **Type VI** – Kaheka and Hapunapuna: A natural pool or holding pond.”

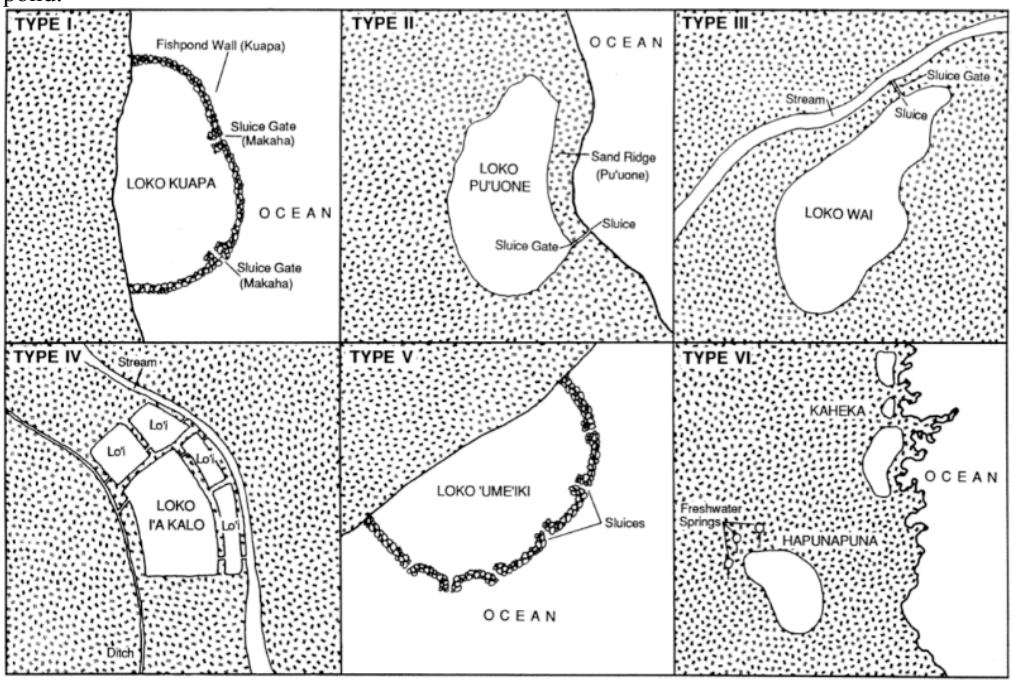

Figure from DHM Planners, Inc. and Public Archaeology Section, Applied Research Group, Bernice Pauahi Bishop Museum, June 1989; based on information by William K. Kikuchi, 1973, Hawaiian Aquacultural System; *Description from* http://www.honuaconsulting.com/lokoiasummary

Loko i'a have positive social, ecological, and economic implications for the State of Hawai'i (Wyban and Wyban 1989). Culturally, *loko i'a* serve as a practice and educational tool to perpetuate traditional Hawaiian culture (Wyban 1992). Ecologically, *loko i'a* provide an innovative approach to sustainable food production[2]. Though traditionally they were not developed for large yields[3] (Farber 1997), they have the productive capacity to increase access to sustainably harvested and produced local seafood. Economically, the production of seafood from *loko i'a* would add millions of dollars to the states economy[4] (Keala et al. 2007).

1.1.1 *History, Management and Current Status of Loko I'a*

Compared to historical accounts, today's fishponds are highly degraded and in a state of disrepair (Figure 2). Though the physical destruction of the ponds is mainly attributed to environmental factors, a complexity of social, economic, and political shifts after western contact comprise the root causes of their degradation (Farber 1997). Naturally, *loko i'a* are subject to a slew of environmental impacts, including tsunamis, land erosion, and eutrophication (Keala et al. 2007), that lead to the degradation of pond structures and overall functionality. The vulnerability of these ponds reveals the importance of their regular maintenance and care. Prior to western contact, ancient Hawaiians had a well-developed system for pond stewardship.

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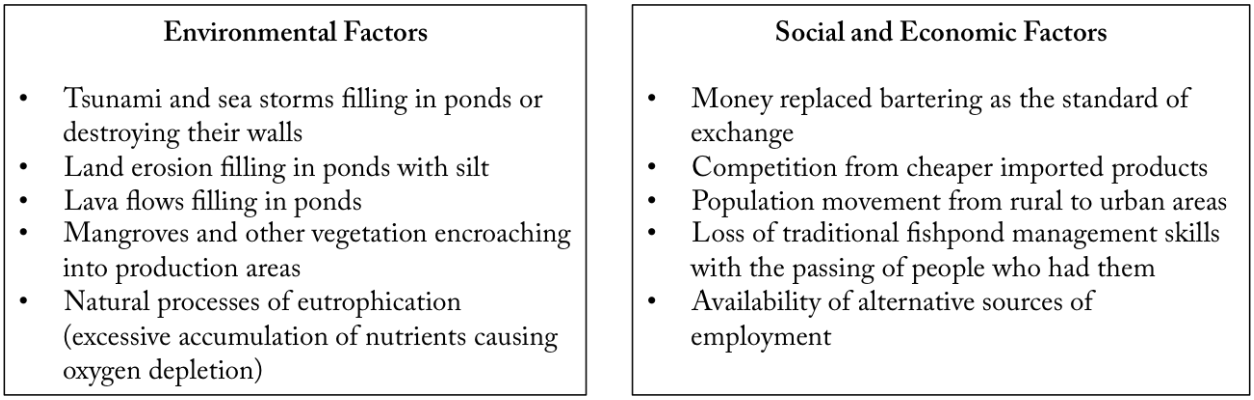
[2] Close to 90% of food is imported to Hawai'i, therefore there has been growing interest in finding new innovative ways to sustainably grow and harvest food.

[3] Traditionally, the purpose of *loko i'a* were to have a convenient stock of fresh, high quality seafood for Hawaiian royalty (Farber 1997).

[4] According to Keala et al 2007, on the island of Moloka'i, the restoration of fishponds for mullet production alone could mean over $1,000,000 added to their economy annually. This number increases when the number of species produced increases, as well as when production across all islands is calculated for.

Figure 2: Factors Attributing to *Loko i'a* Degradation



Adapted from Keala et al. 2007

Traditionally, *loko i'a* were a part of a larger land and sea tenure institution called *ahupua'a,* controlled by *ali'i* (chiefs) (Jokiel et al. 2011; Kaneshiro et al. 2005; Farber 1997). *Ahupua'a* were operated as the basis of an intricate system of land divisions (Kaneshiro et al. 2005). The boundaries of the *ahupua'a* extended from the ridges of the mountains to the fringing reefs in the ocean, encompassing entire watersheds. Within these wedge-shaped land divisions, *konohiki* (land agents) appointed by the ruling *ali'i*, would ensure proper management of specific areas within the *ahupua'a* so that no resources were being compromised (Costa-Pierce 1987; Jokiel et al. 2011). Within these *ahupua'a* were different customary management systems. Most notably, *lo'i*, or taro fields, developed as irrigated agricultural systems in the uplands and fishponds, or *loko i'a*, developed as aquaculture systems near the ocean. *Konohiki* would further bestow *kuleana* (responsibility) and stewardship to specific *'ohana* (families) to cultivate the land (Friedlander et al. 2013).

"Because of the hierarchical nature of the Hawaiian political system and the distinct roles to which all members of society adhered to (involving the overriding obligation to the [gods] to [take care of the land]), the centralized power structure ensured a smooth-running society, the redistribution of food for all members of the ahupua'a and the ability to amass the labor to successfully construct and maintain the large fishponds. With the coming of western ways this binding of ali'i, the konohiki, and the [commoners] to the [land] was forever destroyed" (Farber 1997, p.18).

After the arrival of Europeans and the subsequent colonization of the Hawaiian culture, a string of social, economic, and political factors (i.e., population migration to urban areas, increase availability of alternative employment, adoption of money as exchange standard, shift to western management approaches) lured practitioners away from customary management systems, consequently allowing the environment to overwhelm them (Keala et al. 2007). The abrupt shifts in social, economic, and political values and customs led to the physical destruction of the ponds.

The Bishop Museum estimates there were close to 500 fishponds in operation pre-contact (DHM 1989). Currently, there are only a handful that are close to historical conditions, and there are less than 50 with identified caretakers or communities who are, or have expressed interest in, restoring and maintain their *loko i‘a*. Today, most of the coastline, and therefore *loko i‘a*, are privately owned, included in a land trust, or leased from the state. Individuals that oversee and care for fishponds presently are referred to as *loko i‘a* practitioners. Currently *loko i‘a* practitioners rarely own their *loko*, are able to care for it full-time, or have the full complement of resources necessary to maintain these systems.

1.2 Hui Mālama Loko i‘a Engagement with Environmental Policies

In 2004, a group of these practitioners organized to help centralize resources to individuals and communities hoping to restore their loko. This group called itself Hui Mālama Loko I‘a (HMLI, the Hui). The organization has now grown into a network of over 100 fishpond practitioners representing nearly 40 ponds. As an organization, the Hui has influenced several environmental policies affecting *loko i‘a*.

1.2.1 *Permitting for Restoration Activities*

In 2012, the Hui issued a declaration calling governmental agencies to streamline the permitting process for fishpond restoration activities (Appendix D). Regular restoration and maintenance of these ponds is necessary in order to restore these ponds to working conditions and utilize them to their fullest potential (Wyban 1992). However due to the nature of the land-sea interface, the shoreline is heavily regulated, and it requires that up to 17 permits (see Appendix A) through nine governmental agencies be obtained before any restoration work can begin (Farber 1997).

Each legal instrument has a good purpose (e.g., maintaining environmental integrity, reducing environmental impacts of proposed actions, protecting threatened and endangered species, and minimizing damage to the Hawaiian coastline and nearshore environment during periods of heavy human activity and development), however the impact of this regulatory landscape has been difficult to navigate and has stifled and gridlocked the efforts of most restoration projects proposed by fishpond practitioners and organizations, such as the removal of invasive species, construction and placement of minor accessory structures, and stocking and harvesting organisms via traditional methods (Keala et al. 2007). Though well-intentioned, many environmental policies have negatively impacted the success of well-intentioned restoration activities.

HMLI was not the only organization to respond to this impediment. A group of nonprofit organizations and governmental agencies committed to streamlining the permitting process for *loko iʻa* restoration, a program called Hoʻāla *Loko iʻa*. This program was supported by multiple agencies and organizations, completed by Honua Consulting, and funded by Conservation International, Hawaiʻi (DLNR 2016). The six program goals are to: “(1) Create a single permit

that complies with the relevant state and federal requirements; (2) Fit the needs of practitioners and community groups; (3) incorporate enough flexibility to allow for innovation in meeting current environmental challenges while still respecting the integrity of the fishponds; (4) Cover the "big three" activities that practitioners were having difficulty securing permits for: dredging, removal of invasive species that trigger ground disturbances, and repair of severely damaged walls; (5) Create no additional regulatory burdens or requirements; and (6) Be consistent with the Coastal Zone Management federal consistency general concurrence for minor federal permit activities for Hawaiian fishpond restoration, repair, maintenance, and reconstruction" (DLNR 2016).

As a result of the collective action taken by HMLI and other organizations supporting Hoʻāla *Loko iʻa*, the Department of Land and Natural Resources' Office of Coastal and Conservational Lands (OCCL) was granted the authority in 2014 over all permitting *loko iʻa* restoration projects located within their jurisdiction (i.e. Conservation Zoned Districts). An environmental impact assessment (Final Programmatic Environmental Assessment and Finding of No Significant Impact (FPEA-FONSI)) prepared by Honua Consulting in 2013 found that the majority of *loko iʻa* restoration projects have little to no impact on the marine environment and therefore the permitting process can be streamlined and regulatory power can be given primarily to OCCL in the matter of *loko iʻa* restoration activities. This environmental assessment for a Statewide Programmatic General Permit (SPGP) and Programmatic Agreement was an integral step to facilitate the restoration, repair, maintenance and reconstruction of *loko iʻa* systems across Hawaiʻi. The SPGP is set up as a simple, easy and transparent system for practitioners to restore their *loko iʻa*. For the majority of projects using traditional restoration methods, the

process consists of the submission a single permit application and processing time of 30 days[5]. The applications for the Hoʻāla Loko Iʻa Program were made available to the public in early 2015 (see Appendix B for a more detailed timeline).

1.2.2 *Cultural Best Management Practices*

Best management practices (BMPs) have been developed to help minimize negative impacts to the environment during restoration activities (Howerton 2001). During the permitting process, site-specific BMPs are determined that will be most effective for the proposed restoration activities. In early 2015, HMLI members suggested that standard BMPs could be refined and improved with input from experienced practitioners. Subsequently, HMLI members volunteered to gather and compile cultural BMPs utilized by *loko iʻa* practitioners to take to government agencies to be officially adopted as standards or alternatives to standards. Cultural BMPs (C-BMPs) refer to best management practices that are informed by traditional practices and a deep understanding of the environment. In some cases, C-BMPs have been found to better ensure environmental integrity than standard BMPs. For instance, it is standard practice to use a silt screen to minimize the amount of sediment suspended in the water column during periods of heavy activity. Some practitioners found that the silt screen caused more sediment to suspend in the water column than by not utilizing it. Further investigation by HMLI members revealed that the water flow during changing tidal conditions exceeded the maximum allowable flow of water for silt screens, therefore the silt screen was rendered ineffective. In response, a set of C-BMPs were developed and used that take into consideration the changing tidal conditions and adjusts the work schedule according to the tide chart.

[5] The new streamlined permitting process (SPGP) established a tiered system to fishpond permitting in which ponds that qualify as Tier 1 Projects are free to applicant and take 30 days to process. Tier 2 and 3 Projects require a higher level of review (longer processing time) because proposed actions are potentially trigger more permits.

1.2.3 *Traditional Use of Fresh Water*

In April 2016, HMLI brought attention to the important ecological function that fresh water plays in the productivity of *loko i'a* and nearshore environment. In Hawai'i there have been growing concerns that the diversion of water as a result of increased development will decrease the fresh water availability necessary for traditional and customary Hawaiian practices. After discussing the issue and relevant points at their annual conference, the organization agreed to work on a resolution to be titled "Kahe Mau Ka Wai Ola" calling the State of Hawai'i Commission on Water Resource Management (CWRM) and other water controlling systems to protect Native Hawaiian Water Rights (Haw. Rev. Stat. § 174C-101). The resolution is projected to be presented to CWRM in summer of 2016.

1.3 STUDY FOCUS

The regulatory environment has discouraged *loko i'a* restoration for decades. Within the last ten years however, HMLI has been an effective policy actor in the governance of the nearshore environment and therefore been successful at alleviating regulatory stress on the perpetuation of *loko i'a* culture. This study aims to better understand how HMLI achieved that success through an analysis of the organization's culture. In doing so, it may be better understood how to support the survival of customary rights institutions and management systems similar to *loko i'a* in the state of Hawai'i.

Chapter 2. METHODS

The theory of organizational culture supposes that organizations form a culture and that culture influences the organization's functions, effectiveness, and leadership (Denison and Mishra 1995). To better understand Hui Mālama *Loko i'a*'s organizational success and

effectiveness, several methodological frameworks drawn from social science and business disciplines were applied to inductively analyzed data. Data was collected using ethnographic methodologies at HMLI's annual conferences in 2015 and 2016. The three methodological frameworks combined (Figure 3) were chosen for their applicability to environmentally and culturally oriented organizations. Sections below describe the theory of organizational culture, the new conceptual framework and its components for diagnosing HMLI's organizational culture, and how the data was collected and analyzed.

2.1 THEORY OF ORGANIZATIONAL CULTURE

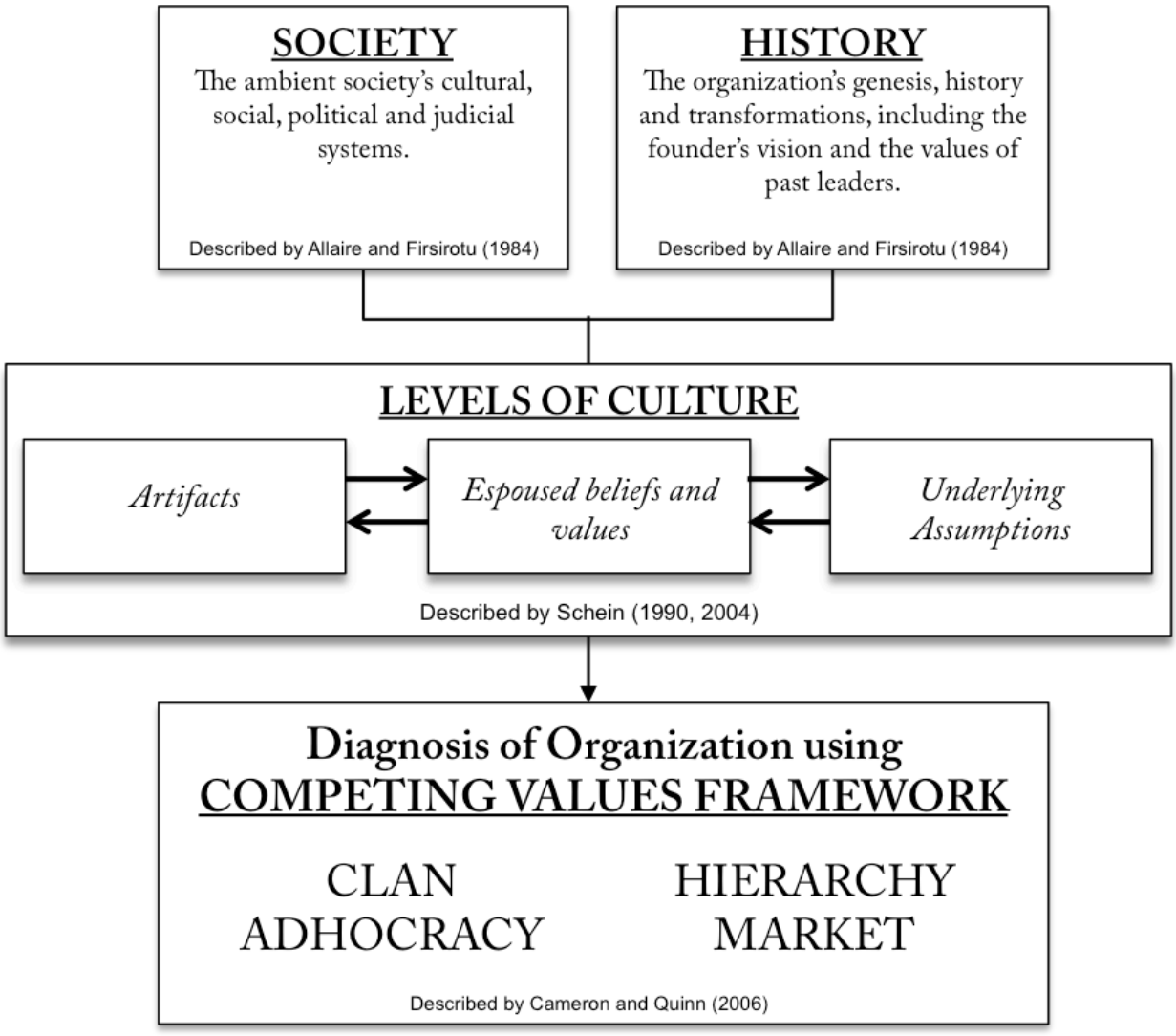
Culture is ubiquitous and there is no *right* or *wrong* culture. Consequently, the definition and components of organizational culture have been subject to debate since the *concept* appeared in the literature 70 years ago. Since then, many frameworks have been proposed and definitions contextualized. Schein (1990) defines culture as:

"(a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and, therefore (e) is to be taught to new members as the, (f) correct way to perceive, think, and feel in relation to those problems." (p. 111)

The major focus of the field of organizational culture has been directed toward the corporate and business worlds (Alvesson and Sveningsson 2008; Fernández et al. 2003; Denison 1990). Due to the lack of academic literature diagnosing organizational culture of environmental and community-based organizations, several interlocking conceptual frameworks for organizational culture (Figure 3) were combined to meet the needs of this study. This common practice for diagnosing organization attributes stems from the differing conceptual and theoretical foundations discussed in the literature (e.g., Deal and Kennedy 1982; Geertz 1983; Cameron and Ettington 1988; Denison 1990; Trice and Beyer 1993). The new conceptual framework

developed for diagnosing the organizational culture for HMLI is composed of three aspects derived primarily from work described by Allaire and Firsirotu (1984), Schein (1990, 2004), and Cameron and Quinn (2006).

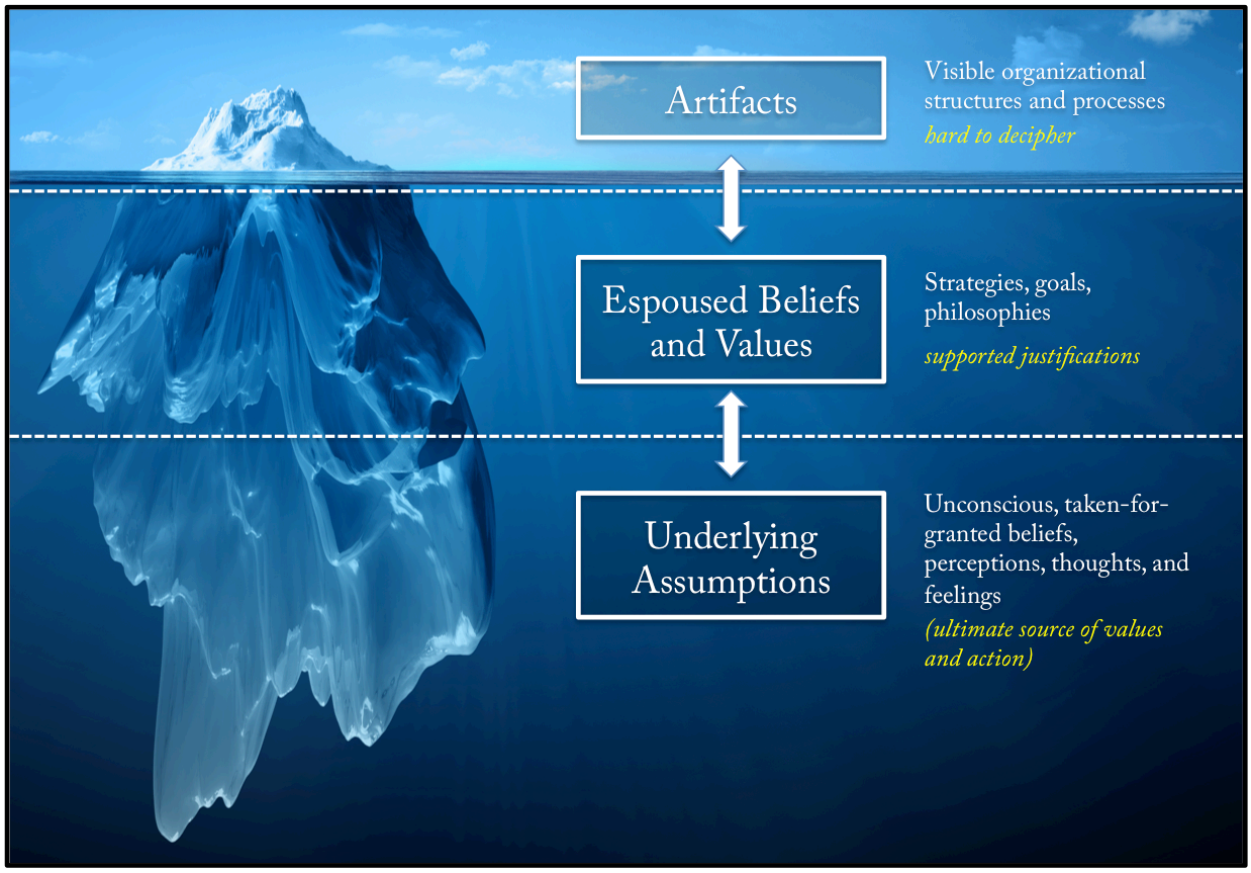
Figure 3: Conceptual Framework To Diagnosis The Organizational Culture Of HMLI



The first aspect considers factors external to the organization. Allaire and Firsirotu (1984) note that an organization's history and the surrounding society's values highly influence the culture of an organization, and therefore organizational culture cannot be diagnosed without an examination of these outside factors.

The second aspect highlights three fundamental levels of culture as described by Schein (2004): (1) artifacts, (2) espoused beliefs and values, and (3) basic underlying assumptions (Figure 4). *Artifacts* describe the formal, visible structures and processes within an organization (e.g., manners of address, stories, organizational records, statements of philosophy, observable ceremonies and rituals). *Espoused beliefs and values* describe the informal rationalizations and ideologies supported by the organization. *Basic underlying assumptions* refer to non-debatable and non-confrontable ideas, concepts, and thoughts assumed to be true.

Figure 4: Levels of Culture



Adapted from Schein 2004; Photo source: http://science-all.com/images/iceberg/iceberg-08.jpg

Levels of culture have also been represented by an iceberg. The tip of the iceberg represents the artifacts—the visible aspect of the iceberg, but only provide us with a small incomplete understanding of the entire entity. Diving beneath the surface reveals the *invisible* part of the

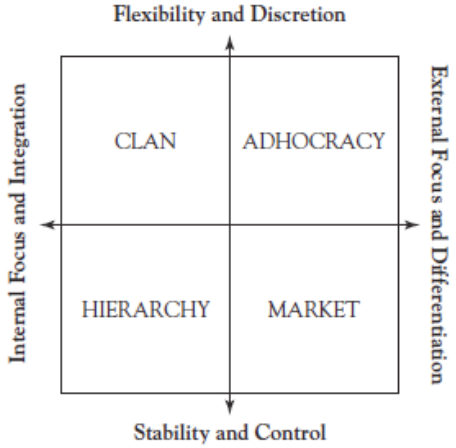
iceberg that supports the *tip*. This *invisible* section represents the espoused values and beliefs of the organization. Not all values and beliefs held by an organization are displayed and explicit. Diving further beneath the espoused values and beliefs section exposes the base of the iceberg. Only from the depths of the ocean is the iceberg understood in complete fullness. The base portion of the iceberg represents the underlying assumptions, or subconscious areas of an organization's culture. Artifacts can be observed by any outsider, however the meanings of these artifacts are not revealed without an understanding of the beliefs, values, and assumptions held by the organization. Ethnographic methods help to push past surface level observations and delve deeper into an organization's true culture (Schein 1990).

After identifying characteristics of ambient society, events within an organization's history, and distinguishing the three levels of culture, an organization can be diagnosed to fit into one or a combination of cultural types as defined by the Competing Values Framework. According to this framework, there are two dimensions, or axes, that determine organizational effectiveness:

"One dimension differentiates effectiveness criteria that emphasize flexibility, discretion, and dynamism from criteria that emphasize stability, order, and control…The second dimension differentiates effectiveness criteria that emphasize an external orientation, differentiation, and rivalry" (Cameron and Quinn 2006, p. 34).

Figure 5: Dimensions in Competing Values Framework

The relationship between dimensions is illustrated in Figure 5. Jointly, the dimensions form four cultural types (clan, adhocracy, market, hierarchy), each of which has specific indicators of effectiveness and core values. Additionally, each cultural type is associated with explicit management theories, therefore by determining which quadrant(s)



Source: Cameron and Quinn (2006)

an organization falls within, one can determine how to lead and manage that organization most effectively (Table 1).

Table 1: The Competing Values of Leadership, Effectiveness, and Organizational Theory

Culture Type	**CLAN**	**ADHOCRACY**	**HIERARCHY**	**MARKET**
Orientation	COLLABORATIVE	CREATIVE	CONTROLLING	COMPETING
Leader Type	Facilitator Mentor Team builder	Innovator Entrepreneur Visionary	Coordinator Monitor Organizer	Hard driver Competitor Producer
Value Drivers	Commitment Communication Development	Innovative outputs Transformation Agility	Efficiency Timeliness Consistency and uniformity	Market share Goal achievement Profitability
Theory of Effectiveness	Human Development and participation produce effectiveness	Innovativeness, vision, and new resources produce effectiveness	Control and efficiency with capable processes produce effectiveness	Aggressively competing and customer focus produce effectiveness
Example	Japanese firms	Google	Government agencies	General Electric

Adapted from Figure 3.2 from Cameron and Quinn (2006)

2.2 DATA COLLECTION: PARTICIPANT OBSERVATION

The literature was reviewed to inform an understanding of the characteristics of the ambient society and HMLI's genesis and history. Participant observation methodologies were used to characterize the cultural profile (levels of culture and competing values framework diagnosis) of HMLI. Participant observation is a qualitative research methodology used in many social sciences to observe a group or community through involvement in their environment (Spradley 1980; Atkinson and Hammersley 1994). This type of research uses multiple methods to inform and analyze (i.e., direct observation, participation, and interviews with the community) (Fetterman 1998). In accordance with the conceptual framework for diagnosing HMLI's organizational culture, direct observations highlighted the organization's visible artifacts, participation led to the discovery of values and beliefs, and field and interview notes revealed the organization's underlying assumptions.

Data were collected in May 2015 and April 2016 at HMLI annual conferences and site visits to 10 *loko i'a*. During the conference and site visits, field notes were taken: (1) during the day while observing HMLI members perform activities and (2) for an hour at the end of every day to capture observations in greater detail, summarize that day's events, describe HMLI member behavior, and reflect on surfacing themes.

Participant observation research is highly subjective, being influenced by the views and biases of the researcher (Atkinson and Hammersley 1994). Maintaining a moderate level of participation allows researchers to more deeply understand a system, but not become so immersed in it so that their findings are jeopardized by subjectivity. For this reason, a moderate level of participation, self-determined by author, was maintained at the annual conferences and site visits to strengthen the objectivity data collected.

When conducting interviews and qualitative research in different cultures, it is important to utilize the proper interviewing technique (Fontes 2008). For these reasons and results from informational interviews, at the conferences each year, I conducted semi-structured individual interviews and informal group interviews to expose underlying assumptions held by HMLI members (Dexter 2012; Fontana and Frey 1994). Direct observation of and participation in the conference events and site visits informed the development of interview questions. All interview responses were captured in the form of notes, as the use of audio or video recording devices would have jeopardized the authenticity of member responses. Eleven informal group interviews took the form of semi-structured social periods ("*talk-story*" in local parlance) with between 3 and 7 HMLI members present, lasting from 15 to 60 minutes. The semi-structured individual interviews lasted from 10 to 45 minutes, face-to-face, and followed a loose structure. Individual

interviews were conducted with 3 KUA staff members, 5 partnering NGO staff, 2 governmental agency officials, and 17 HMLI members.

The University of Washington's Human Subjects Division was consulted prior to contact with conference members to obtain *human subjects* clearance. After discussing the nature of the project activities with the Human Subjects Review Administrator, and not considering the knowledge generated to be generalizable, it was self-determined that the activities were not defined as Research according to the Common Rule (45 CFR 46) (Appendix E).

2.2.1 *Description of HMLI Annual Conference and Organizational Interaction*

HMLI conferences typically span a weekend (Thursday-Sunday). HMLI does not have a direct funding mechanism itself, however supporting resource organizations provide funding so that two members from each participating loko i'a can attend. Each year, a different loko i'a organization hosts the conference at their loko i'a and in their community. Most members arrive on Thursday night and head to a group campsite to set up their tents for the weekend. That evening, members review the agenda for the weekend and listen to *mo'olelo* (historical stories of people and place) about the place they are staying over dinner. All meals are provided over the weekend. At each meal, members give brief updates about their past year of activities and events. For example, updates may include information about progress made on obtaining permits, the condition of *kuapā* and *mākāhā*, strategies on regulating public fishing access to *loko i'a* resources, lessons learned from leasing the land that the *loko i'a* is located on, and/or success or failures to obtaining funding to support *loko i'a* maintenance, restoration, and operation. They introduce themselves, tell what pond they are reporting from, and share their information. On the second day (Friday), members travel to the host pond and work together as an organization to complete a restoration project. For example, in 2015, members worked together to rebuild a

kuapā at Huilua Loko iʻa in Kahana, Oahu and in 2016 on the Big Island, members recovered *pohaku* (large stones that make up the *kuapā* foundation) that had fallen into Ka Loko o Kīholo as a consequence of the 2012 tsunami that destroyed a large section of the pond wall.

After completion of this project, members reconvene at the campsite for group discussions and working groups. Discussions are centered around salient topics affecting *loko iʻa* such as understanding the new guidelines for the streamlined permitting process (SPGP). In 2015, working groups focused on drafting and adopting new mission and vision statement. Saturday is typically composed of working at another restoration project at a neighboring pond and several *huakaʻi* where members split up into groups and travel to different ponds around the island. Visiting various ponds allows members to see how others maintain, restore, operate, and care for their ponds. On the final day, members give final group updates, wrap up group discussions and work, and reflect on the conference workshops.

In addition to the annual conference, members utilize a listserv as a platform for group discussions about important updates, action items, organization business, community workdays, and job announcements. Throughout the year, HMLI hosts small gatherings on individual islands for members to connect with other members living on their island. For example, a small gathering was hosted on Maui to help repair a *mākāhā* that had been damaged. Members from all over Maui traveled to this event, and just a handful traveled from off island to attend.

2.3 Data Analysis

Field and interview notes were combined and analyzed using a general inductive, quasi-grounded theory approach (Glaser and Strauss 1967; Strauss and Corbin 1998; Thomas 2006). The author chose this approach so the research findings would emerge from the data and as not to impose preconceived ideas onto the raw data (Griffee 2005). Field and interview notes were

reviewed repeatedly using the ocular scanning method until emerging themes became apparent. Data was coded using these emerging themes and then applied to the theory of organizational culture using the described conceptual work above to create a cultural profile of HMLI.

Chapter 3. RESULTS AND DISCUSSION

3.1 SOCIETY AND HISTORY

3.1.1 *Ambient Society*

After contact with the west (A.D. 1778), ambient society on the Hawaiian Islands has shifted in response to changing economies, demographics, cultural worldviews, and environmental impacts. The customary management system was abolished and replaced with a western system of dividing, owning, and controlling land. The use of the Hawaiian language was banned, and because Hawaiian is an oral culture, a lot of traditional Hawaiian ecological knowledge was lost, as well as traditional Hawaiian practices and ways of life. Priorities shifted from collectives and community oriented values to individualistic mentalities. Today, social and cultural systems are a blend of western and Hawaiian philosophies, while the political and judicial systems are rooted primarily in western approaches (Jokiel et al. 2011).

3.1.2 *History of Hui Mālama Loko i‘a*

Hui Mālama Loko I‘a was founded in 2004 by representatives from seven loko i‘a with the initial goals of starting an email group account, contacting other *loko i‘a*, and disseminating information (Asuncion, *personal communication*, 2016). Guided by their vision for the fishponds of Hawaii to be perpetually cared for, the Hui met opportunistically (five times) between 2004-2012 (KUA 2015). In 2011 at their gathering on Moloka‘i, HMLI members identified the

permitting process as an obstacle to restoration activities (see Appendix B) and suggested interagency coordination as an apt solution (Asuncion, *personal communication*, 2016).

In 2012, funding from University of Hawai‘i Sea Grant supported the annual HMLI conference. In attendance was the de facto team formed to address permitting concerns including personnel from the Department of Land and Natural Resources Office of Conservation and Coastal Lands (DLNR-OCCL), Office of the National Marine Sanctuaries Hawaiian Islands Humpback Whale National Marine Sanctuary, and National Marine Fisheries Services Pacific Islands Regional Office. This team helped facilitate discussions about permitting issues at the gathering and consequently HMLI members issued a Declaration of Hui Mālama Loko I‘a (Appendix D) calling for a streamlined permitting process for *loko i‘a* restoration activities by governmental agencies.

In 2013, after members expressed interest in formalizing their organization, a community-based organization called Kua‘āina Ulu ‘Auamo (KUA) (Box 1) received funding from Conservation International, Hawai‘i and the Office of Hawaiian Affairs to help HMLI build its operational structure and overall capacity (KUA 2015). Now with a full time Loko I‘a coordinator, HMLI holds a conference annually for its members. KUA brings practitioners and other community members together for trainings and meetings to build skills needed to more effectively manage resources (Friedlander et al. 2013). Conference attendees include the HMLI coordinator, fishpond practitioners, managers from regulatory agencies, and other community members.

Box 1: Introduction to Kua‘āina Ulu ‘Auamo (KUA)

What’s In A Name?

KUA means back. Like a backbone that connects and supports. Kua‘āina are the grassroots, rural peoples of Hawai‘i nei. Ulu means to grow. ‘Auamo is the carrying stick held on multiple shoulders of laborers who shared the burden of carrying something of great weight forward. By taking up the ‘auamo, our kua‘āina communities share the sacred responsibility, or kuleana, to better Hawai‘i.

How We Work?

Our approach is “bottoms-up,” inclusive, and community-driven. We work only where we are invited to work. We believe communities hold tremendous knowledge, and that they are often the best teachers for one another. We believe communities need and deserve connective spaces where they can share, learn, and grow — together.

KUA is community-driven. We build **local capacity for community-based management** of natural and cultural resources, supporting community-based organizations in identifying their **own** resource management goals and developing the expertise, knowledge, and skills necessary to accomplish these goals.

We are committed to **nurturing connective spaces** where a growing network of communities can incubate ideas, pursue joint-strategies, learn from one another, and leverage shared strengths.

KUA promotes **fair and equitable partnerships**. KUA is committed to integrity, transparency, and accountability in all of our actions, and we partner with organizations and institutions that demonstrate a shared commitment to these values.

Mission & History

KUA empowers communities to improve their quality of life through caring for their biocultural (natural and cultural) heritage. Our vision is ‘āina momona — abundant and healthy ecological systems in Hawai‘i that contribute to community well-being.

KUA has pursued this mission since 2003, first as the Hawai‘i Program of the Community Conservation Network (CCN). That same year, KUA and several partners responded to a vision of Uncle Mac Poepoe of Hui Mālama o Mo‘omomi (Moloka‘i) to bring together practitioners from around Hawai‘i to build relationships and share knowledge about community-based resource management. The first gathering, held on Moloka‘i, involved 12 communities. From that initial gathering, a learning network called E Alu Pū (Move Forward Together) was born.

In 2009, the CCN Hawai‘i Program became an independent program called the Hawai‘i Community Stewardship Network (HCSN), which continued the work and mission.
In 2011, the advisory board and staff of HCSN underwent a process with other supporters to formalize the work of HCSN and pursue the formation of an independent organization. In 2012, HCSN became Kua‘āina Ulu ‘Auamo, and in 2013 secured independent nonprofit 501(c)(3) status.

KUA and the E Alu Pū network are celebrating their 10th anniversaries in 2013. Over the last 10 years, the work of those involved in this initiative has connected over 587 individuals and brought over $1.3 million in direct investment to community projects.

Source: http://kuahawaii.org/about/

3.2 LEVELS OF CULTURE

3.2.1 *Artifacts*

Artifacts displayed by HMLI members were observed through direct observation and participation as reported in Table 2. When a member enters a space, he/she acknowledges every person in the room with a greeting. There is no physical structure that members enter because conferences are held outside at a large campground or open space with tables and chairs set up beneath tents for members to mingle in and convene. Members all speak English with some also being fluent in Hawaiian. Some important terminology and values are referred to by their Hawaiian names only (e.g., *ʻāina momona*[6]). The atmosphere calls for little technology; though the members convene in a small space, a microphone attached to a portable speaker is set up to ensure everyone can hear discussion points. With support from University of Hawaiʻi Sea Grant, HMLI produces conference booklets for all members to have which include a profile of each pond represented.

Before every meal, and before and after work sessions, all members *pule* together to talk about the work plans and acknowledge any spiritual presence. When engaged in *pule* one removes any hats or scarves to open him/herself up to the energy in the space. Occasionally, when a *kupuna* (elder) enters a space, a chant protocol is performed in which the major group chants to the *kupuna* welcoming him/her in. The *kupuna* returns with his/her own chant, or *oli*.

During group discussions, an outside facilitator selected by KUA aids the group to discuss important agenda items in a timely and efficient manner. KUA hired an outside facilitator to lead group discussions so that their organizational values and beliefs did not influence HMLI's decisions. When members had thoughts, or *manaʻo*, to share, they raised their hand and were

[6] Fruitful and abundant lands achieved through stewardship and sustainable actions

given a microphone to speak. Members were very respectful of each other and refrained from interrupting one another. At the end of a discussion, when a vote was necessary, Robert's Rules of Order were used to make decisions.

Table 2: Review of Significant Artifacts

Manner of address	When a member enters a space, he/she acknowledges every member with one of the following greeting: (1) Say *aloha* and hug; (2) touch noses and share a breath together as a sign of respect and spiritual exchange
Physical environment	All interactions took place outside in nature. Several open tents were set up with tables and chairs for members to interact with one another
Language	Primarily English with Hawaiian words mixed in; those that speak Hawaiian will do so and then translate for non-Hawaiian speakers
Technology	Microphone and speaker were set up for members to share during group discussions
Artistic creations	The organization does not have an official logo but all artistic creations involve *wai* (water)*, kai* (ocean)*, loko i'a* (fishpond)*, i'a* (fish), and/or the act of motion/movement.
Published materials	Every member receives a conference booklet featuring profiles for each participating *loko*
Statements of Philosophy	**Vision:** Perpetuate *'āina momona* through *loko i'a* culture. **Mission:** Empowering a network of *kia'i loko* whose *kuleana* is to re-activate, restore and cultivate *loko i'a* guided by *loko i'a* culture in pursuit of *'āina momona* for 'ohana and communities.
Observable rituals and ceremonies	**Pule:** A protocol in which members all join hands in a circle and typically one person leads a prayer or acknowledgement centering the group around a particular issue or spiritual presence; occurs before a meal and before and after work **Chant Protocol:** When a *kupuna* enters a space, an *oli* is chanted acknowledging a space and asking permission to enter/be in that space. This practice keeps participants respectful and mindful of the place and their actions. *Not observed as standard practice, but when kupuna are present*
Stories (*mo'olelo*)	*Mo'olelo* are stories, legends, history of places and people. These *mo'olelo* were told to expose members to the places they would be encountering during the conference. During this time, *kupuna* (elder) share in front of the group while members listen quietly and respectfully.

3.2.2 *Espoused Beliefs and Values*

Four espoused beliefs and values emerged from the data:

- *Action.* Here action is described as the act of maintaining, restoring, and operating a *loko i'a*. It was stated and supported during conference discussions that without action, *loko i'a* statewide will remain in a state of disrepair. This value was not only reflected in member

interaction and conversations, but also in the organization's mission statement. This shared value that the act of reactivating, restoring, and cultivating loko for the perpetuation of *ʻāina momona* is thought to be essential to the longevity of *loko iʻa* and Hawaiian culture.

- *Sharing.* The exchange of knowledge and sharing stories and experiences was highly valued by organization members. This was expressed during group discussions and talk story sessions in which members were respectfully allowed to share their *manaʻo* (thoughts) about a particular issue or point. Members believe that everyone has knowledge and skills and the sharing and exchanging of those is valuable to the future of *loko iʻa*.
- *Advocacy*. Advocacy has been a value held by the Hui since its conception. Starting with the regulatory burden of restoration activities to the Hui's current focus on securing and protecting their traditional and customary rights to fresh water. As one *kupuna* expressed, "Battling issues is the Hawaiian way."
- *Outreach.* Members have expressed the importance of community involvement and outreach to *loko iʻa* culture. Most *loko iʻa* have established community workdays and really rely on community support. Outreach is valued because getting the community involved makes it aware, engaged and energized about sustainable practices and environmental conservation.

3.2.3 *Basic Underlying Assumptions*

The basic underlying (subconscious) assumptions held by HMLI members were also informed by field and interview notes. Among the findings, there were three strong assumptions shared among members:

(1) traditional Hawaiian resource management practices are sustainable,

(2) *loko iʻa* as a life style, and

(3) restoration serves to spiritually restore a place and the people.

The basic underlying assumptions, along with uncovered espoused beliefs and values, create the identities of HMLI members. Members assume that traditional Hawaiian resource management practices are by definition sustainable. This stems from the premise that while achieving the current needs of the community, practices must not jeopardize the needs of future generations. The following quote was recorded in 2015 from one *kia'i loko* (fishpond caretaker) during an interview speaking about sustainability and *loko i'a* restoration through traditional means:

"It is not harmful to the environment to restore fishponds within the traditional means. It's actually complimentary to the natural cycle of the coastline. And also it is a sustainable way to feed the nearby community and it not only feeds the people within that community that takes care of the fishpond but it also acts as a nursery for the surrounding coastline. Smaller fish are attracted to the walls of the fishpond and that promotes growth of the nearby reefs. And for me, that's just the environmental aspect of it. Being a sustainable source of food. And also, it's a very spiritual tool as well. Being able to manage a fishpond, being able to take care of a fishpond, it really takes hold of our identity as being Hawaiians. And it's a Hawaiian practice that everybody can get behind and really promote the use of it. It's a traditional practice that can't really be replaced. I guess that's why it's really important to me." (kia'i loko 1, 2015)

Generally, HMLI members expressed that loko i'a is not just a job for *kia'i loko* (fishpond guardians), but is a way of life. It was also expressed that *loko i'a* comes first, and then the *kia'i loko*. It is a way for people to connect back to their cultural identity and to their land. It is a way to practice sustainably and in concert with the marine conservation goals of traditional Hawaiian practices and the state. Individuals' livelihoods are at stake and it should be realized that marine conservation decisions and actions affect the lives of many.

Another strong assumption expresses that through collective action, community support, stakeholder engagement, and spiritual exchanges, HMLI has been able to do what many organizations have not—that is to reactivate the process of spiritually healing the land and therefore spiritually healing the people. *'Āina* has spirit. Therefore it is understood that when one

is restoring a *loko i'a*, not only is a physical space being restored, but the spirit of that space and the spirit of the community are being restored as well.

3.3 Competing Values Framework: Cultural Style Diagnosis

Based on HMLI's artifacts, espoused beliefs and values, and basic underlying assumptions, the Competing Values Framework (CVF) is used to diagnosis HMLI's dominant cultural style as *clan culture*. Organizations classified with a *clan culture* are family-like organizations, where participation, commitment, and traditions are valued and success is measured through internal climate and member concerns (Cameron and Quinn 2006). Leaders in organizations that are dominated by clan culture are most effective when they serve as team builders, facilitators, and supporters (Cameron and Quinn 2006). Organizational effectiveness in clan culture operates on the theory that the involvement and participation of members fosters empowerment and commitment and is determined by member satisfaction and morale, cohesion, and teamwork (Cameron and Quinn 2006).

HMLI exhibits a secondary cultural style as *hierarchical culture*, potentially attributed to the ambient society's roots in traditional Hawaiian culture and current standings in western styles. As described above, Hawaiian customary management systems were traditionally managed using a hierarchical structure. An organization that is diagnosed with a hierarchical culture, like a governmental agency, is driven by consistency, uniformity, and efficiency and lead by coordinators.

3.4 Organizational Effectiveness

Uncovered through the analysis of Hui Mālama Loko I'a's organizational culture are five key factors influencing the organization's overall effectiveness:

HMLI's Dominant Culture Diagnosis as Clan Culture. The annual conferences allow members to build relationships and trust with one another. At these gatherings, members camp together, prepare meals together, eat together, work together, and discuss together. Gathering together supports the prominent clan culture and strengthens the organization's cohesiveness over time. The relationship-building and trust-building aspects of the organizational culture allow for members to comfortably express their needs to the larger group and strategize ways in which to make those needs achievable (e.g., discussion and action taken on traditional and customary rights to fresh water). The ability for the Hui to invite members to speak their concerns and devote resources to addressing these concerns, allows them to effectively come together and create regulatory change. The shared assumptions and values held by HMLI members inform group interactions (e.g., discussion agendas, conference activities) and are dependent on the relationships and trust built overtime. This strengthening of individuals acts as a healing process and motivator to continue to foster collaboration. The strength of these core values allows the Hui to support its members and therefore be effective as an organization diagnosed with a dominant clan culture.

Members' Shared History Strengthening the Organization's Dominant Culture. As Schein (1990) states, some organizations "have 'strong' cultures because of a long shared history or because they have shared important intense experiences (as in a combat unit)". Though HMLI is fairly new in its genesis, the area's history has created a strong organizational culture. The organization's history is rooted in regulatory burden and loss of culture resulting from exposure to the western world—these two factors organization have significantly influenced cultural values, beliefs, and assumptions. Not only have a majority of the members experienced the long, frustrating burdens of the regulatory process, but for those members with Hawaiian ancestry,

they have years of oppressive circumstances that caused and perpetuated the degradation of the *loko iʻa* systems across the state (Keala et al. 2007; Farber 1997). This trauma is reflected in the strength of the emerging *loko iʻa* culture. Many *kiaʻi loko* had been working in isolation of one another and have recently entered a new era of knowledge and resource sharing. Realizing the power in collective action, *kiaʻi loko* embrace their oppressive past and recognize the potential for positive progress as individuals and as a collective.

The reactivation and emergence of *loko iʻa* culture does not fully restore past structures and traditional culture, however it is readjusting to modern times. This rediscovery still acknowledges the connection of *loko iʻa* to their surrounding communities and Hawaiian ancestry. The continuation of these Hawaiian cultural practice by *kiaʻi loko* allow members to come together as a collective and create positive impactful change.

Supportive Partner Groups. HMLI was not the single voice advocating for the streamlined permitting. Over the years, an extended network of supportive partner groups has developed and continues to grow as partners learn more about *loko iʻa* work and meet practitioners. These groups include, but not limited to Conservation International, Hawaiʻi, UH Sea Grant, Office of Hawaiian Affairs, and several NOAA offices. These joint efforts have strengthened the impact of individual actions made by involved organizations and given birth through collective action to the Hoʻāla Loko Iʻa Program and SPGP.

Consequently the level of multi-sector collaboration has elevated HMLI's efforts and has given them access to resources needed to successfully reach decision makers. Additionally funding from partner organizations helped support the accessibility of gatherings and discussions to members. Without the ability to convene, HMLI would not be as effective.

The Role of Facilitation Played to Create Collective Social Impact. HMLI has had many suggestions for improving policy, including their suggestion for interagency coordination for permits identified at their conference on Molokaʻi in 2011. Despite the desire of members to more effectively support each other and create regulatory change, prior to 2012, the organization did not have professionally skilled coordinators or facilitators in the group. In its early stages, HMLI members relied on family and friends to help restore and maintain ponds and *loko iʻa* restoration was described as *lonesome* by a kupuna. There was not much support, gathering, and exchange of knowledge and ideas at such a large scale as there is presently.

In 2012, the de facto team, created to coordinate the streamlining of the permitting process, helped the Hui turn their suggested solution into a Declaration, a medium digestible to government agencies and environmental managers. The role of facilitation in creating collective social impact allowed the Hui to successfully reach those with power to make decisions.

Another example of this is seen after KUA secured funding to hire a *loko iʻa* coordinator for the Hui. KUA's primary goals are to support the Hui and connect it with resources it needs to excel. The current culture that KUA has helped to sustain has allowed HMLI to enter a new phase of effectiveness, supportiveness, and revitalization (people, place, being, spiritual). The most effective leaders for an organization diagnosed with a clan culture are facilitators, mentors and team builders (Cameron and Quinn 2006). KUA perfectly fits this description, making them effective leaders for HMLI and allowing the organization to be more successful in creating change. Facilitation has significantly attributed in advancing the effectiveness of the Hui's actions.

Kiaʻi Loko Iʻa Knowledge Informs Organization's Policy Decisions. The direct on-the-ground perspective and experience help *kiaʻi loko iʻa* to deeply respecting both their

environment and their culture and keep conservation values high. Traditional *loko i‘a* practices are rooted in sustainability as restoration and maintenance activities are achieved by working with ones hands. This foundation of environmental stewardship (e.g., organizational underlying assumption: *loko i‘a* is valued higher than self), shows that in some cases, HMLI values the environment more than some environmental policies (for example, some policies that allow development with minimal environmental damage value development over environmental integrity).

In addition, during conference events, members engage in physical activity together. This immersive experience allows them to gain a specialized level of knowledge about *loko i‘a* systems that they would not otherwise have. Their ability to attend conferences, learn about how other *loko i‘a* function and operate, and engage in experiential learning enriches *kia‘i loko*’s understanding of the nearshore environment and nature of *loko i‘a*. This enriched picture allows members to more readily act and engage in regulatory changes and policy recommendations. This ability to more effectively inform decisions is powerful.

Chapter 4. CONCLUSION

The Hui Mālama Loko I‘a has played a key role in the revitalization of traditional Hawaiian fishponds, including contributing to a new streamlined permitting process, establishing cultural best management practices, and advocating for traditional and customary use of fresh water. Its organizational effectiveness can be attributed to its strong, supportive, clan-like organizational culture, effective leaders, and immense knowledge base. It is clear that without the support of partnering organizations and the strong role of facilitation in creating collective social impact, the Hui would not have achieved success in creating change.

In addition to these political outcomes, HMLI is also responsible for restoring hope back to kia‘i loko and the community, strengthening Hawaiian ecological knowledge, and fostering the exchange and reconstruction of traditional fishpond management skills and knowledge. This stems from the process of relationship and trust building taking place at regular organizational gatherings. This organization is a powerful example of small community-based and stakeholder-driven governance initiatives in Hawai‘i to better manage marine resources using customary management systems. Although the focus of this paper is small in scale and only applicable to the Hawaiian context, this is a great example of how marine conservation decision-making and action taking may be addressed by both community-based governance efforts and multi-sector collaboration.

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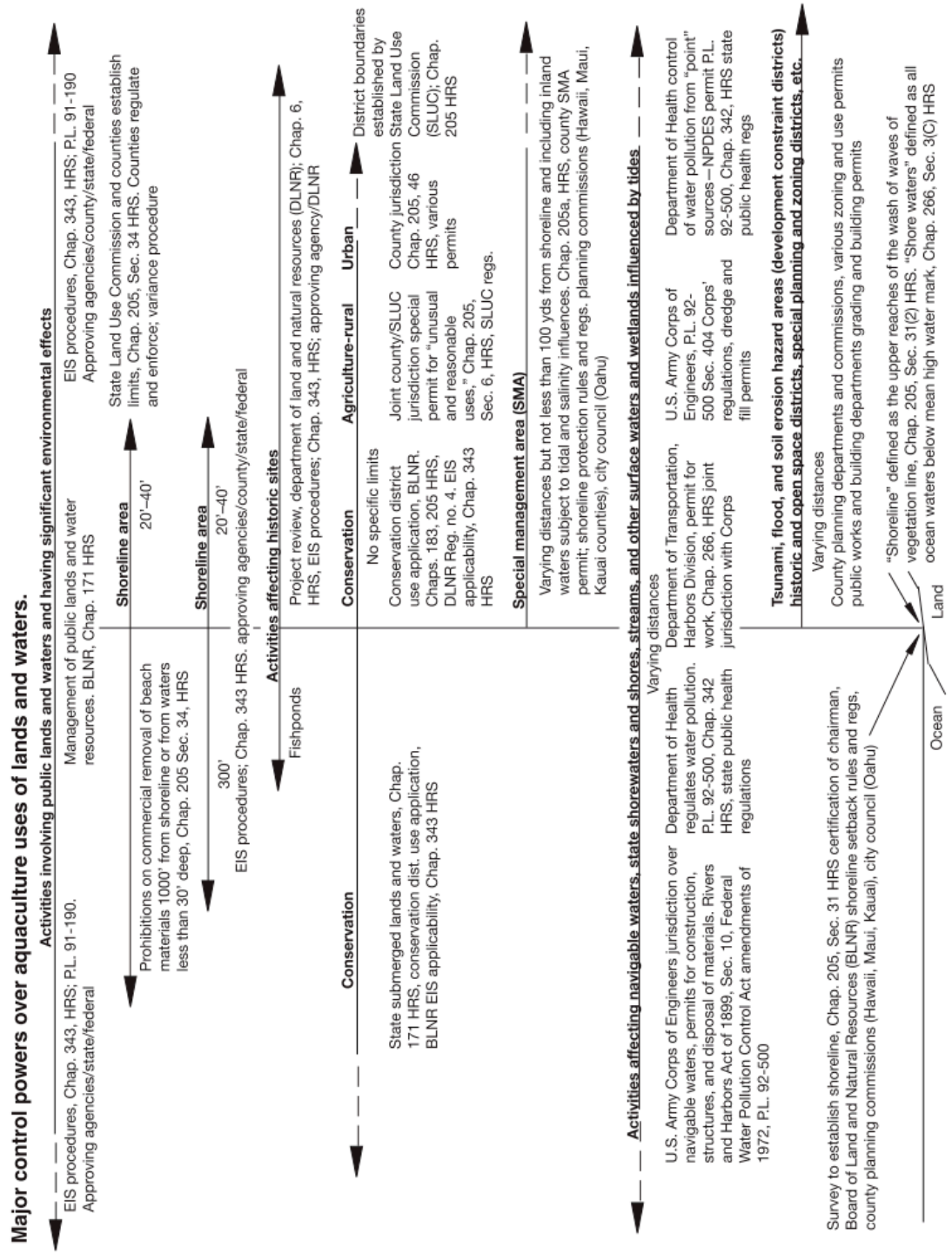
LIST OF FIGURES

LIST OF TABLES

APPENDIX A: DIAGRAM OF POTENTIAL PERMITS FOR *LOKO I'A* RESTORATION ACTIVITIES

Adapted from Keala et al. 2007 diagram (p. 22)



APPENDIX B: HOʻĀLA LOKO IʻA TIMELINE & GUIDEBOOK INTRODUCTION

Adapted from: http://dlnr.hawaii.gov/occl/hoala-loko-ia/
In 2012, a group of government agencies and nonprofit organizations committed to streamlining the permitting process for the restoration of traditional Hawaiian fishpond systems.

Project History

- March 2011: Practitioners at the Hui Mālama Loko iʻa Fishpond Conference on Molokaʻi identify the difficulty the permitting process as a major issue
- March 2012: The Hawaiian Islands Humpback Whale National Marine Sanctuary hosts a meeting bringing practitioners and government agencies together to address permitting issues. A de facto team was formed among NOAA, the Humpback Whale Sanctuary, and OCCL to continue the coordination effort.
- November 2012: Practitioners at the 2012 Fishpond Conference at Waipa, Kauaʻi issue the Declaration of Hui Malama Loko Iʻa calling for government agencies to streamline the permitting process.
- October 23, 2013: Honua Consulting, with the support of Conservation International's Hawaiʻi Fish Trust (now called Conservation International's Hawaiʻi program), develops and publishes the Hoʻāla Loko Iʻa Final Environmental Assessment
- January 2014: Preparation of Conservation District Use Application ST-3703
- February 2014: Statewide Public Hearings
- June 27, 2014: Board of Land and Natural Resources approves CDUP ST-3703; establishes tiered system for fishpond permitting.
- November 2014: US Army Corps determines that applications can be considered under a Nationwide 3 Permit.
- January 2015: DLNR releases **streamlined application** for *loko iʻa* repair and restoration
- July 13, 2015: Governor Ige signs Act 230 waiving Department of Health water quality certification requirements for the restoration, repair, and operation of loko iʻa that are permitted under DLNR's Hoʻāla Loko Iʻa program.

HOʻĀLA LOKO IʻA

PERMIT APPLICATION GUIDEBOOK

HOʻĀLA LOKO IʻA

PERMIT APPLICATION GUIDEBOOK

CONSERVATION INTERNATIONAL

Department of Land and Natural Resources State of Hawai'i

NATIONAL MARINE SANCTUARIES

HAWAI'I FISH TRUST

HŌNUA CONSULTING

NOAA FISHERIES
PACIFIC ISLANDS REGIONAL OFFICE

We are delighted to provide the attached **Fishpond Practitioner Guidebook**, the goal of which is to aid fishpond practitioners to successfully navigate the recently amended policy and regulatory environment for restoration and production. This guidebook was developed through a collaborative partnership involving the State of Hawaii's Office of Conservation and Coastal lands (OCCL), Honua Consulting, Conservation international Hawaii, National Oceanic and Atmospheric Administration (NOAA), Kua'Āina Ulu Auamo (KUA). A special mahalo nui loa to Jillian Lyles with the University of Washington's School of Marine Affairs, who led the development of initial drafts and staffed the development of this guidebook.

Hawaiian fishponds represent a unique nexus of environmental, cultural, and economic interests, providing opportunities to restore and revitalize cultural sites and practices, rebuild coastal and estuarine function, prepare for and adapt to the effects of climate change, educate youth through experiential learning, and provide community food security and self-sufficiency. As the majority of Hawaiian fishponds are in a state of disrepair, local communities and grassroots nonprofit organizations across the state are working to restore fishponds to take advantage of the above opportunities. Permitting for fishpond restoration has always been very costly and time-consuming with pond managers having to navigate a complex set of local, state, and federal regulatory requirements.

To tackle this problem a unique public-private partnership was formed in 2013 involving OCCL, NOAA, CI Hawai'i, KUA and Honua Consulting to develop a streamlined permitting system that integrated more than 17 environmental regulations into a single permit system for restoration, repair and maintenance of Hawaiian fishponds. This streamlined permit system was adopted by Hawaii's Board of Land and Natural Resources in June 2014, enabling the state to coordinate a single application process.

With fishpond practitioners now beginning to use the new permit system, the project partners recognized the need to provide practical, easy-to-understand guidance on how to access, use and abide by the tenants of the permitting system. The result is the attached guidebook, which provides a simple overview of the permit requirements and application process; the steps required for application completion; and best management practices for water, archaeology, cultural, and endangered species surveys around fishponds. The guidance document is to be published online for easy access by community members and fishpond practitioners across the state with the hope that it will help fishpond managers increase the number of restored and productive fishponds contributing to Hawaii's seafood sustainability, while preserving the islands cultural identity and practices.

Sincerely,
Sam Lemmo
Administrator, Office of Conservation and Coastal Lands
State of Hawaii, Dept of Land and Natural Resources

Jack Kittinger
Director, Conservation International Hawai'i
Center for Oceans

APPENDIX C: SET OF QUESTIONS TO ASK SEMI-STRUCTURED INTERVIEW INFORMANTS

1. Which *loko i‘a* are you affiliated with?
2. How did you become involved with *loko i‘a*?
3. Can you describe your current and past experiences with fishponds?
4. Can you describe the history of your *loko i‘a* as you know it?
5. Why is it important to restore and malama *loko i‘a*?
6. What do you value most about *loko i‘a*?
7. What lessons have you learned from working with *loko i‘a*?
8. What challenges do you face in restoring your *loko i‘a*?
9. Do *loko i‘a* have any effect on the surrounding environment?
10. What environmental benefits do *loko i‘a* provide?
11. What does the future of fishponds look like to you?
12. How do you think this streamlined permitting process will affect restoration efforts?
13. How would you describe Hui Mālama Loko I‘a and its members?
14. How has being involved with Hui Mālama Loko I‘a changed understanding of *loko i‘a*?
15. How are you affiliated with Hui Mālama Loko I‘a?
16. How did you become involved with Hui Mālama Loko I‘a?
17. Can you describe your current and past experiences with Hui Mālama Loko I‘a?
18. Can you describe the history of Hui Mālama Loko I‘a as you know it?
19. What does Hui Mālama Loko I‘a value most about *loko i‘a*?

APPENDIX D: DECLARATION OF HUI MALAMA LOKO I‘A

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 pae‘āina o Hawai‘i.

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 costal fish populations and fisheries;

WHEREAS, *loko i‘a* are essential features of health 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

WHEREAS, traditional Hawaiian fishponds practitioners are an active and vibrant community of educators and practitioners; and

WHEREAS, Hui Mālama Loko I‘a met in Waipa in November 2012 for the 5th gathering of traditional Hawaiian fishpond practitioners across the state; and

WHEREAS, for over 20 years permitting difficulties have been identified by fishpond practitioners as one of the leading obstacles in traditional Hawaiian fishpond restoration and use;

WHEREAS, repair of many Hawaiian fishponds may require permits federal, state and county governments; and

WHEREAS, the process in obtaining a permit for the restoration of *loko i‘a* is time consuming, complicated, costly, and confusing and varies depending upon the circumstances of the party applying for the permit; and

WHEREAS, the existing regulations and permit requirements impede community organizations and Native aquaculturalists from repairing and maintaining *loko i‘a*; and

WHEREAS, Article XII Section 7 of the Hawaii State Constitution states: “The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua’a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights”; and

WHEREAS, the enforcement of state and federal regulations, including but not limited to the Endangered Species Act and the Migratory Bird Act, can hinder traditional and customary use of *loko i‘a*; and

WHEREAS, the State has the ability to streamline the permit process and promote interagency cooperation to facilitate restoration, protection, preservation, perpetuation, traditional and customary use, maintenance, and/or leasing of fishponds to cultural and familial descendants and *loko i‘a* practitioners; and

WHEREAS, the Senate of the Twenty-sixth Legislature of the State of Hawaii, Regular Session of 2012, urged 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;

WHEREAS, the Department of Land and Natural Resources Office of Conservation and Coastal Lands with the Hawaiian Islands Humpback Whale National Marine Sanctuary, the National Marine Fisheries Service Pacific Island Regional Office and Conservation International / Hawaii Fish Trust have worked in coordination with fishpond practitioners 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 Mālama *Loko i‘a* 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 pae‘āina o Hawaii.
DECLARED, in the ahupua‘a of Waipa, on the island of Kaua‘i, in the pae‘āina o Hawaii, this second, third and fourth day of November, 2012.

APPENDIX E: UNIVERSITY OF WASHINGTON HUMAN SUBJECTS RESEARCH WORKSHEET

(next page)

UNIVERSITY of WASHINGTON
HUMAN SUBJECTS DIVISION

WORKSHEET: Human Subjects Research

PURPOSE and INSTRUCTIONS

This worksheet provides support for individuals in determining whether an activity is human subjects research. It is completed and retained only when the activity is determined to be **Not Human Subjects Research**. The sections should be considered in the order presented. The term "data" refers to information of all types (information, records, specimens, recordings, photos, X-rays, etc.)

1. Are you a (select your position to reveal the correct Research Study Information box):

- [x] Researcher or Research Coordinator, etc. (not HSD Staff)
- ( ) HSD Staff Member

2. Research as defined by the Common Rule (45 CFR 46)

Check all that apply.

- [x] A. The activity is an **investigation**.
  Investigation: A searching inquiry for facts, or detailed or careful examination.
- [x] B. The investigation is **systematic**.
  Systematic: Having or involving a prospectively identified approach to the investigation, based on a system, methods, or plan.
- [x] C. The systematic investigation is **designed** to **develop** or **contribute** to **knowledge**?
  Designed: the activity has a predetermined purpose and/or intent.
  Develop: to form the basis for a future contribution.
  Contribute: to result in.
  Knowledge: truths, facts, information.
- [ ] D. The knowledge the systematic investigation is designed to develop or contribute is **generalizable**.
  Generalizable: the data and/or conclusions are intended to apply more broadly beyond the individuals studied, or beyond a specific time and/or location, such as to other settings or circumstances.
- [ ] E. All of the following apply to the activity:
  - [ ] The activity is designed to contribute to the solution of social and health problems, or the evaluation of public benefit and service programs.
  - [ ] The activity involves the use of individually identifiable records from one or more of the following state institutions:
    - WA State Department of Social and Health Services (DSHS)
    - WA State Department of Corrections (DOC)
    - WA State Department of Health (DOH)
    - WA State Department of Early Learning
    - Any WA State Institution of higher education, including the UW and UW Medicine
  - [ ] The records pertain only to living individuals.
  - [ ] The records will be obtained and used without the informed consent of the person to whom the records pertain or the persons' legally authorized representatives.

Conclusion

All boxes are checked: the activity is Research as defined by the Common Rule. Proceed to Part 3.

If boxes A, B, C, and D are checked: the activity is Research as defined by the Common Rule. Proceed to Part 3.

If boxes A, B, C, and E are checked: the activity is not Research as defined by the Common Rule. However, IRB review is nonetheless required because of Washington State law RCW 42.48 concerning the research use of certain state records. Proceed to Part 6 to determine whether the activity is considered to be human subjects research by the Food and Drug Administration (FDA).

All other combinations of checked boxes. The activity is not Research as defined by the Common Rule. Proceed to Part 6 to determine whether the activity is human subjects research as defined by the Food and Drug Administration (FDA).

END PART TWO

3. Human Subject as defined by the Common Rule (45 CFR 46): Component 1

Check all that apply.

human subjects definition of "identifiable".

Some specific circumstances in which the information would not be considered identifiable:

- *The identifiers or the key to the identifier code have been destroyed.*
- *The research team has entered into an agreement with the holder of the identifiers or code key that prohibits the release of the identifiers or code key to the team members.*
- *When the data come from a repository or data management center: There are IRB-approved written policies and procedures for the repository or center that prohibit the release of the key to the team members.*
- *There are other legal requirements prohibiting the release of the identifiers or code key to the team members.*

Conclusion

If both boxes are checked: human subjects are involved, as defined by the Common Rule. Proceed to Part 6 to see if the research is subject to FDA regulations.

If one or no box is checked: human subjects are not involved, as defined by the Common Rule. Proceed to Part 6 to see if the research is subject to FDA regulations.

END PART FIVE

6. Human Subjects Research as Defined by the Food and Drug Administration

The UW may be involved in conducting only some components of an FDA-regulated study. When the components are limited to the following activities, it is UW policy that those research activities do not meet the FDA's definition of human subjects research when the UW-conducted activities meet ALL of the following criteria:

- The activities conducted by UW personnel are limited to any of the following:
  - Data analysis (whether or not the data are identifiable);
  - Analysis of specimens;
  - Accessing and providing medical records of participants.
- The UW is not the study clinical coordinating center.

Check if "**YES**".

☐ FDA definition of research. The activity involves any of the following (check all that apply):

☐	The use of a drug (whether approved or unapproved) in one or more living persons other than use of an approved drug in the course of medical practice.
☐	The use of a device (whether approved or unapproved) in one or more living persons that evaluates the safety or effectiveness of the device.
☐	Use of a test article regulated by the FDA (drug, device, biologic, etc.) to obtain data regarding subjects or control subjects that is intended to be eventually submitted to or held for inspection by the FDA.

☐ FDA definition of human subject. Either or both of the following are true:

☐	The research involves a living individual who is or becomes a participant in research, either as a recipient of a test drug, device (including in vitro diagnostics) or biologic, or as a control. The individual may be either a healthy individual or a patient.
☐	An individual on whose specimen an investigational device or control is used in the research, even if the specimen is anonymous.

Conclusion

If both boxes are checked: the activity is human subjects research as defined by the FDA.

If no or one box is checked: the activity is not human subjects research as defined by the FDA.

END PART SIX