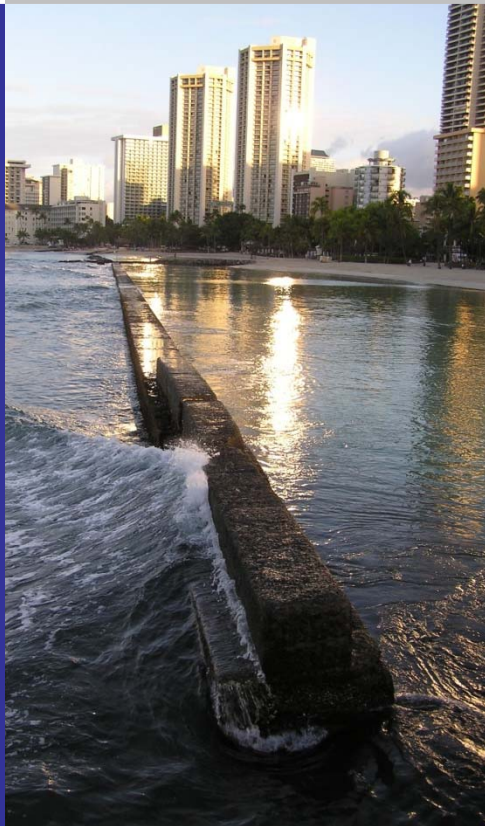


MARINE CONSERVATION IN HAWAII

A BASELINE ASSESSMENT OF LAWS,
POLICIES, AND INSTITUTIONS





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INSTITUTIONS**

ENVIRONMENTAL LAW INSTITUTE
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TABLE OF CONTENTS

EXECUTIVE SUMMARY	VIII
I. INTRODUCTION	1
A. MARINE CONSERVATION IN HAWAII	1
B. APPROACH AND REPORT STRUCTURE	3
II. LEGAL, POLICY, AND INSTITUTIONAL FRAMEWORKS	5
A. BACKGROUND	5
B. GOVERNMENT	5
C. COMMUNITIES AND NON-GOVERNMENTAL ORGANIZATIONS	10
III. ADMINISTRATIVE, INSTITUTIONAL, & PROCEDURAL CONSIDERATIONS.....	13
A. INTEGRATED MANAGEMENT	13
B. ENVIRONMENTAL ASSESSMENTS AND IMPACT STATEMENTS	18
C. COMPLIANCE AND ENFORCEMENT	20
1. LAND-USE COMPLIANCE AND ENFORCEMENT	21
2. WATER QUALITY COMPLIANCE AND ENFORCEMENT	23
3. FISHERIES, PROTECTED SPECIES, AND HABITATS: COMPLIANCE AND ENFORCEMENT	26
D. PARTICIPATION	34
E. LICENSING, FEES, AND FINANCING	41
IV. LAND-BASED ACTIVITIES	46
A. LAND-USE	46
1. PLANNING AND ZONING	47
2. COASTAL PARKS, PROTECTED AREAS, AND BEACHES	54
B. FRESHWATER	64
1. WATER QUALITY	65
2. AHUPUA`A MANAGEMENT AND WATERSHED APPROACHES	75
3. HABITATS AT THE INTERFACE: BUFFER ZONES AND WETLANDS	79
V. MARINE ACTIVITIES.....	90
A. FISHERIES	90
B. PROTECTED SPECIES AND HABITATS	96
C. AQUACULTURE	114
D. INVASIVE SPECIES	117
E. PORTS, HARBORS, AND VESSELS	121
F. CLIMATE CHANGE	129
G. OTHER OCEAN CHALLENGES	132
VI. SUMMARY OF OPTIONS.....	135

ACRONYMS

Acronym	Full Name
ADP	Aquaculture Development Program
ANPR	Advanced Notice of Proposed Rulemaking
ANSTF	Aquatic Nuisance Species Task Force
AOHCC	Association of Hawaiian Civic Clubs
APHIS	Animal Plant and Health Inspection Service
APPS	Act to Prevent Pollution from Ships
BLNR	Board of Land and Natural Resources
BMP	Best Management Practice
BRFA	Bottomfish Restricted Fishing Area
CCN	Community Conservation Network
CDUP	Conservation District Use Permit
CELCP	Coastal and Estuarine Land Conservation Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CGAPS	Coordinating Group for Alien Pest Species
CITES	Convention on International Trade in Endangered Species
CLIA	Cruise Lines International Association
CLP	Coastal Lands Program
COEMAP	Coastal Erosion Management Plan
CORAL	Coral Reef Alliance
CWA	Clean Water Act
CWB	Clean Water Branch
CWRM	Commission on Water Resources Management
CZARA	Coastal Zone Act Reauthorization Amendments
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
CZMP	National Coastal Zone Management Program
DAR	Division of Aquatic Resources
DBEDT	Department of Business, Economic Development, and Tourism
DOBOR	Division of Boating and Ocean Recreation
DOCARE	Division of Conservation and Resource Enforcement
DOFAW	Division of Forestry and Wildlife
DOH	Department of Health
DOI	Department of Interior
DOT	Department of Transportation
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EMD	Environmental Management Division
EMWP	East Maui Watershed Partnership
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FMA	Fishery Management Area
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
FRA	Fisheries Restoration Area
FS	Forest Service

HAWP	Hawai'i Association of Watershed Partnership
HCRI-RP	Hawai'i Coral Reef Initiative Research Program
HDOT	Hawai'i Department of Transportation
HDOT-H	Department of Transportation-Harbors Division
HEA	Hawai'i Ecotourism Association
HEAR	Hawaiian Ecosystems at Risk
HEPA	Hawai'i's Environmental Policy Act
HICNCP	Hawai'i Coastal Nonpoint Pollution Control Program
HICZMA	Hawai'i State Coastal Zone Management Act
HICZMP	Hawai'i Coastal Zone Management Program
HIHWNMS	Hawaiian Islands Humpback Whale National Marine Sanctuary
HINMSA	Hawaiian Islands Humpback Whale National Marine Sanctuary Act
HIRSA	Hawaiian Islands Recreational SCUBA Association
HMRFS	Hawai'i Marine Recreational Fishing Survey
HOARP	Hawai'i Offshore Aquaculture Research Project
HOCC	Hawai'i Ocean and Coastal Council
HOST	Hawai'i Ocean Safety Team
HTA	Hawai'i Tourism Authority
HWF	Hawai'i Wildlife Fund
ICCL	International Council of Cruise Lines
IMO	International Maritime Organization
KIRC	Kaho'olawe Island Reserve Commission
LAS	Local Action Strategy
LBP LAS	Hawai'i LAS on Land-Based Pollution Threats to Coral Reefs
LUC	Land Use Commission
MACZAC	Marine and Coastal Zone Advisory Committee
MARPOL	International Convention for the Prevention of Pollution from Ships
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MLCD	Marine Life Conservation District
MMC	Marine Mammal Commission
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
MMSN	Marine Mammal Stranding Network
MPA	Marine Protected Area
MPRSA	Marine Protection, Research and Sanctuaries Act
MSD	Marine Sanitation Device
MTRP	Marine Turtle Research Program
NARS	Natural Area Reserve System
NDZ	No-Discharge Zone
NEMO	Nonpoint Education for Municipal Officers
NEP	National Estuary Program
NEPA	National Environmental Policy Act
NERRS	National Estuarine Research Reserve System
NMFS	National Marine Fisheries Service
NMS	National Marine Sanctuary
NMSA	National Marine Sanctuaries Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRCS	National Resources Conservation Service

NWCA	Northwest Cruise Ship Association
OCCL	Office of Conservation and Coastal Lands
OCRM	Office of Coastal and Ocean Resource Management
OLE	Office of Law Enforcement
OP	Office of Planning
OPA	Oil Pollution Act
ORMP	Ocean Resources Management Plan
PIFSC	Pacific Islands Fishery Science Center
PIR	Pacific Islands Region
PIRO	Pacific Islands Region Office
POTW	Publicly Owned Treatment Work
PRC	Polluted Runoff Control
PRD	Protected Resources Division
RCRA	Resource Conservation and Recovery Act
SAWCS	Statewide Aquatic Wildlife Conservation Strategy
SGCN	Species of Greatest Conservation Need
SMA	Special Management Area
SOLAS	Safety of Life at Sea Convention
SOP	Safe Operating Practice
SPA	The Shore Protection Act
SWG	State Wildlife Grant
TMDL	Total Maximum Daily Load
TNCH	The Nature Conservancy Hawai`i
UH	University of Hawai`i
UHHIP	University of Hawai`i Hawaiian Internship Program
UN	United Nations
UNEP	United Nations Environment Programme
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USCRTF	United State Coral Reef Task Force
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
Wespac	Western Pacific Fishery Management Council
WHFC	West Hawai`i Fishery Council
WQS	Water Quality Standards
WRP	Wetlands Reserve Program
WTP	Willingness To Pay
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

The Hawai'i Seascape is an interconnected system of people, islands, and the surrounding waters from nearshore to the high seas. Hawai'i's coral reefs are particularly valuable as critical habitat for Hawai'i's many native and endemic marine species. Hawaiian monk seals haul out on Hawai'i's beaches and forage for food in its waters. Humpback whales come by the hundreds to breed in Hawai'i's waters. Twenty-three percent of the 566 marine fish species in Hawai'i are found nowhere else on earth.

Many activities have minor individual impacts, but in the aggregate, these impacts threaten the integrity of Hawai'i's marine ecosystems and the services they provide including, for example, food production, recreation, and cultural heritage. The health of the marine environment is affected by what happens in the water and what happens on the land. Managing this three-dimensional habitat is complicated by the fact that pollutants and sediments make their way to the ocean through freshwater flows, atmospheric deposition, and directly from the shoreline. Moving farther offshore, the effects of land-based activities are disbursed and diminished; however, in the nearshore environment the impacts from land can be immense. Therefore, attaining and maintaining a healthy marine environment requires consideration of all of the activities at sea and on land.

Effective conservation of Hawai'i's marine environment requires a sound understanding of the existing legal, policy, and institutional framework, which is heavily informed by traditions and culture of Native Hawaiians and Hawai'i's many other residents. Any legal, policy, and institutional actions taken to conserve and protect Hawai'i's marine environment should incorporate Native Hawaiian culture and traditions along with Hawai'i's other diverse inhabitants. Those

undertaking marine conservation should recognize the realities of the existing legal and institutional structure, increasing population, and the resulting pressures on increasingly limited resources.

This Baseline Assessment was created to support and inform the development of a Hawaii Seascape Strategy about the key laws, policies, and institutions that affect marine conservation. It identifies a list of potential options to enhance marine conservation objectives and advances collaborative and decentralized marine conservation approaches that promote direct stakeholder participation in the management of resources. Such approaches are supported by the island-centric nature of Hawai'i—recognizing that each island has unique attributes and challenges, and day-to-day management may be best accomplished through island-specific actions rather than uniform, one-size-fits-all approaches.¹

This Assessment identifies specific threats facing Hawai'i's marine environment, and then provides relevant law, policy, and institutional options to address those threats. The options include existing opportunities for implementation as well as potential hurdles. The Assessment considers cross-cutting issues, including compliance and enforcement, funding, capacity, education, and integrated management.

Summary of Identified Threats to the Main Hawaiian Islands

Chief threats to marine conservation in Hawaii include a number of cross-cutting issues such as

¹ This is not to say, however, that uniform approaches are never warranted. In some instances, uniform approaches may not only be appropriate but necessary—both because of existing legal constructs (e.g., federal laws) and the inter-island nature of an issue (e.g., commercial shipping or longline fishing in federal waters).

fragmented and overlapping management mandates and inadequate compliance and enforcement. Sector-specific threats include expanding and differentiating land uses and diminishing water quality, unsustainable fisheries, threatened and endangered species and habitats, invasive species, shipping, cruise ship and recreational vehicle impacts, climate change, and tourism impacts.

Fragmented and Overlapping Management

A variety of federal, state, and local agencies manage Hawai'i's terrestrial, freshwater, and marine environment. Federal agencies manage federal lands and marine waters beyond three miles from shore; oversee and implement several national environmental laws; provide enforcement in the marine environment; and are the primary regulatory authority in some sectors such as shipping. State agencies manage state lands and waters and implement state and federal environmental laws. Several Divisions in the Department of Land and Natural Resources (DLNR) provide the majority of oversight of marine activities including fisheries management in state waters, state natural resources enforcement, and management of small boats and harbors. Finally, local agencies and actors at the county level take the lead in regulating coastal land use.

While sector-based management is a necessity and institutional redundancy can lead to more robust management systems, the fragmentation and overlapping mandates can also result in major management gaps and a degraded environment in the absence of appropriate and efficient coordination and cooperation.

Compliance and Enforcement

Without compliance and enforcement, laws and regulations do not work. Interviewees and published reports describe the challenges in achieving compliance with federal and state laws and regulations. This Assessment focuses particularly on the challenges of achieving compliance with water quality, land-use requirements, and fisheries laws and regulations. Key compliance and enforcement challenges identified include lack of capacity and financial support to enforce existing laws, lack of political

will to implement laws, and a lack of compliance in some sectors.

Expanding Land-Use and Diminishing Coastal Water Quality

Land-use and water quality are closely related, and both land-use and freshwater quality affect the health of the marine environment. Land-use and water quality threats to Hawai'i's marine environment include:

- Coastal development leading to loss and narrowing of beaches, coastal hardening, damage to coastal habitats, and nearshore pollution from runoff, erosion, and sewage;
- Degradation of coastal parks, protected areas, and beaches from overuse and lack of maintenance;
- Altered stream flow including channelization, damming, and erosion and siltation from upland deforestation;
- Nonpoint sources of pollution including nutrient runoff from agriculture;
- Sewage discharges and spills; and
- Stormwater runoff.

Fisheries Impacts

Marine capture fisheries—including subsistence, small-scale, recreational, and commercial fishing—can cause significant impacts on the structure and function of marine ecosystems. The fishing industry is diverse including those that fish for commercial, subsistence, recreational, and cultural reasons and combinations thereof. The fishing fleet includes large-scale commercial longline vessels, small-scale troll vessels, and recreational charter vessels. In addition, there are several shore-based operations that target reef fisheries.

Fisheries management decisions affect the abundance and health of targeted population; non-target bycatch including other fish species, marine mammals, sea turtles, and birds; and marine habitats. Interviews and research identified the following fishing practices that are of particular concern for marine conservation in Hawai'i:

- Spear fishing by scuba divers that depletes reef fish species;
- Lay gill net fishing that indiscriminately catches reef fish and bycatch including endangered sea turtles and monk seals and damages coral reefs; and
- Longline fishing that catches sharks, seabirds, and sea turtles as bycatch.

In addition to specific fishing practices, the sheer magnitude of fishing efforts in the nearshore and pelagic environments threatens the long-term viability and health of many of Hawai'i's fisheries and the associated marine ecosystems. Experience to date shows that fisheries management is hampered by inadequate compliance and enforcement.

Threatened and Endangered Species and Habitats

Of all states in the United States, Hawai'i has the highest number of threatened and endangered species. Endangered and threatened marine species that visit or make a home in Hawai'i's nearshore and beach environments include the Hawaiian monk seal, four sea turtle species (green, hawksbill, leatherback, and loggerhead), and the humpback whale. Twenty-six marine mammals are found in Hawai'i's waters. These species and several specific habitats are protected by state and federal laws. Specific marine-based threats to protected marine species and habitats identified in this Assessment include:

- Ships strikes of marine mammals;
- Bycatch and gear entanglement of monk seals and sea turtles;
- Damage to coral reefs from recreational activities such as snorkeling and diving, especially in areas close to shore;
- Damage to coral reefs from vessel anchors; and
- Invasive species out-competing, smothering, and preying upon native species.

Invasive Species

Invasive species, especially when combined with other disturbances, present a major threat to the health of Hawai'i's coral reefs. Of particular concern for Hawai'i are invasive macroalgae that

smother coral reefs. Nearshore species, such as invasive mangroves, can also alter natural sedimentation and filtration patterns on land, thereby affecting the nearshore marine environment.

Invasive species management is extremely challenging in our globalized world where travel and shipment of goods and people enable the transport of these marine aquatic hitchhikers. The inter-island shipment of people and goods is of particular concern for Hawai'i, both because of the potential to transport marine invasive species as well as the potential for terrestrial invasive species to hop from island to island. Recent battles over the launch of the Hawai'i SuperFerry highlight this concern, among others.

Impacts from Shipping, Cruise Ships, and Recreational Vessels

As a state consisting of islands, shipping and other vessel traffic is an integral part of life in Hawai'i. Commercial ships, including cargo vessels and tankers, bring goods to and from the Hawaiian Islands. Tour boats, dive boats, and other recreational vessels move visitors and residents to important marine sites. Hawai'i is also increasingly a cruise ship destination, with operators moving among the main Hawaiian Islands. Threats from vessels include:

- Ship strikes of marine mammals;
- Intentional and accidental discharges including chemical, oil, gray water, sewage, and garbage releases;
- Dispersal of potentially invasive species; and
- Habitat damage from anchors, propellers, and groundings.

Shipping and vessel movement additionally requires a land-based infrastructure of ports, harbors, marinas, and boat ramps. This infrastructure can damage the marine environment through inadequate facilities to address waste water from vessels and activities to maintain working waterfronts including dredging and land-based construction. A particular challenge for small boat harbors in Hawai'i is the lack of funding to adequately maintain facilities.

Climate Change

Climate change will or already does affect all aspects of marine conservation. While Hawai'i has a small role to play in the mitigation of climate change worldwide, it will have to adapt to the inevitable changes that will affect the marine environment. Predicted climate change impacts that will directly threaten the marine environment include:

- Coral bleaching due to temperature increase and exacerbated by ocean acidification;
- Limited growth or loss of other calcifying organisms due to ocean acidification; and
- Poleward movement of species due to temperature increases.

The marine environment may be altered in new ways as sea level rises and affects the coastal environment. Adapting land-use to sea level rise may lead to increased armoring, and increasing beach replenishment projects. Climate change can also exacerbate other threats to the marine environment. For example, new conditions can make the environment more favorable for invasive species expansion.

Impacts from Tourism

As the mainstay of Hawai'i's economy, tourism is both part of the problem and, potentially, part of the solution. Hawai'i's beaches offer recreational activities such as swimming, surfing, windsurfing, and beach-going to residents and tourists. In 2005, 82.6 percent of all visitors to the state of Hawai'i participated in swimming, sunbathing, and other beach activities, while 23.2 percent went on to surf and/or body board. Snorkeling and diving are two of the most popular tourist activities in Hawai'i. Hawai'i's coral reefs generate \$360 million per year for Hawai'i's economy through reef-related tourism and fishing. According to Hawai'i's Department of Business, Economic Development, and Tourism, uncontrolled use of sensitive reef areas by tourism companies, residents, and commercial operations causes irreversible damage to corals through trampling, contact with divers, and anchor damage.

Because tourism plays a critical role in the economy and depends upon a healthy marine environment for its success, marine conservation strategies will need to work with the industries in this sector to achieve conservation objectives. The impacts from tourism can be felt in every sector, and thus it is a cross-cutting issue that is discussed throughout the Assessment.

Summary of Key Options to Address Threats

The options identified build upon existing programs in Hawai'i that are viewed as successes and that hold promise for expansion. They also incorporate the recommendations of a variety of Hawai'i-based assessments and personal interviews. Finally, the options draw on a number of tools and mechanisms that have been implemented successfully outside of Hawai'i, which could potentially be applied or adapted to achieve Hawai'i's marine conservation objectives.

Expand Ecosystem-Based Management and Co-Management Approaches

Many involved in ocean management—from academics to practitioners—are calling for the implementation of ecosystem-based management as a way to effectively conserve and protect marine resources. This approach fits well with the traditional Native Hawaiian approach to management—namely the *konohiki* system of management based on *ahupua`a* and the larger *moku*. Both systems are place-based and regulate human actions within the context of the ecosystem. Both call for an ecosystem approach that integrates management and decision-making across sectors (e.g., water quality, fisheries, and land-use) to comprehensively manage the ecosystem by accounting for cumulative impacts and making tradeoffs among potentially competing uses and needs.

There are already several existing state management approaches on land and at sea that recognize the importance of cooperative management. In these approaches, cooperative management is both an effective way to manage natural resources and it shifts management toward more traditional approaches. These approaches could be used as models for other regions in Hawai'i and include:

- Subsistence fishery areas that are reserved for and co-managed by Native Hawaiian communities.
- West Hawai'i Fishery Council that brings together conflicting resource users—divers and the aquarium trade industry—to manage resources cooperatively.
- Watershed Partnership Programs that bring together public and private landowners to protect more than 200,000 acres of forested watersheds and are working together collectively under the Hawai'i Association of Watershed Partnerships.

In federal waters, the one of the best existing place-based frameworks is the National Marine Sanctuary Program. The existing Hawaiian Islands Humpback Whale National Marine Sanctuary could be developed in to a more robust area-based management program as is seen with its sister sanctuary in the Florida Keys.

Strengthen Public Participation

Community-based approaches management can increase perceptions of management legitimacy; empower local communities; and allow for the infusion of local knowledge into the regulatory process. In addition to co-management, opportunities for public participation in the development and implementation of marine conservation strategies should be strengthened. Ensuring that a broad variety of stakeholders have access to information regarding specific developments, projects, and legal and regulatory changes that will impact their marine resources is the first step. This entails going beyond publication on department websites and broadening outreach efforts to ensure that harder-to-reach communities are aware of potential impacts through innovative communications efforts. It also entails building on existing community-based mechanisms to ensure active involvement in decision-making and implementation. In particular, efforts should be made to integrate broader opportunities for participation into the ongoing initiatives to expand *ahupua`a* and other existing watershed management efforts as the mechanism for co-management of resources. At the same time,

building on these efforts to ensure much broader multi-stakeholder dialogue, including the private sector and civil society, is critical.

Incorporate Native Hawaiian Culture and Traditions into Decisions and Actions

Beyond the general need for broad stakeholder involvement and public participation, Native Hawaiian culture and traditions play a special role – and these cultures and traditions could enhance conservation and management of the Hawai'i Seascape. Many of the traditions align with marine conservation goals. Even in the absence of this alignment, the rights and traditions of Native Hawaiians are and should be protected and preserved. Therefore, each section of this Assessment identifies ways that existing approaches can incorporate Native Hawaiian concepts into laws, policies, and management decisions.

Expand Industry Support for Conservation and Sustainability

Achieving and maintaining a healthy marine environment in Hawai'i will require support from the private sector. Many of the leading industries in Hawai'i directly depend upon a healthy marine environment for long-term sustainability, including tourism, fisheries, and mariculture. Adopting a collaborative and participatory approach to work with the key industries can be integral to effective management of the Seascape. At the same time, experience in Hawai'i and elsewhere has shown that collaborative approaches alone are not sufficient. Accordingly, regulatory and legal actions such as citizen suits are also necessary to compel compliance.

Increase Compliance and Enforcement

Laws and regulations only work if there is compliance with them. Compliance can be achieved through three major approaches: incentive-based approaches, facilitative approaches, and actions to compel compliance. This Assessment advances the need for facilitative approaches to achieve compliance for three reasons: (1) enforcement is costly; (2) the remote nature of the ocean and the islands limits the ability of the state and federal government to monitor and enforce all activities that affect marine conservation; and (3) compliance depends

upon the perceived legitimacy of the laws and regulations making cooperation, education, and outreach key elements for success.

Minimize Fisheries Impacts

Impacts from commercial and non-commercial fishing are a central challenge. Measures need to address targeted species extraction, bycatch, and habitat damage. Addressing these issues will likely require the implementation of a combination of legal, regulatory, and community-based tools to reduce fishing pressure and minimize bycatch and habitat damage. These include:

- Expansion of community-based management approaches;
- Regulatory changes to more effectively manage non-commercial fisheries including the creation of a recreational fishing license and possible limitations on entry into commercial fishing; and
- Expansion of existing or development of new marine reserves to protect representative species and habitats, to conduct scientific research, and to serve as a baseline for ecosystem health.

Incorporate Climate Change Considerations into Decisions and Actions

Laws, regulations, and policies should be reviewed and amended to specifically address the anticipated effects of climate change. This could include, for example, changing setback ordinances to account for sea level rise or maximizing coral reef resilience by removing or minimizing controllable impacts such as eutrophication and sedimentation.

There are also many opportunities to incorporate climate change considerations under the existing legal and regulatory framework. This includes climate change considerations when:

- Developing plans such as land use plans by counties, coastal management plan under the Office of Planning, and fishery management plans by the Western Pacific Fishery Management Council;
- Conducting environmental assessments and impact statements as required by the National

Environmental Policy Act and the Hawai'i Environmental Policy Act; and

- Making recovery plans and designating critical habitat for endangered and threatened species.

Moving Forward

This Baseline Assessment seeks to inform the development of a Hawaii Seascape Strategy for marine conservation. It provides a broad overview with references to important resources for additional information. The Baseline Assessment is designed to provide background information on the existing legal, policy, and institutional framework, its strengths and weaknesses, and potential options for changing or enhancing that framework to better achieve marine conservation objectives.

Each section of this Assessment includes options for addressing marine conservation threats. Some of the options identified in this Assessment are appropriate for government leaders, while other focus on ways in which civil society and the public might access the legal and policy system to encourage governance solutions to identified threats. Still other options are cooperative approaches that require government agencies to work with communities to solve marine conservation challenges.

The priorities included in the Executive Summary are based on comments from interviewees, the current political environment in Hawai'i, and major gaps identified in the legal and regulatory framework identified through our research. However, a more thorough examination of the specific biological and social challenges and a participatory decision-making process should be used to select marine conservation options. Similarly, scientific analyses and broad participatory processes will be essential in crafting the specific measures to improve management and conservation of Hawai'i's unique Seascape.

I. INTRODUCTION

A. MARINE CONSERVATION IN HAWAII

Hawaii is an ocean state. Stretching for 1,500 miles across the Pacific Ocean, Hawaii is the most remote island chain in the world. Water, of which more than ninety-nine percent is marine, accounts for approximately forty percent of the State of Hawaii's territory. Historically and today, Hawaii's residents depend upon the ocean for food, recreation, and livelihoods. Perceptions of a pristine marine environment bring visitors to Hawaii by the millions.

Hawaii is home to more than 10,000 endemic terrestrial and marine species found nowhere else on earth. There are an estimated 6,500 indigenous marine species of which fifteen to twenty percent are endemic.² The islands have formed over the last seventy million years by volcanic activity. As is characteristic of volcanic islands, the Hawaiian Islands have high terrestrial peaks, and the marine benthos rapidly drops off resulting in deep pelagic environments within the state's three mile territorial seas. The marine environment includes rocky intertidal, estuarine, sandy bottom, coral reef, and pelagic habitats.

Human-caused environmental changes have permanently altered Hawaii's environment and biodiversity. Seventy-five percent of all recorded animal and plant extinctions in the U.S. have

occurred in Hawaii.³ The Hawaii's *Comprehensive Wildlife Conservation Strategy* identifies twenty-six marine mammals, six marine reptiles, 154 marine fishes, 197 marine invertebrates, and seventy-nine marine plants or algae as being Species of Greatest Conservation Need.⁴ Continued pressure from human development and activity threatens the future of many unique Hawaii's species and habitats. More than 1.2 million people reside in Hawaii, and there are approximately 170,000 additional tourists on the islands every day. The population is expected to grow by approximately one percent per year over the next thirty years to reach 1.6 million in the mid-2030s—with visitors it will reach 1.8 million.⁵

Major threats to the marine environment include: overfishing and bycatch; development; recreational impacts; invasive species; pollutants including oil, nutrients, light, noise, and debris; aquaculture; ship strikes and groundings; lack of enforcement; and lack of adequate funding.⁶

While this Assessment focuses on the State of Hawaii as a whole, the authors recognize that each island is a culturally and environmentally unique place. The authors strive to identify island-specific activities, obstacles to and opportunities and options for marine conservation where appropriate. The following paragraphs highlight some of the key approaches and challenges to marine conservation on each of the Hawaiian Islands.

² STATE OF HAWAII DEP'T OF LAND AND NATURAL RES., DIV. OF AQUATIC RES. & DIV. OF FORESTRY AND WILDLIFE, HAWAII'S COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY 3-13, 5-1 (2005), <http://www.state.hi.us/dlnr/dofaw/cwcs/files/NAAT%20final%20CWCS/Preface/prefacecombo.pdf> [hereinafter CONSERVATION STRATEGY]

³ *Id.* at 3-13.

⁴ *Id.*

⁵ STATE OF HAWAII DEP'T OF BUS., ECON. DEV. & TOURISM, RESEARCH AND ECONOMIC ANALYSIS DIV., POPULATION AND ECONOMIC PROJECTIONS FOR THE STATE OF HAWAII TO 2030 (2004) [hereinafter POPULATION AND ECONOMIC PROJECTIONS].

⁶ CONSERVATION STRATEGY, *supra* note 2, at 5-1.

Hawai'i (Big Island).⁷ The Big Island is home to more than 170,000 residents.⁸ It is the youngest and largest of state's islands. Increasingly, it is a key destination for tourists, and according to the U.S. Census Bureau it was one of the top 100 fastest growing counties in the nation from 2005-2006 with a 4.4% increase in housing units. With a growing population comes growing impacts to Hawai'i's marine environment from land-based sources as well as ocean activities. Conservation actions here should consider this growth, and planners and other actors should be proactive in addressing ensuing pressures.

The Big Island offers model management approaches that could be applied elsewhere. The West Hawai'i Fishery Council (WHFC) is a unique grassroots organization that brings together stakeholders including divers, fishermen, aquarium collectors, and other ocean constituents to advise the DLNR on the management of West Hawai'i's marine environment. This Council helps to manage a series of Fisheries Restoration Areas (FRAs) along the west coast of the Big Island. Another community-based management approach is found in Miloli'i. Miloli'i is designated as a community-based subsistence fishing area, allowing the Native Hawaiian community to co-manage the nearshore fishery.⁹

Kaua'i. As of 2000, Kaua'i had a resident population of approximately 58,000.¹⁰ It is the oldest of the main Hawaiian Islands. With approximately 444 inches of rain annually, it is one of the wettest places in the world.¹¹ With a population increase of 7.8% from 2000-2006¹² and an expanding tourism sector, Kaua'i is must also addressed increasing pressure on limited resources. Kaua'i's nearby islands are important

sites for nesting seabirds.¹³ Monk seals are also known to be found on and around Kaua'i.¹⁴

Several programs work to protect Kaua'i's terrestrial, watershed, and marine environments. The Kaua'i Watershed Alliance, a public-private partnership, works to protect 142,000 acres of watershed. Several organizations are working together to develop a seabird habitat conservation plan for the island.¹⁵ Under state law, the community of Ha'ena has been authorized to establish community-based subsistence fishing area to be co-managed by the inhabitants of the *ahupua`a*.¹⁶

Kaho'olawe. From 1941-1993, Kaho'olawe was controlled by the U.S. Navy and used intermittently for bombing practice. It was turned over to the State of Hawai'i in 1993 and is now managed by the Kaho'olawe Island Reserve Commission (KIRC). According to HRS § 6K-3, the island is a protected reserve including a two-mile wide ocean area where limited fishing is allowed. The island has occasional visitors but is otherwise uninhabited. Protect Kaho'olawe 'Ohana is a grassroots organization working to restore the cultural and natural resources on Kaho'olawe.

Lana'i. Lana'i is the third smallest of the main Hawaiian Islands and has a resident population of approximately 3,200 people. It is part of the County of Maui. The island itself has extensive erosion problems from overgrazing by cattle, goats and deer.¹⁷ It has five offshore islands, four of which are seabird sanctuaries.¹⁸ The Lana'i Watershed Partnership is working to protect the watershed by fencing and removal of ungulates and reforestation.¹⁹ Lana'i is home to one of the Marine Life Conservation Districts (MLCDs)—the Hulopo'o-Manele MLCD. On land, the Lana'i Forest and Watershed Partnership protects approximately 20,000 acres of forested watershed.

⁷ To distinguish the island of Hawai'i from the State of Hawai'i, the island is referred to in this Assessment as the "Big Island").

⁸ STATE OF HAWAII DEP'T OF BUS., ECON.DEV. & TOURISM, RESEARCH AND ECONOMIC ANALYSIS DIV, STATE OF HAWAII DATA BOOK (2006) [hereinafter DATA BOOK]

⁹ HAW. REV. STAT. § 188-22.7 (2005).

¹⁰ DATA BOOK, *supra* note 8 at Table 1.05.

¹¹ CONSERVATION STRATEGY, *supra* note 2 at 6-1

¹² U.S. CENSUS BUREAU, KAUAI COUNTY, HAWAII: QUICK FACTS, <http://quickfacts.census.gov/qfd/states/15/15007.html>.

¹³ CONSERVATION STRATEGY, *supra* note 2 at 6-1.

¹⁴ *Id.*

¹⁵ *Id.* at 6-6.

¹⁶ HAW. REV. STAT. § 188-22.9.

¹⁷ *Id.* at 6-43.

¹⁸ *Id.*

¹⁹ *Id.* at 6-47.

Maui. Maui is the second largest of the Hawaiian Islands and has a resident population of more than 117,000 people. Because tourism is an important and growing industry here, conservation actions should consider the obstacles and opportunities that come with this industry. Three watershed partnerships work to preserve forested watersheds. The Kealia National Wildlife Refuge protects birds and sea turtles. Eight offshore islands are seabird sanctuaries. Maui has two MLCDs—Honolua-Mokule'ia Bay, and Molokini Shoal. Fishing is not permitted in the Honolua-Mokule'ia Bay. Molokini Shoal is a cove within Molokini islet—an offshore seabird sanctuary that prohibits entry.

Ni'ihau. Ni'ihau is a small privately-owned island that is used primarily for cattle and sheep ranching, hunting, and some military exercises. It has a resident population of 160.²⁰ Hawaiian monk seal adults and pups have been spotted increasingly on the beaches of Ni'ihau. It is thought to have some of the best coastal habitat in the state, but information is limited due to the private nature of the island.²¹ While the island is privately owned, the beaches and waters surrounding Ni'ihau are public, and tourism activities including snorkel tours are beginning to target these waters.

Moloka'i. Moloka'i is the fifth largest of the Hawaiian Islands with a population of approximately 7,400.²² It is a part of Maui County with the exception of a small area known as Kalaupapa that is a former leper colony that is designated as a separate county, Kalawao County. Forty-five percent of Moloka'i's residents are Native Hawaiian,²³ and the communities strive to retain their Native Hawaiian values and traditions. Conservation efforts on Moloka'i especially should strive to incorporate historic values and traditions. The Moloka'i Enterprise Community is a U.S. Department of Agriculture (USDA)-funded community-based program that is implementing a 10-year strategic plan that includes restoration of

fishponds, development of a land trust, waste management and watershed protection, in addition to economic and social service activities.²⁴

O'ahu. As of 2006, O'ahu had over 900,000 residents, of which 380,000 reside in Honolulu.²⁵ The state government is based on O'ahu as are many community-based and environmental organizations. This often leads to a "Honolulu-centric" focus. O'ahu is the main destination for tourists, although tourism growth on Maui, the Big Island, and Kaua'i exceeds growth on O'ahu.²⁶ Because of its large resident and visitor population, O'ahu's marine environment faces some of the biggest challenges for conservation. O'ahu has three of the state's MLCDs, including the first and most popular with 3,000 visitors per day, Hanauma Bay.

B. APPROACH AND REPORT STRUCTURE

The Environmental Law Institute (ELI), in partnership with Conservation International, developed the following law, policy and institutional assessment. ELI used existing ocean-related laws, regulations, policies, and plans as well as interviews with resource managers, fishermen, ocean industry representatives, academics, and non-governmental organizations to understand the major environmental challenges facing Hawai'i's ocean and coastal areas, as well as to identify the legal, policy and institutional obstacles to and opportunities for effective marine conservation in Hawai'i. The Assessment is divided into Legal, Policy, and Institutional Frameworks (Part II), Administrative, Institutional and Procedural Considerations (Part III), Land-Based Activities (Part IV), Marine Environment (Part V), and Options, Obstacles, and Opportunities (Part VI).

²⁰ *Id.* at Table 1.05 (data from 2000).

²¹ *Id.* at 6-14.

²² DATA BOOK, *supra* note 8

²³ *See, e.g.*, HAWAI'I STATEWIDE RURAL DEV. PROJECT: MOLOKA'I RURAL DEV. PROJECT, <http://huinet.hawaiiirdp.org/molokai/>.

²⁴ MOLOKA'I ENTERPRISE COMMUNITY, <http://www.molokaieec.org/home.html>.

²⁵ U.S. CENSUS BUREAU, STATE AND COUNTY QUICKFACTS, <http://quickfacts.census.gov>.

²⁶ HAWAI'I TOURISM AUTH., NATURAL RESOURCES ASSESSMENT: VOLUME 1 at 5 (2003) [hereinafter NRA: VOL. 1].

Part II, Legal, Policy, and Institutional Frameworks describes overarching considerations including the federal and state governance structure, Hawai`i's communities, and non-governmental organization (NGO) participation in marine conservation.

Part III, Administrative, Institutional, and Procedural Considerations, covers cross-cutting issues including funding, compliance and enforcement, and public participation. This section pulls together information across sectors, which may also be described in subsequent sections of the report.

Part IV, Land-Based Activities, recognizes the interconnectedness of Hawai`i's land and freshwater systems to the ocean environment and includes activities that impact the marine environment. There is no point of land in Hawai`i that is farther than 30 miles from the ocean. The linkages between land-use, freshwater quality, air quality and marine health are thus clearly evident throughout the islands. The Hawai`i coastal zone management laws target integrated natural resource management as an essential component of sustainable marine conservation by incorporating all lands of Hawai`i into the legislative definition of Hawai`i's "coastal zone."²⁷

Part V, Marine Environment, covers more traditional marine conservation issues such as fisheries management, protected species, habitat protection, shipping and ports. It considers management in state waters out to three miles and federal waters from three to two-hundred miles offshore. Within this section is a brief discussion of the potential impacts of climate change and mitigation and adaptation strategies. Climate change is a cross-cutting issue that could fit equally well in the land-based activities section.

Part VI, Summary of Options, provides a summary of the potential legal and policy options to enhance marine conservation in Hawai`i that are described in further detail in the body of the Assessment.

²⁷ Haw. Rev. Stat. § 205A-1 (2005).

II. LEGAL, POLICY, AND INSTITUTIONAL FRAMEWORKS

A. BACKGROUND

This Assessment takes a broad approach in its analysis of governance and considers bottom-up, community-based activities as vital components of effective governance in addition to the common model of top-down governance. Hawai'i is rich with not only marine biodiversity, but also a unique cultural heritage that must inform the management of its natural resource. Hawai'i's government must properly recognize the rights and traditional approaches of Native Hawaiians and other residents, while at the same time manage resources according to U.S. federal and state requirements. In considering potential legal and policy approaches to marine conservation, this Assessment targets bottom-up approaches and participatory governance that stress transparency and cooperation for marine management in Hawai'i.

This Assessment focuses on the role that federal and state government play in conserving the marine environment in Hawai'i. Where relevant, international laws and institutions are briefly considered. This Assessment also highlights the non-government organizations (NGOs) that engage with the federal and state government through community-based management, advocacy, litigation, and other forms of public participation.

B. GOVERNMENT

Hawai'i's marine and coastal environment is governed by local, state, federal and international laws, regulations, and policies. The state is also divided into four counties that each have governing authority over land-use decisions that may affect the marine environment (a fifth county,

Kalawao, lacks a county government). Hawai'i County includes the Big Island; Honolulu County includes O'ahu; Kaua'i County includes the island of Kaua'i; and Maui County includes the islands of Kaho'olawe, Lana'i, Maui, and Moloka'i. The State of Hawai'i has governing authority over the terrestrial and ocean environment on each island out to three miles from the shoreline. The federal government has jurisdiction in the terrestrial and ocean environment that comprises state waters, as well as primary authority in the areas beyond the three-mile limit out to 200 miles.

FEDERAL GOVERNMENT

Laws

The federal government manages the marine environment through national laws that relate to the environment generally and the marine environment specifically; and sector-based laws that regulate ocean and coastal users. Also, procedural laws and specific provisions within environmental laws are important for determining public participation as well as indicating how laws and regulations are enforced (Table 1).

Table 1. Federal Statutory and Regulatory Framework	
Types of Laws and Regulations	Examples
General environmental laws	National Environmental Policy Act, Endangered Species Act , Oil Pollution Act, Comprehensive Environmental Response, Compensation and Liability Act
Marine conservation and management laws	Coastal Zone Management Act, National Marine Sanctuaries Act, Ocean Dumping Act, Magnuson-Stevens Fishery Conservation and Management Act, Clean Water Act (marine waters)

	provisions), Coral Reef Conservation Act of 2000
Laws affecting marine conservation	Clean Water Act, Clean Air Act, Rivers and Harbors Act
Procedural laws	Administrative Procedure Act, public participation provisions (e.g., notice and comment and citizen suit provisions)

Federal laws authorize federal agencies to regulate the marine environment and activities that affect the marine environment, as well as create programs that are jointly implemented by federal and state agencies. Also, many federal programs provide financial support to states to implement provisions of federal environmental laws.

Institutions: Judiciary

The Hawai'i District Court is the state's federal trial court, hearing both civil and criminal federal cases that mainly relate to the federal constitution and federal statutes. Cases decided by the district court may be appealed to the Ninth Circuit Court of Appeals and ultimately the U.S. Supreme Court. Cases involving endangered species, marine mammals, and federal fisheries are tried in federal court. For example, Earthjustice is suing the National Marine Fisheries Service (NMFS) and the Navy to halt planned sonar activities that would take place in and near the HIHWNMS and the Papahānaumokuākea Marine National Monument.²⁸

Institutions: Agencies

The National Oceanic and Atmospheric Administration (NOAA) is the main agency that addresses marine management and conservation. Sub-agencies include the NMFS (or NOAA-Fisheries) and the National Ocean Service (including the Sea Grant Program, National Marine Sanctuaries Program, Coastal Services Center, the Office of Ocean and Coastal Resource Management, and the Office of Response and Restoration). The Environmental Protection Agency (EPA) has management authority over aquatic ecosystems including oceans, coasts and estuaries and in particular is responsible for

regulating water quality under the Federal Water Pollution Control Act (Clean Water Act or CWA). Other important federal agencies include the U.S. Army Corps of Engineers (USACE), the U.S. Coast Guard (USCG), the Department of Transportation (DOT), Department of Interior's (DOI's) Minerals Management Service (MMS), DOI's National Park Service (NPS), and DOI's Fish and Wildlife Service (USFWS).

STATE GOVERNMENT

Laws: Constitution

Hawai'i's State Constitution provides a framework for conservation and preservation of the marine environment, as well as protection of Hawai'i's diverse population, including Native Hawaiians. Under Article IX, Section 8, the State Constitution states that "The State shall have the power to promote and maintain a healthful environment, including the preservation of any excessive demands upon the environment and the State's resources." Article XI, Section 1 calls on Hawai'i to conserve and protect natural resources and states that natural resources are held in trust for the benefit of the people. Article XI, Section 9 recognizes that all people have the "right to a clean and healthful environment." The State Constitution specifically addresses marine resources. Article XI, Section 6 states in full that:

The State shall have the power to manage and control the marine, seabed and other resources located within the boundaries of the State, including the archipelagic waters of the State, and reserves to itself all such rights outside state boundaries not specifically limited by federal or international law

All fisheries in the sea waters of the State not included in any fish pond, artificial enclosure or state-licensed mariculture operation shall be free to the public, subject to vested rights and the right of the State to regulate the same; provided that mariculture operations shall be established under guidelines enacted by the legislature, which shall protect the public's use and enjoyment of the reefs. The State may condemn such vested rights for public use.

²⁸ EARTHJUSTICE, OUR WORK, *Cases: Navy Sonar Tests in Hawaiian Waters*, http://www.earthjustice.org/our_work/cases/2007/page.jsp?itemID=30326478.

In addition to explicitly recognizing conservation objectives, the State Constitution recognizes the importance of protecting the diverse heritages of its population. Article IX, Section 9 grants the State of Hawai'i "the power to preserve and develop cultural, creative and traditional arts of its various ethnic groups." The State Constitution further protects Native Hawaiian rights and traditions in Article XII. Article XII, Section 5 establishes an Office of Hawaiian Affairs, which holds real and personal property in trust for Native Hawaiians and Hawaiians. Article XII, Section 7 protects traditional and customary rights: "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."

In 2008 voters will have the opportunity to vote on whether to endorse a constitutional convention, which would allow Hawai'i to make changes to the State Constitution. In a plea to voters to encourage endorsement, Lieutenant Governor James "Duke" Aiona stated the need to address natural resource protection among other things.²⁹ If approved, the convention will be held in 2010. This could provide Hawaii the opportunity to strengthen the Constitution's language to ensure long-term sustainability of marine resources.

Laws: Statutes and Regulations

The legal system created by state statutes and regulations can target environmental protection generally; directly target management and protection of the marine environment directly; indirectly affect the ability to manage and protect the marine environment when addressing both land-based and ocean-based human uses; and use procedural laws to affect how decisions are made and laws enforced (Table 2).

Types of Laws and Regulations	Examples
General environmental laws and regulations	Hawai'i Environmental Policy Act, Hawai'i Endangered Species Law, Environmental Response Law
Marine conservation and management laws and regulations	Coastal Zone Management, Marine Life Conservation Districts, Designation of Community Based Subsistence Fishing Area, fishing regulations related to size, gear, licenses, permits and practices, State Water Code related to marine waters
Laws affecting marine conservation	Cruise ship discharge laws, commercial harbors law, land-use laws and ordinances, State Water Code related to freshwater
Procedural laws and regulations	Enforcement provisions, public participation provisions (e.g., notice and comment requirements)

Institutions: Legislature

Hawai'i's legislature meets for sixty days of the year. According to Article III, Section 10 of the Hawai'i State Constitution, the state legislature convenes its regular session at 10:00 am on the third Wednesday in January and meets for sixty working days. Special sessions are limited to thirty days, and no session may be extended for more than fifteen days. Hawai'i citizens cannot introduce legislation by initiative or referendum. However, Hawai'i legislators can introduce bills "by request"—a process by which citizens, lobbyists, and government entities submit a bill to a state legislator who in turn introduces the bill. This practice leads to a large number of bills being introduced each year. For example, in 2007 Senate President Colleen Hanabusa introduced 423 bills of which 412 were introduced "by request."³⁰ While this practice provides Hawai'i

²⁹ Advertiser Staff, *Hawaii to Vote on Holding a Constitutional Convention*, HONOLULU ADVERTISER (Dec. 11, 2007), <http://the.honoluluadvertiser.com/article/2007/Dec/11/br/br8490352761.html>.

³⁰ Colleen Hanabusa, *'By Request' Bills are an Important Part of Legislative Process*, HONOLULU STAR BULLETIN (Feb. 11, 2007), <http://starbulletin.com/2007/02/11/editorial/commentary2.html>.

citizens with direct access to the legislature, some have commented that the short legislative session and the large number of bills introduced creates an overloaded agenda and can result in legislative inaction. Interviewees identified the need to educate legislators on marine conservation, so that legislators can make informed decisions regarding the bills that are introduced.

In 2007, bills that relate to marine management and conservation include the following:

- HB 702/SB 1276: Requiring an environmental impact statement for the harbor improvements needed to support the Hawai'i SuperFerry;
- HB 736 Relating to Ocean Recreation and Coastal Areas Programs: Transferring small boat harbors and other programs from the DLNR back to the Hawai'i Department of Transportation (HDOT);
- HB 1037 Relating to Coastal Zone Management: Requiring agencies to consider sea-level rise and minimize related risks including establishing shoreline setbacks forty feet or greater from the shoreline;
- HB 1388/SB 1474 Relating to the Hawai'i Ocean and Coastal Council: Providing authority to continue the council;
- HB 1499 Relating to Ocean Resources: Authorizing administrative inspection of aquatic life collection bags, containers, vehicles or other conveyances;
- HB 1578 Relating to Ocean Resources: Requiring the DLNR to consult with Native Hawaiians when adopting fishery regulations;
- HB 1615 Relating to the Development of a Shellfish Aquaculture Industry: Appropriates funds for a feasibility study;
- HB 1616 Relating to Aquaculture: Appropriating funds for a feasibility study for the establishment of an aquaculture quarantine facility;
- HB 1674 Relating to Ocean Recreation: Requiring the DLNR to conduct an environmental baseline study of the impacts of commercial and non-commercial recreational activities on West

Hawai'i, and imposing a moratorium on small boat harbor permits in West Hawai'i;

- HB 1788 Relating to Aquatic Resources: Establishing the Hawai'i Aquatic Stewardship Act;
- SB 151 Relating to Bioprospecting: Creating a temporary advisory commission to address bioprospecting;
- HB 1848 Relating to Aquatic Resources: Providing grants for community-based resource management and establishing a community-based management advisory committee to advise the DLNR;
- SB 1001/HB 1115 Making an Appropriation for a Marine Algae Pilot Project: Funding research at the University of Hawai'i (UH);
- SB 1093/HB 1581 Relating to Ocean Health Consensus (funding an ocean health consensus project at the UH);
- SB 1914 Relating to Creation of an Ocean Board and Ocean Zoning Master Plan: Creating a board and plan that incorporates ideas from the traditional *ahupua`a* system and the Ocean Resources Management Plan (ORMP); and
- SB 6 Relating to Opihi: Prohibiting the sale of opihi except in certain circumstances.

In addition to bills, the Hawai'i legislature may issue either single-house or concurrent resolutions. Resolutions do not have the force of law but may request that either federal or state agencies take certain actions. For example, in 2007, the legislature issued HCR 58 "Requesting All Branches of the United States Government to Prohibit Dumping of Vessel Sewage in Federal Waters in the Vicinity of the Hawaiian Islands Humpback Whale National Marine Sanctuary." Also, leasing of submerged lands in Hawai'i requires a concurrent resolution.³¹ In 2007, Senate Concurrent Resolution 24 authorized an easement covering submerged lands at Lahaina, Maui as a dive site for commercial submarine tours.

³¹ HAW. REV. STAT. § 171-53 (2007).

Institutions: Judiciary

The judiciary has an important role to play in determining how laws that affect the marine environment are interpreted. For example, a recent ruling by the Hawai'i Supreme Court requires the HDOT to consider environmental impacts of permitting and making port upgrades for an inter-island Super Ferry that would transport people, cars, trucks and goods.³² In 2006, the Hawai'i Supreme Court reaffirmed that the shoreline marking the boundary between the public beach and private property is determined by the highest wash of the waves and not an artificial vegetation line. Usually determined by the vegetation lines, private property owners sought to extend their private property by planting and propagating vegetation below the high water mark.³³

Since judges are important decision-makers, some interviewees recommend environmental education for the judiciary to give judges a better understanding of key issues and regulations when making decisions that affect the marine environment. Also, some interviewees recommend the creation of an environmental court that would enable judges to gain expertise and focus specifically on complex environmental cases.

Institutions: Agencies

State agencies are tasked with implementing state and in some cases federal laws through the development of regulations, policies and practices. State agencies often serve multiple roles including developing laws and policies; engaging with the community through outreach and education; enforcing laws and regulations; responding to environmental injuries; restoring species and habitats; and actively managing resources or industries. Table 3 provides a list of the state agencies responsible for managing natural resources and those whose actions affect marine natural resources.

³² Sierra Club v. Hawai'i Dep't of Transp., 167 P.3d 292 (Haw. 2007) OR 2007 WL 2428467 (Haw. 2007).

³³ Diamond v. State of Hawai'i, 145 P.3d 704 (Haw. 2006), http://www.earthjustice.org/library/legal_docs/hawaii-public-beach-decision.pdf.

Table 3. State Agencies

Department of Land and Natural Resources
Office of Conservation and Coastal Lands
Division of Aquatic Resources
Board of Land and Natural Resources
Division of Forestry and Wildlife
Division of Boating and Ocean Recreation
Division of Conservation and Resource Enforcement
Division of Forestry and Wildlife
Department of Health
Clean Water Branch
Department of Business, Economic Development and Tourism
Land Use Commission
Department of Agriculture
Hawaii Tourism Authority
Department of Transportation
Harbors Division
Office of Planning
Coastal Zone Management Program
Marine and Coastal Advisory Committee

Several ocean management plans exist for the management of Hawai'i's ocean resources and activities, in both in state and federal waters. These management plans have helped to inform the development of this Assessment (Table 4) and should be considered in further detail when implementing marine conservation objectives in Hawai'i

Table 4. Management Plans and Assessments Related to Hawai'i's Marine Environment

Plan	Lead Agency
Ocean Resources Management Plan	Coastal Zone Program
Coastal Erosion Management Plan	Office of Conservation and Coastal Lands, DLNR
Hawai'i 2050 Sustainability Task Force Report	Hawai'i Sustainability Task Force
Hawai'i's Natural Resources Assessment Report	Hawai'i Tourism Authority (HTA)
Planning for Sustainable Tourism	DBEDT
Hawai'i Tourism Strategic Plan: 2005-2015	HTA
2004 Sustainable Tourism in Hawai'i Study	HTA
Ke Kuma Plans (1999, 2002)	
County Tourism Strategic Plans	HTA

Table 4. Management Plans and Assessments Related to Hawai'i's Marine Environment	
2006-2015 (Hawai'i, Kaua'i, Maui, O'ahu)	
County Plans supported by sustainable community plans: Hawai'i County General Plan Kaua'i County General Plan Maui County General Plan 2030 Sustainability Plans for Kihei-Makena, Hana, Paia-Haiku, West Maui, Wailuku-Kahului, Lana'i, Makawao-Pukalani-Kula, Moloka'i, and Kaho'olawe O'ahu General Plan Sustainable Community Plans for Central O'ahu, East Honolulu, Ewa, Koolaupoko, Koolauloa, North Shore, Primary Urban Center, and Waianae	County Council of Kaua'i, Planning Department County of Maui, Department of Planning City and County Honolulu, Department of Planning and Permitting
Hawaii's Implementation Plan for Polluted Runoff Control	Department of Health and DBEDT
Molokai Enterprise Community Visioning Plan	USDA
Focus Maui Nui Strategic Plan	County of Maui
Aquatic Invasive Species Management Plan	DLNR et al
Lack of Public Awareness Local Action Strategy	DLNR et al
Land-Based Sources of Pollution Local Action Strategy	DLNR et al
Hawaii Comprehensive Wildlife Conservation Strategy	DLNR et al
Marine Managed Areas Framework	DAR
Coral Reef Fisheries Local Action Strategy	DLNR et al
Climate Change and Marine Disease Local Action Strategy	DLNR et al
Recreational Impacts to Reefs Local Action Strategy	DLNR et al
DOCARE Strategic Plan	DOCARE

Advisory bodies, including the Hawai'i Ocean and Coastal Council, the Marine and Coastal Zone Advocacy Council, and the six Local Action Strategy Steering Committees, provide linkages among state agencies, federal agencies and stakeholders.

Interviewees identified several agency challenges for effective conservation of the marine environment including: conflict of interest among agencies; fragmented governance (horizontal and vertical); Honolulu-centric actions; lack of data to inform decisions; and financial challenges. A 2003 assessment of Hawai'i's natural resources found that not only do agencies fail to communicate about issues at specific sites, but in some instances existing plans within a single agency are contradictory.³⁴ Many of these challenges are similar to those identified at the national level by the U.S. Commission on Ocean Policy and the Pew Oceans Commission in their respective reports.³⁵

C. COMMUNITIES AND NON-GOVERNMENTAL ORGANIZATIONS

Hawai'i has a diverse population including Native Hawaiians, established immigrant populations from the mainland of the U.S. and Japan, newer immigrant populations from nations including Micronesia, the Marshall Islands, Samoa and Vietnam, and a recent surge in immigration of wealthy U.S. citizens establishing vacation residents on Hawai'i's islands. According to the U.S. Census Bureau, nine percent of Hawai'i's population is Native Hawaiian or Other Pacific Islander, 41.5% is Asian, twenty-seven percent is white, 2.3 % is black, 0.3 % is American Indian or Native Alaskan, and eight percent is of Hispanic

³⁴ NRA: VOL. 1, *supra* note 26 at 24.

³⁵ PEW OCEANS COMM'N, AMERICA'S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE (2003) [hereinafter LIVING OCEANS]; U.S. COMM'N ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY (2004) [hereinafter OCEAN BLUEPRINT].

or Latino origin.³⁶ In 2006, the population was estimated to be 1,285,498, with approximately 200 people per square mile. It is projected that by 2030, the population will reach over 1.4 million people, and based on a land mass of 6,422.62 square miles, more than 228 people per square mile. With more than 900,000 inhabitants (and 1,460 per square mile), the greatest percentage of people reside in Honolulu County (i.e., the Island of O'ahu). The city of Honolulu houses greater than one-third of that population with more than 380,000 people residing within the city.

Community approaches to management of marine resources must consider these diverse populations and their use of the marine environment. Of special importance to Hawai'i are Native Hawaiian rights and traditions and the communication of these rights and traditions through story, legend and hula. After years of top-down management, there has been a recent upsurge in efforts to incorporate traditional approaches into the management of Hawai'i's natural resources, including the *ahupua`a* styles of resource management.³⁷

State and federal agencies involve communities in resource management in a variety of ways including:

- Providing public notice to and taking comments from the public on proposed resource plans and regulations;
- Inclusion of stakeholders in planning processes;
- Inclusion of stakeholders on planning and advisory committees and boards; and
- Co-managing resources including marine resources.

Several government-supported community-based approaches are described in this Assessment (Table 5).

Table 5. Examples of Community-Based Management Approaches

Subsistence Fishing Communities: Ha`ena and Miloli`i West Hawai`i Fish Council Project Loko I`a (restoration and reuse of traditional Hawaiian fishpond) Moloka`i Enterprise Community Malama-Kai Community Based Coral Monitoring Project (completed 2003) Malama-Kai Hawai`i Day-Use Mooring Buoy System Watershed Partnerships Hui Malama O Mo`omomi Mauka Makai Watch
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While there is great need to involve communities in resource management through government-led initiatives or independent approaches, community-based management in Hawai'i faces several challenges. Because of the diverse nature of communities and individual needs, it may be challenging to obtain community support for conservation efforts. Also, funding is often a challenge for community-based approaches, especially those that are bottom-up and lack long-term programmatic state or federal funding.

NGOs, including environmental organizations, citizen's groups and industry or trade organizations provide a platform for Hawai'i's citizens to speak with a common voice. Often NGOs provide linkages between communities and government.

Challenges exist for environmental NGOs in Hawai'i. In comparison to the vastness and value of the marine environment, the marine NGO community is a small one with relatively little money to implement goals. Often environmental (and other) NGOs are based in Honolulu and are considered to be Honolulu-centric in their focus. Finally, some consider the marine conservation NGO community to be fragmented and in need of a common vision for marine conservation. One way this fragmentation may be reduced is through the annual Hawai'i Conservation Conference hosted by the Hawai'i Conservation Alliance.

A variety of industry and trade organizations represent members that play a direct role in the utilization of marine resources, as well as engage in activities that may harm the marine

³⁶ U.S. Census Bureau, Hawaii QuickFacts, <http://quickfacts.census.gov/qfd/states/15000.html>.
³⁷ See, e.g., Office of Hawaiian Affairs, Community Conversations (2004). See also, R.E. Johannes, *The Renaissance of Community-Based Marine Resource Management in Oceania*, 33 ANNU. REV. ECOL. SYST. 317 (2002).

environment. Important industries, both in terms of economy and marine impacts include tourism (with visitor expenditures of \$12.5 billion in 2006), construction (a \$2.7 billion industry), and federal government contracts (worth \$692 million in 2006).³⁸ It is important to point out that the federal government is expected to invest \$2.3 billion in military housing over the next decade, so marine conservation efforts in Hawai'i may seek to work with the federal government to ensure that these developments reduce marine impacts to the extent practicable. When considering marine conservation, construction and tourism industries exist in part because of the perceptions of a healthy marine environment. Some of these industry actors take steps to work with the conservation community to achieve common objectives. Others have not traditionally taken part in conservation approaches but future efforts could include these non-traditional actors.

³⁸ STATE OF HAWAI'I DEP'T OF BUS., ECON.DEV. & TOURISM, RESEARCH AND ECONOMIC ANALYSIS DIV., ANNUAL REPORT: EXECUTIVE SUMMARY (2006).

III. ADMINISTRATIVE, INSTITUTIONAL, & PROCEDURAL CONSIDERATIONS

A. INTEGRATED MANAGEMENT

The U.S. Commission on Ocean Policy and the Pew Oceans Commission identified fragmented laws and institutions and lack of coordination as major challenges to effective ocean governance in the U.S. Hawai'i is no exception to this finding. For example, a recent tourism and natural resources assessment for Hawai'i found a lack of coordination among agencies working at the same sites and even contradictory plans within a single agency.³⁹

Lack of institutional coordination can lead to conflicting ocean uses. An example relates to submerged land leases for marine aquaculture.⁴⁰ Those wishing to develop commercial aquaculture facilities in state waters must obtain appropriate permits from the USACE, a Conservation District Use Permit (CDUP) from DLNR, and ultimately a lease from DLNR after appropriate environmental assessment. Black Pearls Inc. took these steps to obtain a lease of a seventy-five acre site off of Honolulu International Airport, which it did successfully. However, the site is currently designated as a "Thrillcraft Area" under DOBOR. Before the lease is granted, the regulations must be altered to change this designation.

Integrated management approaches seek to reduce fragmentation, user conflict, and lack of coordination. This can take a variety of forms. Decision-makers from disparate sectors can come

³⁹ NRA: VOL. 1, *supra* note 26 at 24.

⁴⁰ STATE OF HAWAII, DEP'T OF LAND AND NATURAL RES. AND DEP'T OF AGRIC., FOURTH REPORT TO THE LEGISLATURE, STATE OF HAWAII, 3002 REGULAR SESSION: IMPLEMENTATION OF CHAPTER 190D, HAWAII REVISED STATUTES, OCEAN AND SUBMERGED LANDS LEASING 18-19 (Dec. 2002).

together to form common plans for marine use and conservation. Specific areas can be designated for use and a lead agency can oversee activities. Often integrated management strives for significant public participation and transparency, because the decisions have potentially wide-ranging impacts on one or more marine sectors. Some of the existing efforts to coordinate institutions for marine management in Hawai'i are described below.

LAWS AND INSTITUTIONS

REGIONAL COUNCILS AND BODIES

Several councils and advisory bodies in Hawai'i participate in the management of ocean and coastal resources. A few councils and advisory bodies have the authority to make regulatory decisions in the management of specific resources. These include, for example:

- *County Councils* are elected officials with the authority to regulate non-conservation land-use through zoning rules and ordinances. While the Councils have no authority over submerged lands or oceanic resources, their decisions have enormous implications for land-based impacts on the marine environment.
- *Western Pacific Fishery Management Council (Wespac)*, established according to the Magnuson Stevens Fishery Conservation and Management Act (MSA) are appointed members with authority to develop fishery management plans with oversight by the NMFS.
- *Board of Land and Natural Resources (BLNR)* includes seven members, one

from each land district and three at large. BLNR heads the Department of Land and Natural Resources and has the authority to adopt rules that have the force of law, set and collect administrative fines, and make land lease and CDUA decisions related to the use of public lands, among other responsibilities.

Regional councils tasked with integrated management often lack specific regulatory authority. Instead such councils and advisory bodies have planning authority or act in an advisory capacity to those regulating the resource. These include the following:

- *West Hawai'i Fishery Council (WHFC)* is a community-based council on the Big Island that serves as an advisory body to DLNR in the management of the state waters on the west side of the Big Island. It includes members that represent aquarium collection and dive industries as well as other interests. This collaborative approach comes after many years of user conflict among these industries—industries that both require healthy reefs for the success of their businesses.
- *Marine and Coastal Zone Advocacy Council (MACZAC)* is a public advisory body composed of twelve members with balanced representation from “business, environment, practitioners of Native Hawaiian culture, terrestrial and marine commerce, recreation, research, and tourism.” The Council is tasked with “work[ing] toward the implementation of an integrated and comprehensive management system for marine and coastal zone resources.” To fulfill its mission, the MACZAC has established ten working groups to address: (1) shoreline certification; (2) cultural resources; (3) ocean resources; (4) commercial boating regulations and harbor facilities; (5) shoreline access/coastal parking; (6) marine managed areas; (7) wastewater; (8) regulatory review; (9) lua/compost toilets; and (10) moku management.
- *Hawai'i Ocean and Coastal Council (HOCC)*, a temporary advisory council,

was established by the governor in 2005. The Council helped inform the development of the *Ocean Resources Management Plan (OCRM)* and ended according to the sunset provision after the last day of the 2006 legislative session. House Bill 2398, which did not pass, was introduced in 2007 that would have made the Council permanent.

- *`Aha Kiole Advisory Committee* was established by Hawai'i statute in June 2007. It is a temporary advisory committee tasked with developing recommendations for the creation of a permanent *`aha moku* council that will provide advisory input based upon traditional practices and knowledge; help develop a set of best practices for natural resource management; foster understanding and practical use of knowledge; ensure sustainability; enhance community education and cultural awareness; and participate in protecting Hawai'i's natural resources.⁴¹ The Act states that “[t]he purpose of this Act is to initiate the process to create a system of best practices that is based upon the indigenous resource management practices of moku (regional) boundaries, which acknowledges the natural contours of the land, the specific resources located within those areas, and the methodology necessary to sustain resources and the community.”⁴²

MARINE SPATIAL PLANNING

Marine spatial planning includes a wide range of regional ocean management approaches that may or may not have conservation goals. Marine spatial planning can be extensive ocean zoning that designates how the ocean can be used in specific areas as has been done on the Great Barrier Reef in Australia. It can also be single-sector in focus. Fisheries management measures can be place-based with the creation of no take zones or zones where certain types of fisheries are

⁴¹ S.B. 1853 § 2(b)(1) (Haw. 2007).

⁴² *Id.* at § 1.

not allowed. For example, Habitat Areas of Particular Concern off the coast of Alaska are specific areas closed to trawling in order to protect the deep sea coral habitat. Marine spatial planning includes management areas that are designated for conservation purposes including marine protected areas, sanctuaries, reserves and monuments, as well as designating where specific ocean industries can work. Hawai'i does not have a comprehensive marine spatial planning system. As with most places in the U.S., the marine area designations fall under myriad laws and institutions to create a patchwork of spatial designations.

Marine Protected Areas and Sanctuaries

Marine protected areas and sanctuaries are found in Hawai'i's state and federal waters. They include the following:

- *Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS)* is a National Marine Sanctuary made up of five different ocean areas that abut six islands with the purpose to protect humpback whales and their habitat.
- *Papahānaumokuākea Marine National Monument* was designated as such by President George W. Bush under his authority derived from the Antiquities Act.
- *ʻAhihi-Kinaʻu Natural Area Reserve* is a state reserve on Maui and is the only designated marine natural area reserve.
- *Kahoʻolawe Island Reserve*—once a military bombing site—the island and a two-mile swath of ocean around it is a protected reserve with few allowed activities.
- *Marine Life Conservation Districts (MLCDs)* are designated in state waters of the main Hawaiian Islands offering varying degrees of protection to marine resources.

Sector-Specific Area Management

In addition to conservation zones, a variety of sector-specific designations offer some protection to marine resources. These include:

- *Fishery Reserves and Protected Areas* including Community-Based Subsistence

Fishing Areas, the Miloli'i Fishery Management Area, the Ha'ena Community-Based Subsistence Fishing Area, and the Limu Management Area

- *Fishery Replenishment Areas*
- *Bottomfish Restricted Fishing Areas (BRFAs)*

OPTIONS FOR INTEGRATED MANAGEMENT

As throughout the United States, the laws, policies and institutions governing the marine environment in Hawai'i are fragmented. This fragmentation has led to a lack of understanding of how different activities interact to impact the health of the marine environment and has impaired effective management of these cumulative impacts across time, space, and sectors. Lack of integrated management has also led to regulatory inefficiencies, with various agencies having overlapping and uncoordinated mandates and programs. This type of situation also creates difficulties for the private sector by requiring multiple permits from a variety of federal and state agencies and creating substantial regulatory uncertainty.

To address this fragmentation, experts from a variety of disciplines have called for integrated natural resource management approaches. These come by a variety of names and in different forms, some of which may be better suited to the creation and sustaining of a Hawai'i Seascape than others. Fundamental to the following options is the notion that management of the marine environment should be ecosystem-based. Ecosystem-based management (EBM) is a science-based approach that strives for conservation and sustainability of marine ecosystems through inclusive, participatory, and transparent methods. EBM also strives to integrate human values and ecosystem needs.

Option 1. Take advantage of existing laws and regulations to integrate management across institutions.

1. Use the Coastal Zone Management Program to implement ecosystem-based management of the marine environment.

The Coastal Zone Management Act (CZMA) is the major federal mechanism for integrating management of terrestrial and ocean environments. Three general obstacles to using the CZMA to implement ecosystem-based management objectives are:

- (1) Insufficient funding;
- (2) Insufficient enforcement provisions; and
- (3) The failure to include entire watersheds in the regulatory definition of “coastal zone.”

In Hawaii, the entire terrestrial environment is considered part of the coastal zone, so watersheds are included. This provides an opportunity—not available in many coastal states—to consider the entirety of the watershed and its impact on the marine environment.

The Hawaii CZM Program does suffer from a lack of funding. In fact, the County of Honolulu recently opted out of the CZM Program, having determined that the minimal funding the federal government provides was not sufficient incentive when weighed against the time-consuming performance evaluation requirements of the program.

The federal consistency provision under the CZMA does provide the State of Hawaii with a tool to ensure that federal agency actions (even in waters beyond state waters) are consistent with the approved state CZM policies. Under this provision, the State of California has brought federal agencies to court over alleged inconsistent actions. In *California v Norton*, the Ninth Circuit court held that California’s right to review and disapprove of federal oil and gas leases in federal waters off of California’s coast as not consistent with California’s CZM enforceable policies. In March 2007, the California Coastal Commission filed a complaint against the U.S. Department of

the Navy, claiming that navy sonar exercises off the coast violate the California CZM enforceable policies and therefore violate the CZMA.⁴³ To date, Hawaii has not used this provision to challenge federal agency actions in court.⁴⁴

Efforts are underway at NOAA and the Coastal States Organization to develop a new vision for the CZMA that will provide Congress with insight on how best to reauthorize the existing law. One stakeholder meeting was held in Honolulu in the summer of 2007 and additional comments are being accepted.⁴⁵ Through these visioning efforts or through individual efforts, the reauthorization process may provide Hawaii with a unique opportunity to influence the development of a new and more effective CZMA, tailored to the needs of the Hawaii’s marine environment. Hawaii stakeholders identified existing obstacles and recommended solutions that relate to traditional uses, climate change, diverse ocean uses, public access and waterfront revitalization, hazards, intergovernmental coordination, land-use, habitat, and water quality.⁴⁶ These could serve as a starting point for developing more refined recommendations.

2. Extend the focus of watershed partnerships to include the nearshore marine environment.

The Hawaii Association of Watershed Partnerships (HAWP) represents more than 50 public and private partners working together to raise funds and support cooperative management and protection of nine watersheds on six islands. Currently, the main focus of these groups is on upper watershed protection through forest

⁴³ *California Coastal Commission v U.S. Department of the Navy*, Complaint for Preliminary and Permanent Injunctive Relief; Declaratory Relief and Writ of Mandamus (Central Dist. Cal., 2007), <http://www.coastal.ca.gov/fedcd/sonar/ccc-v-navy-2-22-2007.pdf>.

⁴⁴ Personal interview, December 2007 (notes on file with ELI).

⁴⁵ OCEAN AND COASTAL RESOURCE MANAGEMENT, NOAA, ENVISIONING THE FUTURE OF COASTAL MANAGEMENT, http://coastalmanagement.noaa.gov/czm/czma_vision.html.

⁴⁶ NOAA & CSO, ENVISIONING THE FUTURE OF COASTAL MANAGEMENT: STAKEHOLDER MEETING HAWAII—JUNE 7, 2007, MEETING SUMMARY, http://coastalmanagement.noaa.gov/czm/media/VisioningMtg_Hawaii_June2007.pdf.

restoration, land-use management, and biodiversity protection. Through the establishment of additional watershed partnerships, and/or the inclusion of nearshore marine issues in their mandate, these multi-stakeholder groups could provide a mechanism for reinvigorating the traditional practices of *ahupua'a* to achieve EBM.

3. Make use of federal integrated management programs as the basis for EBM.

Two federal programs are particularly relevant to marine EBM: the National Estuarine Research Reserve (NERR) Program managed nationally by the National Oceanic and Atmospheric Administration and the National Estuarine Program (NEP) managed nationally by the Environmental Protection Agency. NEPs and NERRs are site-based programs that are linked to a national office. They are often involved in ecosystem-based management efforts in other regions of the U.S. by direct participation or by providing indirect support in regional management. For example, the San Luis Obispo Science and Ecosystem Alliance in Central California, the Elkhorn Slough Tidal Wetland Project, the Puget Sound Partnership, and the Chesapeake Bay Program make use of NEPs and NERRs for information and integrated management.

Several obstacles exist to this approach. Currently, Hawaii does not have any area designated as a NERR or NEP; although, Hawaii was once home to a NERR. Designation is no small feat. The last NEPs were designated in 1995, and one NEP expert commented that limited funding is one barrier that keeps the NEP program from expanding beyond the existing 28 programs. The NERR program currently has 26 reserves with the most recent reserve designated in 2006. Both are limited in the sense that they focus on estuarine environments, so they would be applicable in a limited number of areas in Hawaii.

Option 2. Develop new marine EBM programs through soft-law and grassroots approaches.

1. Develop EBM using grassroots approaches.

In some regions of the U.S., fledgling grassroots EBM programs are taking shape. For example, San Luis Obispo Science and Ecosystem Alliance in Central California links resource managers, scientists, ocean industries, and NGOs together through an advisory body, and scientists conduct targeted research to directly inform management decisions.⁴⁷ Some advantages to grassroots approaches are that they allow for flexible management and may be more appealing to those who would resist increasing bureaucracy and regulatory oversight. The disadvantage of grassroots approaches is that they may lack long-term funding needed to sustain integrated management efforts and lack the legal accountability mechanisms that may be needed to force action. However, it is possible that grassroots approaches may later be codified as occurred with the West Hawaii Fishery Council.

2. Adopt memoranda of understanding (MOUs) and other soft-law agreements among agencies to facilitate integrated management approaches.

In the absence of legally-binding agreements, agencies use Memoranda of Understanding (MOUs) to facilitate cross-agency cooperation. MOUs and other soft-law agreements can and do form the basis of EBM or integrated management programs in other regions of the country. The often-cited example of integrated management, the Chesapeake Bay Program, is in fact established through an interstate soft law governor's agreement.⁴⁸ Other nascent soft law approaches include the Gulf of Mexico Alliance created by soft law agreement among the Gulf State governors⁴⁹ and the West Coast Governor's Agreement that seeks to integrate marine

⁴⁷ SLOSEA: SAN LUIS OBISPO SCIENCE AND ECOSYSTEM ALLIANCE, <http://www.slosea.org/>.

⁴⁸ See CHESAPEAKE BAY PROGRAM: A WATERSHED PARTNERSHIP, HOME, <http://www.chesapeakebay.net/>.

⁴⁹ See GULF OF MEXICO ALLIANCE, HOME, <http://www.dep.state.fl.us/gulf/>.

management across Washington, Oregon and California.⁵⁰

Option 3. Mandate integrated ocean management.

In the absence of national leadership, many U.S. states have responded to the calls for ecosystem-based management and are working towards comprehensive ocean management. Some states have enacted new laws to accomplish these goals (e.g., California, Washington, and New York), while others are still in the legislative process (e.g., Massachusetts and New Jersey). States have taken different approaches to EBM. California and New York laws create advisory bodies tasked with developing plans and providing recommendations on comprehensive ocean management.⁵¹ Washington's Puget Sound Partnership has a larger role to play. Senate Bill 5372, enacted in 2007, provides the Partnership the authority to convene agency managers to resolve disputes related to ecosystem-scale projects or programs and to disburse funds for Puget Sound recovery. The Partnership is also to assess performance of implementing agencies and seek compliance through measures including consultation with the agency, public meetings, and recommendations to the governor to halt further funding to the agency.

As a first step, the Puget Sound Partnership is focusing on public education because an examination of public perception revealed that while residents of Puget Sound thought that conservation of the Sound was of utmost importance, most believed the Sound to be in good health. The Partnership realized that public education about the health of the ecosystem and the threats it faces was the first step to achieving a healthy sound. Similar outreach and education efforts were recommended by several of the

⁵⁰ WEST COAST GOVERNORS' AGREEMENT ON OCEAN HEALTH, WELCOME, <http://westcoastoceans.gov/>.

⁵¹ California Ocean Protection Act, PUB. RESOURCES CODE Division 26.5 § 35500 et seq. (enacted in 2004), http://resources.ca.gov/copc/docs/OPC_Code_Div_26.5.pdf; New York Ocean and Great Lakes Ecosystem Conservation Act, Environmental Conservation Law § 14-0101 et seq. (enacted in 2006).

Hawai'i interviewees as a necessary first step to achieving marine conservation.

To date, the state laws have not created regulatory programs but rather serve as mechanisms to coordinate ocean and coastal management and provide funding for research, restoration and conservation activities. Because these programs are at their early stages of implementation, there is little information on the success of these new state programs to achieve healthier ocean environments.

B. ENVIRONMENTAL ASSESSMENTS AND IMPACT STATEMENTS

One of the chief ways state and federal agencies determine if the decisions they make will adversely affect natural resources is through environmental assessments (EAs) and environmental impact statements (EISs) required by NEPA, "state NEPAs," and other environmental laws that require environmental review before taking action. Federal and state decisions include decisions made when issuing permits, thereby tying private actions to environmental review.

Both NEPA and Hawai'i's Environmental Policy Act (HEPA) are procedural laws that require federal and state agencies to consider the possible environmental impacts of their actions and propose alternatives in order for agencies to make informed decisions. Environmental organizations often litigate over whether or not an EIS is needed and whether the EAs or EISs have sufficiently considered the ecosystem impacts of the proposed action. In Hawai'i, two ongoing cases demonstrate the use of NEPA and HEPA in environmental advocacy. In *Sierra Club v Hawai'i Department of Transportation*, the Hawai'i Supreme Court ruled that the Hawai'i HDOT must perform an EA to determine whether the SuperFerry and accompanying upgrades to ports will have a significant impact on the environment. In a lawsuit filed by Keep the North Shore Country, plaintiffs seek a supplementary EIS,

updating an environmental impact state drafted in 1985, before the state permits the expansion of the Turtle Bay Resort.⁵²

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

National Environmental Policy Act (NEPA)

For any major federal agency action, a federal agency must determine if the action will have a significant impact on the environment by conducting an environmental assessment (§ 102; 42 USC § 4332). If there is a “finding of no significant impact” (FONSI), the agency can proceed with the action. If, however, the impact is significant, the agency is required to produce an environmental impact statement that describes the proposed impact, adverse environmental effects that cannot be avoided, alternatives to the proposed action, the relationship between short-term and long-term benefits, and any irreversible or irretrievable commitments of resources.

STATE MANAGEMENT

State Environmental Policy Act

The purpose of HEPA is “to establish a system of environmental review which will ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical considerations.”⁵³ The law requires an environmental assessment when the following types of actions are proposed:

- (1) the use of state or county lands or state or county funds;
- (2) any use within conservation district lands;
- (3) any use within shoreline area
- (4) any use within the Waikiki area of O`ahu;

- (5) any amendments to existing county general plans;
- (6) any reclassification of conservation district lands by the Land Use Commission;
- (7) Construction of new or expanding helicopter facilities that will affect conservation district lands, shoreline areas or historic sites;
- (8) The creation of a wastewater treatment unit serving more than 50 single-family dwellings, a waste-to-energy facility, a landfill, an oil refinery, or a power-generating facility.⁵⁴

Like NEPA, HEPA requires an EA, a FONSI determination, and, if significant, an EIS. A “significant effect” is defined as “the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic welfare, social welfare, or cultural practices of the community and State.”⁵⁵

Hawai'i's environmental policies are defined in HRS § 344-1 et seq. If an EIS is required, it must include “the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.”⁵⁶

OPTIONS FOR ENVIRONMENTAL ASSESSMENTS AND IMPACT STATEMENTS

The development of EAs and EISs provide agencies, the private sector, and the broader community the opportunity to the multitude of environmental impacts when taking a major agency action. Options for enhancing the use of this tool include identifying and assessing relevant

⁵² Keep the North Shore Country v City and County of Honolulu, Civil No. 06-1-0867-05, 1st Cir. Hawaii (2006), <http://keepthenorthshorecountry.org/Documents/Judgment%20-%2020120506.pdf>. The case was heard by the Hawai'i Supreme Court on April 9, 2008.

⁵³ HAW. REV. STAT. § 343-1 (2007).

⁵⁴ HAW. REV. STAT. § 343-5 (2007).

⁵⁵ HAW. REV. STAT. § 343-2 (2007).

⁵⁶ *Id.*

marine impacts including potential climate change impacts.

Option 1. Conduct a meaningful assessment of cumulative impacts.

One of the greatest challenges in managing the environment, marine or otherwise, is the ability to assess and manage the many minor individual impacts that collectively result in major environmental damage by using a governance system designed to examine each permitted activity on an permit-by-permit basis.⁵⁷ NEPA explicitly requires consideration of the cumulative effects of past, present, and reasonably foreseeable future actions. However, in practice EAs and EISs often do not adequately consider cumulative impacts due to lack of understanding about the complexities of the interactions, lack of scientific information, and a desire to limit the scope of environmental analysis.⁵⁸

EPA guidance on review of cumulative impact assessments may be useful to consider when developing EAs or EISs. It recommends:

- Consideration of the resources and ecosystem components cumulatively impacted by determining whether the resource is particularly vulnerable to incremental impacts; the proposed action is one of several similar actions in the same area; other activities are having similar impacts; impacts have been historically significant; and other analyses have identified cumulative impacts of concern;
- Consideration of geographic boundaries and time period that are large enough to consider all potentially significant impacts;
- Consideration of past, present, and reasonably foreseeable future actions including whether the environment is

degraded; ongoing activities are causing impacts; and trends for activities and impacts;

- Describe baseline conditions, how conditions have changed over time, and the degree to which the ecosystem will change over time under each alternative; and
- Consider the inclusion of specific thresholds beyond which impacts are unacceptable.⁵⁹

Option 2. Consider climate change impacts in EA and EIS.

Major climate change impacts that relate to the marine environment include sea level rise, ocean temperature increases, potential changes in ocean circulation, ocean acidification, and changes in storm surge. In 2007, the Ninth Circuit held that federal agencies must assess greenhouse gas emissions and other climate change impacts related to proposed activities under NEPA.⁶⁰ A similar analysis could be conducted for state agency actions under HEPA.

C. COMPLIANCE AND ENFORCEMENT

Laws relating to the protection and preservation of Hawai'i's marine environment are not effective unless there is compliance. There are a variety of approaches that county, state, and federal agencies in Hawai'i use to achieve meaningful compliance. Because these approaches are numerous, this Assessment focuses on the following three broad

⁵⁷ For a scientific analysis of the affects of cumulative impacts, see Ben Halpern et al., *A Global Map of Human Impact on Marine Ecosystems*, 319 SCIENCE 948 (2008).

⁵⁸ U.S. ENVTL. PROTECTION AGENCY, CONSIDERATION OF CUMULATIVE IMPACTS IN EPA REVIEW OF NEPA DOCUMENTS, EPA 315-R-99-002 (1999).

⁵⁹ *Id.*

⁶⁰ Center for Biological Diversity v. National Highway Traffic Safety Administration, F.3d, 2007 U.S. App. LEXIS 26555 (9th Cir., 2007); for analysis of the case, see Dustin Till, *Ninth Circuit Requires Climate Change Analysis under NEPA* (Nov. 28, 2007), <http://www.martenlaw.com/news/?20071128-climate-change-analysis>.

categories: incentives, facilitative approaches, and approaches to compel compliance.⁶¹

Incentives serve to promote the voluntary correction of violations by the regulated community. These include reduced or waived penalties and awards for compliance. Facilitative approaches assist the regulated community to understand and comply with laws and policies. Agencies within Hawai'i use a variety of facilitative approaches to achieve compliance including: technical assistance, community-based monitoring, awareness-raising, and education. When incentives and facilitative mechanisms are ineffective, state and federal agencies apply more coercive approaches including: compliance orders, civil fines, injunctions, and civil and criminal enforcement to achieve compliance.

1. LAND-USE COMPLIANCE AND ENFORCEMENT

Land-use regulation in Hawai'i is accomplished through a dual system of state and county laws which have varying degrees of overlap and prescribed coordination.⁶² With the exception of federal lands, state and local government is mainly responsible for land-use compliance and enforcement as described below.

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

NOAA, Coastal Zone Management Program
NOAA's Office of Coastal and Ocean Resource Management (OCRM) oversees Hawai'i's CZM program (HICZMP). The HICZMP is charged with comprehensively managing coastal resources, protecting sensitive resources, and balancing

⁶¹ For an in depth discussion of these categories, see Carl Bruch, *Compliance*, in DAMS AND DEVELOPMENT, RELEVANT PRACTICES FOR IMPROVED DECISION MAKING 111 (UNEP ed., 2007).

⁶² HAWAII COUNTY PLANNING AND PERMITTING DEP'T, HAWAII LAND USE REGULATORY SYSTEM (2006), http://www.hawaii-county.com/planning/Land_Use_Regulatory_System.pdf.

competing uses in the coastal zone. In NOAA's oversight role, it conducts periodic performance reviews. Reviews include site visits to various counties in Hawai'i and analysis of performance reports and assessments. Evaluation findings are issued after each review and generally include one of two types of recommendations: necessary actions or program suggestions. Necessary actions must be undertaken by the state to address specific problems. If the actions are not completed within a certain time period and the problem persists, NOAA possesses mechanisms to enforce the federal Coastal Zone Management Act. These include the withdrawal of federal funds in cases of non-compliance⁶³ or the withdrawal of program approval if non-compliance persists.⁶⁴

Honolulu County refused federal CZM program funds in fiscal year 2007. While the county continues to implement land-use regulations related to the CZM program (special management area permits and shoreline setback variances), the county claims that NOAA's performance review is too rigid and time intensive for the one percent of the budget that comes from federal CZM program funds.

STATE MANAGEMENT

Division of Conservation and Resources Enforcement (DOCARE)

DOCARE is the enforcement division for the DLNR. DOCARE is responsible for policing all state lands and all state waters out to the three mile limit. This includes nearly 1.3 million acres of state lands, beaches, and coastal areas.

DOCARE utilizes a broad range of facilitative approaches, including public outreach and education, to achieve compliance and enforcement. For example, DOCARE uses web-based information, workshops, and pamphlets that help the regulated community understand its legal obligations. In Hawai'i County, enforcement officers hold community meetings to address concerns regarding illegal activities on state

⁶³ 16 U.S.C. § 1458(c)(1) (2004).

⁶⁴ 16 U.S.C. § 1458(d) (2004).

lands.⁶⁵ DOCARE also enlists citizens to assist in enforcement. For example, DLNR has a “Conservation Hotline” to allow visitors to state parks on O`ahu to report violations. On other islands, DLNR encourages visitors to contact division offices.⁶⁶ Citizen complaints are one of the largest sources of information for violations of state environmental laws.

To assist DLNR and DOCARE with compliance, DLNR created Mauka Makai Watch. Similar to a neighborhood watch program, Mauka Makai Watch engages the participation of the local community to assist DOCARE and other resource regulators with natural resource enforcement, education, outreach, monitoring and surveillance. Specifically, DOCARE enforcement officers train community members in surveillance and enforcement techniques to reduce noncompliance. Citizens can file reports via phone or mail to DOCARE, who then sends investigators to determine if there has been a violation. In addition, the officers train community members in monitoring for violations.

State and federal land-use laws provide DOCARE with a wide range of sanctions for noncompliance. As DLNR’s enforcement arm, DOCARE works in close collaboration with state and county agencies, including the Office of Conservation and Coastal Lands (OCCL), DAR, and BLNR. In response to reports of violations from state and county agencies, a DOCARE enforcement officer will investigate the complaint and prepare a report. If there is a violation, DOCARE can assess civil penalties and bring civil and criminal actions. Civil actions can be administrative or judicial. DOCARE enforcement officers also have the authority to issue field citations which often carry monetary penalties.

⁶⁵ STATE OF HAWAII, DEP’T OF LAND AND NATURAL RES., BUREAU OF LAND AND NATURAL RES., COASTAL POLICY (March 2005), <http://www.hawaii.gov/dlnr/docare/BLNR-CoastalPolicy-Enforcement.htm>.

⁶⁶ STATE OF HAWAII, DEP’T OF LAND AND NATURAL RES., STATE PARKS DIV., GENERAL STATE PARKS RULES, <http://www.state.hi.us/dlnr/dsp/rules.html>.

Hawai`i Coastal Zone Management Program, State Office of Planning (OP)

At the state level, the OP, in the DBEDT, is the lead agency for administering the HICZMP.⁶⁷ The OP administers the HICZMP through a network of state agencies and the county Planning Departments, using facilitative and coercive approaches to achieve compliance. It is not a regulatory program. In general, the HICZMP provides county and state agencies with directives that the OP monitors for compliance. The OP has adopted a range of facilitative approaches to encourage compliance. The OP encourages cooperation and participation among its stakeholders. For instance, an individual HICZMP staff member is assigned to each county to serve as a liaison. Counties are required to provide the state OP liaison with permitting reports, financial information, violation tallies, and monitoring reports. Periodic site visits are conducted to verify compliance and assess potential violations.

Quarterly, the OP convenes meetings with Department of Planning and Permitting Directors to discuss performance gaps with each director and identify the necessary steps to achieve compliance. This process provides a forum for directors to share ideas and discuss solutions. HICZM program staff use the meetings to increase institutional capacity and provide substantive training on topics such as special management permits and nonpoint source pollution control.

In addition to facilitative approaches, the state CZM program employs coercive measures to achieve compliance. For instance, State CZM program staff members attend Land Use Commission (LUC) hearings to testify against the issuance of permits that would not comply with the HICZMP. Also, if a county or state agency does not comply with the HICZMP, the OP can suspend its federal funding. While the OP also has the authority to use civil enforcement, this approach has not been used since the adoption of the CZM program in 1978.

⁶⁷ STATE OF HAWAII DEP’T OF BUS., ECON.DEV. & TOURISM, RESEARCH AND ECONOMIC ANALYSIS DIV., OFFICE OF PLANNING, HAWAII COASTAL ZONE MANAGEMENT PROGRAM, http://www.hawaii.gov/dbedt/czm/program/program_czm.shtml.

The HICZMP reviews federal programs and activities for consistency with the objectives and policies of Chapter 205A. Under the federal Coastal Zone Management Act (CZMA), a state may bring federal agencies to court for alleged activities that violate HICZMP enforceable policies. To date, Hawai'i has not brought suit against any federal agency under this provision.

County Departments of Planning and Permitting

Within each county, the county Department of Planning and Permitting (DOPP) administers both statewide laws, such as the State land-use law and the Hawai'i Coastal Zone Management Program, as well as county-specific zoning and land-use ordinances, and the administration of land-use development permits. In addition, the DOPPs administer zoning and permitting in Urban, Rural, and Agricultural districts of lands less than fifteen acres. The HICZMA provides the counties with regulatory control and authority over all development within Special Management Areas (SMA) and Shoreline Setback Areas (SSA) of the coastal zone.⁶⁸

While each county's land-use ordinances differ to varying degrees, there are significant similarities in how the counties approach compliance and enforcement. Generally speaking, the counties advocate a cooperative-based enforcement strategy. Most counties have sought to develop and expand compliance assistance materials. These include newsletters, fact sheets, web-page information, and workshops. Counties provide technical support for beach restoration and nourishment activities. DOPP planners periodically attend neighborhood board meetings to discuss county specific shoreline protection and conservation and restoration projects.

Violations are largely reported by members of the community. Once a violation has been reported, inspectors first work with violators to achieve compliance, rather than assess fines. In the event that violators do not come into compliance after an inspector visit, the DOPP will issue civil fines. Pursuant to county ordinances and rules, the

DOPP issues a notice of violation along with a fine schedule—including daily fines—and an order. The county has the discretion to cut or remove penalties in exchange for immediate correction of a violation. In Honolulu County, as well as other counties in varying degrees, if the fines go unpaid, and violations are not corrected within a certain amount of time, a flag will be placed on the violator's driver's license and vehicle registration. In instances where the violation is especially egregious and due process has been provided, the Department may place a lien on the violator's land. Often such action precipitates settlement negotiations between the violator and the DOPP that can result in a reduction of fines and removal of the lien. Fines are not assessed to collect revenue for the county, but rather to encourage compliance.

Permits, including Special Management permits, may be revoked or modified without the consent of the permittee if the permit was granted in violation of the law; the permit applicant made a material misrepresentation; or a material change in circumstances has occurred following the issuance of the permit that poses a substantial threat to public health or safety as determined by various state and federal agencies.⁶⁹

2. WATER QUALITY COMPLIANCE AND ENFORCEMENT

FEDERAL MANAGEMENT

POINT SOURCES

Environmental Protection Agency

EPA has authorized the Department of Health (DOH) to implement the National Pollution Discharge Elimination System (NPDES) program. EPA monitors both the implementing agency, in this case the DOH, as well as regulated industries for compliance with the NPDES program. EPA uses a number of approaches to ensure that both entities comply with NPDES and stormwater permitting. For instance, EPA assigns one liaison to the Clean Water Branch (CWB) to provide

⁶⁸ STATE OF HAWAII, DEP'T OF LAND AND NATURAL RES., LAND DIV., COASTAL EROSION MANAGEMENT PLAN, <http://www.hawaii.gov/dlnr/occl/files/coemap.pdf>.

⁶⁹ COUNTY OF HONOLULU, HAW. REV. ORDINANCES § 25-9.6 (2007).

technical expertise and assist with compliance and enforcement measures. The liaison often conducts on site inspections with CWB enforcement officers to determine compliance. EPA also requires the DOH to submit annual work plans and monitoring reports. In addition, EPA uses the Integrated Compliance Information System (ICIS) to track violations and the resulting enforcement actions. Through ICIS, EPA requires the state NPDES program to input all NPDES data relating to permitting, inspections, violations, enforcement actions, and penalty information into the web based system. The system enables EPA to access integrated data relating to compliance and enforcement and target critical discharges that the Department of Health may not be addressing.

EPA provides grant money to the state NPDES program annually. EPA has the authority to withdraw federal funding for state noncompliance, but will only take this action as a last resort. EPA has never withdrawn funding from Hawai'i's NPDES program for lack of compliance. One interviewee noted that NPDES discharges in Hawai'i have a high rate of compliance.

Finally, EPA has the authority to pursue a direct federal or a joint federal and state enforcement action against alleged violators. Presently, there are no civil enforcement officers and two criminal enforcement officers in Hawai'i.

NONPOINT SOURCES

NOAA and EPA

Section 6217 of the federal Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) created a Coastal Nonpoint Pollution Control Program to be jointly administered by NOAA and EPA. NOAA and EPA have conditionally approved the program. The agencies are working with the state to receive full program approval. NOAA and EPA annually conduct joint reviews to assess the program's progress towards meeting the imposed conditions.

STATE MANAGEMENT

POINT SOURCES

Department of Health, Clean Water Branch

Pursuant to HAR 11-55, the enforcement division of the DOH's CWB is vested with the authority to enforce and ensure compliance with NPDES permits. Pursuant to this authority, CWB has adopted a range of approaches to achieve compliance.

One approach to compliance is the use of incentives. The CWB initiated awards, a form of incentive, for exemplary businesses. The Good Business Awards identify industrial and commercial businesses that have excelled in the implementation and compliance of the state's stormwater Best Management Practices (BMPs).⁷⁰

Overwhelmingly, interviewees within the DOH, including those who work in the monitoring and enforcement division, start from the premise that education and technical assistance are preferred tools for achieving compliance. For instance, the CWBs provide workshops and technical training on best management practices and Hawai'i's law for industry members, engineers and various other stakeholders.

The state relies on industry self-policing and self-regulation. The enforcement division of the CWB also engages its stakeholders in promoting compliance. For instance, facilities must submit discharge monitoring reports to the enforcement division. The reports indicate whether the facility has exceeded its discharge limits. The enforcement and monitoring staff review the reports, and in the event of noncompliance, will send an officer to inspect the facility to take samples. If there is a violation, the enforcement officers will generally issue a warning and prescribe a time table for compliance. Enforcement officers have found that the ability to issue warnings has proven a valuable mechanism to provide guidance and compliance assistance to regulated facilities.

⁷⁰ HONOLULU DEP'T OF ENV'T SERV., GOOD NEIGHBOR AND GOOD BUSINESS AWARD, http://www.cleanwaterhonolulu.com/storm/hero/good_neigh_or.html.

Should permittee fail to comply within the designated time period, the CWB can issue sanctions. If the violator does not rectify the violation, the permit is often revoked and the CWBs will send a Notice of Finding of Violation and Order that includes administrative and civil penalties that cannot exceed \$25,000 per day. The facility can appeal the order; in such cases, the state tries to resolve differences through a negotiation process. In certain situations, the CWB will refer a case to the state Attorney General's Office which has the authority to criminally enforce the violations with possible fines of \$50,000 per day and possible jail time.

Stormwater Permitting

The CWB's enforcement section is responsible for issuing and enforcing MS4 permits (Municipal Separate Storm Sewage System) for the State of Hawaii. The enforcement division uses the same compliance and enforcement approaches described under the NPDES section.

NONPOINT SOURCES

DOH Polluted Runoff Control Program

The DOH's CWB administers Hawaii's runoff control program through Hawaii's *Implementation Plan for the Polluted Runoff Control (Implementation Plan)*. While the Implementation Plan does not provide the state with a legally enforceable mechanism⁷¹ to prevent nonpoint source pollution, the Hawaii Attorney General recently identified two state statutes that have legally enforceable mechanisms to avert nonpoint source pollution. The first, Hawaii's water pollution control law, prohibits any public body or person from discharging any pollutant into state waters except as authorized by law or by permit.⁷² The law vests Hawaii with the authority

⁷¹ An enforceable mechanism is defined in the Environmental Law Institute publication, *Enforceable State Mechanisms for the Control of Nonpoint Source Water Pollution* as "a *sanction* such as a civil, criminal, or administrative penalty, loss of a license, and performance of required remedial action (but not mere loss of an incentive); and a *process*, either explicit or implied, for applying the standard and imposing the sanction. JIM McELFISH, *ENFORCEABLE STATE MECHANISMS FOR THE CONTROL OF NONPOINT SOURCE WATER POLLUTION* (1997), <http://www.epa.gov/owow/nps/elistudy/nonpoint.pdf>

⁷² HAW. REV. STAT. § 342D-50 (2007).

to issue enforceable nonpoint source rules which may include "water quality standards for specific areas, types of nonpoint source discharge, or management measures."⁷³ The second, Hawaii Administrative Rules Chapter 11-54-04, establishes Hawaii's water quality standards, stating that "[a]ll waters shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants." The law enumerates a variety of unlawful pollutants including: materials that will settle to form objectionable sludge or bottom deposits and soil particles resulting from erosion on land involved in earthwork, such as the construction of public works; highways; subdivisions; recreational, commercial, or industrial developments; or the cultivation and management of agricultural lands.⁷⁴

Under these provisions, the CWB has adopted a range of facilitative approaches to promote compliance. For instance, the CWB has formed partnerships with farmers groups, community members, industries, and other state agencies including the HICZMP, to develop program goals and provide technical advice and guidance through demonstrations and workshops. The CWB relies heavily on citizen complaints. If there is a complaint, the enforcement section will send an enforcement officer to inspect the alleged violation. The enforcement officers have the capability of issuing fines and bringing administrative and civil enforcement actions for nonpoint source pollution. However, the CWB has traditionally provided technical assistance and participated in negotiations with violators to achieve compliance. According to interviews, the CWB has taken no enforcement action, either civil or criminal, to date.

Coastal Zone Management Program

The Coastal Zone Act Reauthorization Amendments of 1990 required Hawaii to develop and implement a coastal nonpoint pollution control program, to be approved by NOAA and the EPA. The Hawaii Coastal Nonpoint Pollution Control

⁷³ HAW. REV. STAT. § 342E-3(a) (2007).

⁷⁴ HAW. ADMIN. R. § 11-54-04.

Program (HICNCP) and Management Plan were approved in 1998.

In 2000, Hawai'i integrated the HICNCP and its Polluted Runoff Program and established an integrated *Hawai'i Implementation Plan for the Polluted Runoff Control*. The program is cooperatively administered by the DOH and OP. The agencies primarily employ facilitative approaches to achieve compliance with the program. For example, the DOH administers a statewide monitoring program for nonpoint source pollution and ambient water quality standards. DOH uses EPA's computerized environmental data system, the STORET program, and Waterbody System as the primary database and information system for monitoring. The OP coordinates with the DOH to educate the public through a variety of demonstration projects including a project to control soil runoff into state waters. The OP also holds public meetings and provides trainings on nonpoint source pollution prevention.

County Government

The four Hawai'i counties administer varying components of the HICNCP. These include: management measures for urban activities and hydromodifications, agriculture, and recreational boating. Certain counties, including Maui County have received CWA Section 319 grants from EPA to revise their grading ordinances and train inspectors to inspect for erosion controls.

NONGOVERNMENTAL APPROACHES

Under the citizen suit provision of the CWA, citizens can sue both EPA and the DOH for failing to enforce permits issued under the CWA. For example, Sierra Club and other environmental organizations sued the City and County of Honolulu in 2004 alleging that the Sand Island and Honouliuli wastewater treatment plants violated their NPDES permits by discharging pollutants in excess of that allowed under the permit.⁷⁵

⁷⁵ Sierra Club v. Honolulu, 2007 U.S. Dist. LEXIS 80452 (D. Haw. 2007).

3. FISHERIES, PROTECTED SPECIES, AND HABITATS: COMPLIANCE AND ENFORCEMENT

Compliance with and enforcement of fisheries and other marine conservation laws, regulations and policies is a central challenge to conservation of the marine environment. Numerous reports and interviews identify compliance and enforcement as major challenges to fisheries management.

Examples of recent illegal activities include:

- Illegal spearfishing in Honolua Bay, Maui—within a MLCB and part of the HIHWNMS.⁷⁶
- Illegal take of lobster and illegal boating activity in the `Ahihi-Kina`u Natural Area Reserve.⁷⁷
- Failure to submit mandatory catch reports in the aquarium fishery.⁷⁸
- Illegal longline fishing inside the recently declared Papahānaumokuākea Marine National Monument.⁷⁹

These, however, only illustrate the type of illegal activities and not the scope of the problem. Many interviewees have commented that the lack of compliance is pervasive in protected areas as well as other regions of the marine and coastal environment.

⁷⁶ ENV'T PROT. AGENCY ET. AL., HAWAII'S LOCAL ACTION STRATEGY TO ADDRESS LAND-BASED POLLUTION THREATS TO CORAL REEFS 13 (2003), http://www.hawaii.gov/health/environmental/water/cleanwater/prc/pdf/LAS.CR-LBP_fnl_3-22-04.pdf.

⁷⁷ Christie Wilson, *Hawaii Fights to Protect Maui Nature Reserve from Impact*, at CYBER DIVER News Network (June 13, 2007),

<http://www.cdnn.info/news/eco/e070613a.html>.

⁷⁸ Associated Press, *Unregulated Aquarium Fishing Worries Biologists, Divers* (Oct. 9, 2005), at

<http://www.kpua.net/news.php?id=6475>.

⁷⁹ Coast Guard News, *Coast Guard Catches Longliner Fishing Illegally in Northern Hawaii Protected Waters* (Jan. 25, 2007), <http://coastguardnews.com>.

FEDERAL MANAGEMENT

NOAA Office for Law Enforcement (OLE)

OLE is responsible for enforcement of federal fisheries—which largely occur in federal waters (three-200 miles offshore)—U.S. vessels in international fisheries, and conservation in state, federal and international waters. OLE enforces the MSA, Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), the Lacey Act, and the Marine Protection, Research and Sanctuaries Act (MPRSA).⁸⁰ It has four pillars for ecosystem protection and conservation: (1) investigations and patrols; (2) community oriented policing and problem solving; (3) technology and vessel monitoring systems (VMS); and (4) partnerships.

Investigations, patrols, and technology such as VMS used on the Hawaii longline fleet help OLE to compel compliance. Its Community Oriented Policing and Problem Solving (COPPS) program facilitates and incentivizes compliance through education, communication, and community involvement. The COPPS program includes the use of a hotline that allows anyone in the U.S. to report a federal fishing violation.⁸¹ OLE provides incentives for compliance through its “Fit-It Notice” Program that gives first-time offenders an opportunity to correct minor technical violations without a penalty.⁸² It also has a “Recognition and Rewards” program for resource stakeholders that have provided “special contributions towards conserving the nation’s marine resources.”⁸³

OLE works with the US Coast Guard, US Customs Service, the Federal Bureau of Investigation, Drug Enforcement Agency, Department of Justice, and the Food and Drug Administration, in addition to state enforcement programs to achieve its goals.⁸⁴ The OLE has a

⁸⁰ NOAA FISHERIES: OFFICE FOR LAW ENFORCEMENT, ABOUT OLE—OFFICE FOR LAW ENFORCEMENT, http://www.nmfs.noaa.gov/ole/ole_about.html.

⁸¹ NOAA FISHERIES: OFFICE FOR LAW ENFORCEMENT, COMMUNITY ORIENTED POLICING AND PROBLEM SOLVING (COPPS), <http://www.nmfs.noaa.gov/ole/copps.html>.

⁸² *Id.*

⁸³ *Id.*

⁸⁴ NOAA Fisheries: Office For Law Enforcement, *Partnerships*, at <http://www.nmfs.noaa.gov/ole/partnerships.html>.

Cooperative Enforcement Agreement with DOCARE, which deputizes DOCARE officers to initiate actions in cases of a federal matter. The Enforcement Agreement also enables NOAA funding to the state to allow the state to assist NOAA agents and officers with their mission.

The Pacific Island Division is the most recent branch of the OLE. It was established in 2003 and currently has six special agents and one enforcement officer assigned to it.⁸⁵ Of the U.S. OLE programs, the Pacific Islands Division has the second largest area to monitor and enforce. It is responsible for compliance and enforcement in the waters surrounding Hawai'i, the Commonwealth of Guam, American Samoa, and the Northern Marianas.

NOAA, Office of General Counsel for Enforcement and Litigation (GCEL)

GCEL assesses civil penalties against those violating the laws under which NOAA manages marine resources. Civil penalties include Notice of Permit Sanctions or Notice of Violation and Assessment. Based in Silver Spring, Maryland, fifteen attorneys are responsible for prosecuting civil penalty cases, permit sanctions, and administrative forfeitures for all federal fisheries nationwide. It also provides support to the US Department of Justice for prosecution in federal court. The GCEL Southwest and Pacific Islands Region based in Long Beach, California, is responsible for cases arising along the Pacific Coast as well as the entire Pacific Islands region.

U.S. Coast Guard

The USCG is responsible for enforcement of fisheries and shipping laws, as well as national security and drug enforcement at-sea.⁸⁶ It conducts fisheries enforcement in coordination with NOAA OLE and Hawai'i state enforcement officials. It is the lead agency for at-sea enforcement.⁸⁷ For fisheries, USCG works to prevent encroachment into the U.S. EEZ by foreign fishing fleets; enforces domestic fisheries

⁸⁵ Personal communication with Pacific Island Division (communication on file with authors).

⁸⁶ U.S. Coast Guard [hereinafter USCG], *Ocean Guardian: Fisheries Enforcement Strategic Plan 2004-2014* [hereinafter *Ocean Guardian*] (2004).

⁸⁷ *Id.* at 3.

laws; and ensures compliance with international agreements.⁸⁸ The USCG operates under four key concepts: (1) sound regulations; (2) effective presence; (3) application of technology; and (4) productive partnerships.

In implementing its goal to “effectively enforce federal regulations that provide stewardship of living marine resources and their environments,” the USCG plans to:

- Focus on significant (rather than minor) violations;
- Partner with NOAA OLE;
- Employ new surveillance technologies;
- Improve command and control capabilities;
- Advocate for expanding VMS; and
- Increase intelligence sharing and patrol coordination with NOAA and state enforcement.

Hawaiian Islands Humpback Whale National Marine Sanctuary

The HIHWNMS uses facilitative and enforcement approaches to achieve compliance. It seeks compliance through education including, for example, issuing regulation reference cards to boaters.⁸⁹ According to the 2002 management plan, the Sanctuary provides training, salary, and staff to support a NOAA enforcement officer at the Sanctuary headquarters during whale season.⁹⁰ The officer responds to whale harassment complaints. Each Sanctuary violation is subject to a civil penalty of not more than \$100,000, with each day of violation constituting a separate violation.

⁸⁸ *Id.*

⁸⁹ HAWAIIAN ISLANDS HUMPBAC WHALE NATIONAL MARINE SANCTUARY, HAWAIIAN ISLANDS HUMPBAC WHALE REVISED MANAGEMENT PLAN 17 (2002), <http://hawaiihumpbackwhale.noaa.gov/planreview/hihw/sanctuaryrevised.html>

⁹⁰ *Id.*

STATE MANAGEMENT

Division of Conservation and Resources Enforcement

DOCARE is responsible for enforcement of fisheries, protected species, and habitat protection laws in state waters, in addition to enforcement on Hawai`i’s state lands (as described previously). It has three program areas: (1) public safety; (2) effective resource protection; and (3) preventative enforcement measures. Preventative enforcement measures are facilitative approaches to achieve compliance and include the production of an introductory guide to marine resources.⁹¹ DOCARE is also in the process of developing manuals for scuba diving and boating.⁹²

DOCARE has agreements with NOAA OLE and NMFS to cooperatively enforce marine resource laws.⁹³ DOCARE also looks to citizens for support in enforcement. It has a hotline that citizens can call to report violations including, for example, violations of laws to protect sea turtles.⁹⁴

COOPERATIVE APPROACHES

In addition to the general cooperative approaches described previously that include citizen hotlines and education programs, Hawai`i has specific volunteer programs that support enforcement and compliance.

Kapoho Reef Watch, Wai`opae Tide Pools MLCD

The Kapoho Reef Watch program is a local volunteer program that supports the conservation of the Wai`opae Tide Pools through monitoring, education, and management.⁹⁵

⁹¹ STATE OF HAWAII DEP’T OF LAND AND NATURAL RES., MAUKA: “TOWARD THE OCEAN”,

<http://state.hi.us/dlnr/docare/brochure/Makai-Brochure.pdf>.

⁹² STATE OF HAWAII DEP’T OF LAND AND NATURAL RES., DIV. OF CONSERVATION AND RES. ENFORCEMENT, MISSION STATEMENT, <http://state.hi.us/dlnr/docare/mission.htm>.

⁹³ *Id.*

⁹⁴ George H. Balazs, *Reporting Stranded Sea Turtles on Oahu*, at <http://www.turtles.org/nmfs/oahu.htm>.

⁹⁵ See U.S. CORAL REEF TASK FORCE, IMPLEMENTATION OF THE NATIONAL CORAL REEF ACTION STRATEGY: REPORT TO CONGRESS AT 39 (2005).

Community-Based Management: Mauka-Makai Watch Program

The DLNR, The Nature Conservancy, the Community Conservation Network, Hawai'i Wildlife Fund, Malama Hawai'i, and Sea Grant are partners in the Mauka-Makai Watch Program established in 2005. The concept behind this approach is that those who are most closely involved with the resource are best positioned to ensure compliance with laws and regulations. Through this program citizens are encouraged to watch for and report potential violations to DOCARE and others in the community.⁹⁶

OPTIONS FOR COMPLIANCE AND ENFORCEMENT

One of the most common challenges cited by interviewees was the lack of effective enforcement to protect natural resources. In addition to the general challenges described below, specific topic sections also describe options, obstacles and opportunities for compliance and enforcement.

Some of the identified enforcement and compliance needs include:

- **Increased capacity**, including human and financial capacity. For example, interviewees noted that the county Departments of Planning and Permitting lack the staff necessary to go into the field to monitor for compliance. They are limited to responding to citizen complaints.
- **Political will** to use existing law and enact new laws to protect the marine environment. For example, while the Hawai'i Attorney General has identified two legally enforceable mechanisms to control nonpoint source pollution, there are currently no enforcement actions being taken against statutory violators. DOH has

not issued a single fine and has not brought any civil or criminal enforcement actions.

- **Judicial education** about natural resources provisions. Some interviewees noted that a lack of understanding about the importance of natural resource laws and regulations undermines the use of enforcement as a tool to achieve compliance.
- **Increased prosecution** of natural resources violations.
- **Effective coordination** among agencies. For example one interviewee noted that the State Office of Planning has neglected its duties in ensuring that the counties adhere to Chapter 205A. According to the interviewee, the state agency does not collaborate effectively with the counties in addressing shoreline management.

In January 2006, the Hawai'i Office of the Auditor conducted a management audit of DOCARE as requested by the 2005 Hawai'i State Legislature. The Auditor concluded that the DLNR and division leaders have not achieved full and effective enforcement, resources have not been used in a manner consistent with their conservation contrary to the Hawai'i State Constitution, and stated that, "Hawai'i's natural and cultural resources will continue to deteriorate unless the DLNR and its DOCARE aggressively address many of the weaknesses" that are noted in the report (Office of the Auditor 2006).

Interviewees from various divisions within DLNR identified a number of factors that impede enforcement. These include long delays in reports, inaccurate information included in the report, and a lack of institutional capacity among agencies to achieve effective collaboration and compliance. Interviewees at the county level identified lack of staffing as a problem in county Departments of Planning. Understaffing, according to several interviewees, stems from lack of funds to hire more enforcement officers. Interviewees from county and state agencies expressed frustration with their inability to proactively monitor for violations. The agencies largely rely on citizen complaints or other state agencies to monitor for violations.

⁹⁶ STATE OF HAWAII DEPT OF LAND AND NATURAL RES., BLNR COASTAL POLICY: REQUEST FOR APPROVAL TO DEVELOP AND PURSUE THE "ENFORCEMENT" CHAPTER OF THE STATEWIDE COMPREHENSIVE BLNR COASTAL POLICY (2005), <http://www.hawaii.gov/dlnr/docare/BLNR-CoastalPolicy-Enforcement.htm>.

The 2006 DOCARE audit makes the following recommendations:

- DLNR should develop a strategic plan covering department-wide issues and cross-divisional issues
- Evaluate DOCARE's mission
- Have DOCARE develop performance measurement plants to determine whether progress is made on goals and objectives addressing the overall health of the natural resources
- Have its divisions adopt rules that collaborate with DOCARE
- Have DOCARE leaders use performance outcomes as part of the budget process
- Formally establish cross-divisional working groups to develop strategic and action plans
- DOCARE should expand its policy manual to fully cover topics pertaining to the protection of natural and cultural resources

In general, achieving compliance includes the use of incentives, increases in facilitative approaches such as education and outreach and co-management approaches, and increasing enforcement. Because of the existing financial constraints to increasing enforcement effort, incentive-based and facilitative-approaches may be the best policy options to pursue in Hawai'i. Of these options, undertaking a facilitative approach to achieving compliance through co-management may be the best option because it satisfies several other important needs such as empowering citizens through public participation and incorporating Native Hawaiian practices into modern management. Furthermore, enforcement actions have been known to erode trust between local communities and resource managers and can undermine efforts to implement traditional management approaches.⁹⁷

⁹⁷ A. Keane et al., *The Sleeping Policeman: Understanding Issues of Enforcement and Compliance in Conservation*, 11 ANIMAL CONSERVATION 75, 75-76 (2008)

Option 1. Increase incentives to achieve compliance.

Incentives—including grants and subsidies, bounties, fees and commissions, tax credits, loan guarantees, prizes and rewards, favorable administrative conditions, and praise⁹⁸—can be used as regulatory instruments and specifically to achieve compliance of regulated industries. For example, self-reporters may not be cited as an incentive to achieve compliance. Also, in cases where violators are cited, rather than penalizing them, a “fix-it” incentive can be used—i.e., violators fix their violation in exchange for no penalty. Other incentives can include rewarding or recognizing those that demonstrate high levels of compliance as a way to inspire continued compliance and encourage others to follow suit.

Option 2. Increase facilitative approaches to achieve compliance.

As Option 4 describes, enforcement is often limited by lack of funding and capacity, especially when it comes to monitoring the various activities that take place in and on the oceans surrounding Hawai'i. Enforcement alone, then, will be incapable of achieving effective compliance, so facilitative approaches are also needed.

Hawai'i's land-use laws are enforced through a matrix of State and county enforcement. These laws and ordinances change on a yearly basis. Education is one way to facilitate compliance with the rule of law. Education can extend to the judiciary, state and federal agencies, non-governmental organizations, as well as educating resource users about the importance of compliance in order to achieve marine conservation objectives.

1. Educate the judiciary, agencies, NGOs and citizens, and industry.

The importance of cases involving injury to natural resources may not resonate with judges who also listen to civil or criminal cases involving abuse, human injury, and death. Convincing a

⁹⁸ P.N. Grabosky, *Regulation by Reward: On the Use of Incentives as Regulatory Instruments*, 17 L. & POL'Y 257, 259 (1995).

judge that is not educated as to the importance for long term conservation of marine resources may not have the appropriate level of concern needed to decide such cases. Also, marine conservation laws can be complex. Some interviewees noted the need to educate the judiciary about fisheries laws and regulations and the need to impose stiff penalties for those committing significant violations.

Interviewees identified the need to provide training to DOCARE enforcement officers, so that officers can recognize and respond to shoreline violations. One approach is to develop a standard training system to keep enforcement officers abreast of potential changes in the law and the need for proper enforcement of existing law and regulations. For water quality, EPA provides annual trainings to enforcement officers on monitoring and control of NPDES permits. A U.S. Coast Guard study also found that lack of proper knowledge about the fishery was contributed to ineffective enforcement, leading to the recommendation for regional fisheries training centers.⁹⁹

The DOH and the state CZM program use many facilitative approaches to achieve compliance. In partnership, the agencies work to educate farmers, students, community groups, and environmental organizations on nonpoint source pollution control and identification. The DOH is working with the University of Hawai'i to develop watershed based plans on seven priority watersheds within the state of Hawai'i. DOH is working to create demonstration sites to educate the public on best management practices to control nonpoint source pollution.

In addition to educating NGOs and citizens about how to help achieve compliance, education can also include training NGOs and citizens to use the legal system to compel state and federal agencies to enforce the rule of law through petitions, providing comments, and filing citizen suits.

⁹⁹ Jeffrey K. Randall, *Improving Compliance in U.S. Federal Fisheries: An Enforcement Agency Perspective*, 35 OCEAN DEV'T & INT'L L. 287 (2004).

One challenge of enforcement is often that a large number of facilities suddenly find themselves in violation of the law when new, stricter standards are set. As water quality standards become more rigorous, for example, regulators should provide industry with compliance schedules and technical training.

2. Adopt co-management approaches to increase legitimacy of laws and regulations.

For a discussion of this option, see Options for Fisheries, Protected Species, and Habitat.

Option 3. Increase actions to compel compliance.

While facilitative and incentive-based approaches can increase compliance, enforcement remains an important and necessary tool to achieve compliance.¹⁰⁰ Case studies in fisheries, for example, have demonstrated that compliance increases with the increase in the perceived probability of being caught.¹⁰¹

1. Use legal authority to enforce existing law and penalize violators with penalties that reflect the extent of the damage to the resources and are substantial enough to deter illegal behavior.

While state law authorizes administrative, civil and in some cases criminal penalties for illegal behavior that damages marine resources, these provisions are rarely used, and penalties that are imposed may not reflect the value of the resource lost or damaged. For example, a settlement was announced in June 2007 that requires a snorkel charter that dropped anchor on a protected coral reef to pay \$7,300.¹⁰² The anchor broke at least 11 coral heads in the `Ahihi-Kina`u Natural Area Reserve. While a fine of \$7,300 may be substantial for an individual, it seems miniscule for a snorkel charter vessel that charges an hourly

¹⁰⁰ A. Keane et al., *supra* note 97 at 75-76 (2008) (citing enforcement as an effective tool to reducing poaching in marine reserves, among other examples).

¹⁰¹ *Id.* at 77

¹⁰² Christie Wilson, *Hawaii Fights to Protect Maui Nature Reserves from Human Impact*, CYBER DIVER NEWS NETWORK (June 13, 2007), at <http://www.cdnn.info/news/eco/e070613a.html>.

rate of \$1,225.00.¹⁰³ This was the first time DLNR pursued an administrative settlement for a violation of state laws that protect coral species,¹⁰⁴ and it demonstrates the increased interest in pursuing enforcement actions.

Several research studies indicate that increases in enforcement activities increase compliance. For example, Moffett et al. find that legal actions can deter large oil spills.¹⁰⁵ Many economic studies weigh the value of noncompliance versus the cost of enforcement actions based on, for example, risk of being caught, risk of being prosecuted, and the value of the penalty.¹⁰⁶ However, scholars do caution that penalties that are too high can be problematic due to increased cost of litigation and in some cases greater effort to hide illegal activity due to fear of penalties.¹⁰⁷

Option 4. Increase funding and capacity for compliance measures and enforcement.

Compliance and enforcement tops the list of challenges identified for effective marine conservation in Hawai'i, and one of the primary reasons for a lack of effective enforcement is the lack of capacity and funding to properly conduct enforcement and compliance activities. The Nature Conservancy summarizes the challenge with DOCARE funding and capacity as follows:

... as of October 2005, DOCARE had only 103 personnel to police these vast areas, of which 79 were branch level field supervisors or enforcement officers on regularly scheduled patrols. The report further noted that the division's Maui branch had just 16 personnel and, at most, four or five officers on duty at any one time patrolling the islands of Maui, Lâna'i, and Moloka'i and all the waterways in

between. The branch also has responsibility for patrolling waters around the island of Kaho'olawe.¹⁰⁸

NOAA's Office for Law Enforcement is responsible for enforcement and compliance for federal fisheries, with at-sea support from the U.S. Coast Guard and land-based support from many coastal state law enforcement offices. In 2003, OLE agents and officers logged over 2,000 hours conducting surface patrols, 474 hours conducting aerial patrols and 2,000 hours conducting inspections. It has 19 patrol boats in all. These numbers are small compared to the vastness of the resource and the number of people fishing the waters in all of the U.S. states and territories.

In a 2005 report to Wespac on Coast Guard enforcement activities, it was noted that while the Coast Guard did not detect any violations of the bottomfish closures, it also "did not conduct any law enforcement patrols in support" of the closure.¹⁰⁹

Interviewees identified programmatic funding as the main challenge in enforcing the polluted runoff control program. Currently, the NPS program does not have funding to participate in more than one project per island each year. In order to obtain CWA § 319 funds, the state must provide matching funds. EPA awarded the program \$1,500,000 in 2007. However, the State of Hawai'i has not provided the program with new matching funds. Instead the state matches the federal funds with in-kind funding such as agency employee salaries to match EPA funds. An increase in new state funds will enable the program to receive more federal funds, which in turn will allow the program to expand, increase compliance, and explore the agency's enforcement options.

¹⁰³ SHANGRILA, PRIVATE SAILING CHARTERS IN LUXURY AND COMFORT, <http://www.sailingmaui.com/shangrila.html>.

¹⁰⁴ Christie Wilson, *Maui Snorkeling Tour Boat Operator Fined for Damaging Coral*, CYBER DIVER NEWS NETWORK (June 13, 2007), at <http://www.cdn.info/news/eco/e070613.html>.

¹⁰⁵ Maurice Moffett, Alok K. Bohara & Kishore Gawande, *Governance and Performance: Theory-Based Evidence from U.S. Coast Guard Inspections*, 33 POL'Y STUDIES J. 283 (2005).

¹⁰⁶ See, e.g., Randall, *supra* note 99.

¹⁰⁷ *Id.* at 297.

¹⁰⁸ The Nature Conservancy, Press Release: *Groups Join in Support of Better Enforcement of Natural Resource Regulations* (Jan 31, 2007), <http://www.nature.org/wherewework/northamerica/states/hawaii/press/press2945.html>.

¹⁰⁹ *Appendix 5: United States Coast Guard Enforcement Activities*, <http://www.wpcouncil.org/Bottomfish/Documents/AnnualReports/2005>.

1. Increase funding and hire additional staff to conduct enforcement activities.

Understaffing and lack of funds was a primary concern among interviewees. With such an expansive jurisdiction, DOCARE employs only 111 enforcement officers. According to the State Auditor's report, Maui's enforcement division has just 16 personnel and, at most, four or five officers on duty patrolling the islands of Maui, Lana'i and Moloka'i at a time. In addition, the report concluded that branch officers spend too much time performing administrative duties and not enough time in the field protecting Hawai'i's natural resources.¹¹⁰

Several interviewees commented that the enforcement division lacks adequate staff to manage NPDES permitting effectively. The DOH enforcement division employs only 6 enforcement officers to enforce the NPDES, stormwater, and the polluted run-off programs, with the overwhelming majority of their time spent monitoring and enforcing the NPDES program. Accordingly, interviewees commented that unpermitted violations largely go unenforced. All six of DOH's enforcement officers are based on Honolulu leaving all other islands without direct enforcement capabilities. While officers will travel to other islands, their protracted response time can lead to greater water quality degradation.

In 2007 scientists, fishers, and conservation groups called upon the legislature to approve a \$5 million budget increase to DOCARE to support the hiring, training and equipment for forty new enforcement officers and 10 support staff increasing the division's size by 40%.¹¹¹ One interviewee recommended providing county Departments of Planning and Permitting with more federal funds from the state CZM program to hire additional enforcement personnel.

DLNR has expressed that it is working to increase the number of enforcement officials, and a law

fellow at DOCARE has facilitated the agency's ability to take natural resources enforcement actions. However, the law fellow position was a one year position and not a permanent one.

2. Dedicate personnel to natural resource enforcement.

Two recommendations have been made by interviewees regarding the dedication of personnel to marine conservation compliance and enforcement. Some interviewees have expressed the need for an environmental court where an environmentally-educated judiciary would handle marine conservation as well as other natural resource cases. The rationale for such courts is the need to have specialized knowledge about complex scientific and regulatory information. Environmental courts exist in some countries such as Australia. However, the idea of environmental courts is not a new one,¹¹² and to date no U.S. environmental courts have been established.¹¹³ It is likely to be an enormous undertaking to establish such a court.

Another recommendation is to dedicate certain enforcement staff to the job of natural resources enforcement and compliance so that they can focus on violations that diminish efforts to conserve resources, rather than have broad obligations that may usurp natural resource enforcement actions. One officer in Florida describes the success of this approach as follows:

In October 1989 the Commission's Division of Law Enforcement dedicated 39 sworn officers to establish an Environmental Enforcement Section (EES). These positions were existing positions, not new positions appropriated by the Legislature. The Division restructured the supervisory level and removed the Sergeant position from the chain of command. This Sergeant position was redirected toward full-time criminal environmental investigations. *This redirection actually increased*

¹¹⁰ OFFICE OF THE AUDITOR, MANAGEMENT AUDIT OF THE DIVISION OF CONSERVATION & RESOURCES ENFORCEMENT (2006), <http://www.hawaii.gov/auditor/Overviews/2006/06-01%20overview.pdf>.

¹¹¹ *Id.*

¹¹² See, e.g., James M. Kramon, *A Consideration of the Concept of Federal Environmental Courts*, 4 MD L. F. 85 (1973).

¹¹³ J.S. Harbison, *Private Enforcement of Public Values in U.S. Courts: Justiciability Barriers in Environmental Law*, 3 ENVTL L. REV. 264 (2001).

*productivity in traditional resource enforcement within the Division, as well as the EES, averaging 1,000 cases per year since implementation.*¹¹⁴

D. PARTICIPATION

Public participation is critical to sound environmental governance. Decisions related to the use and management of marine and related resources have tremendous impacts on people's everyday lives. While there is no blueprint for what constitutes "good" public participation, there are well-developed principles, processes, and tools that have been used around the world to involve stakeholders in the management and protection of natural resources.

Over the past several years, public participation in environmental decision-making has been increasingly viewed as a set of three interwoven human rights: the right to access information, the right to participate in decision-making, and the right to access justice. Public participation is also inextricably tied to the right to a healthy environment. Understanding public participation as a human right has profound implications for decision-makers. Aside from legal duties or instrumental reasons, if participation is a right, there are attendant ethical obligations to provide meaningful participation to stakeholders and the general public.

There are also numerous benefits that can be realized from public participation in environmental decision-making. Involving the public can broaden the potential sources of relevant information, knowledge, and expertise available to policies, projects, and decisions. This can include: supplementary baseline data about local environmental conditions and processes; improved understanding of the potential issues affecting a resource; and identification of a wider range of potential solutions to those issues.

¹¹⁴ Randy Hopkins, *Environmental Law Enforcement: Meeting the Challenge* (emphasis added), <http://www.fdle.state.fl.us/FCJ/EI/SLP%20papers/Hopkins.pdf>

Just as important, public involvement provides decision-makers (and other stakeholders) with an understanding of the values and trade-offs that are associated with various environmental issues and their potential solutions. Understanding these often-competing stakeholder concerns is the first step to balancing them in ways that are acceptable to as many parties as possible.

Providing the public with an opportunity to air their concerns and have those concerns addressed also benefits stakeholders by offering them a sense of ownership of the process and reassuring them of the legitimacy of the ultimate decision. Even if stakeholders disagree with the final decision, they are more likely to accept it if they have been part of the decision-making process. Addressing public concerns in an open and transparent manner builds trust and encourages further cooperation among regulators, the public, and other stakeholders. In providing a means for identifying contentious issues (and a possible forum to resolve them), resource managers can also avoid costly delays and even the re-opening of issues after resources have already been invested.

The increased understanding and ownership that often result from public participation also provide impetus for stakeholders to become actively involved in the implementation, monitoring, and evaluation of environmental protection and management activities. This can be an extremely important means for ensuring sustainable marine conservation, as well as a mechanism for augmenting scarce government resources to realize conservation goals.

On the other hand, the failure to involve the public appropriately can contribute to public resistance to the project, increased administrative costs, and poorly designed and executed policies, laws, and projects.

Access to Information Related to Marine Resources

In order to provide meaningful input into decision-making processes, the public must have access to information about project proposals and their potential impacts. Access to information contributes to the overall level of public

understanding of marine resource issues and their solutions. Awareness-raising can also lead to the behavior changes that are necessary to realize those solutions. The increased transparency that results from broad access to information also engenders increased accountability on the part of decision-makers, helping to ensure that decisions are reasoned, defensible, and have appropriately accounted for public values. Increased access to information can also improve public understanding of how decision-making processes work, which in turn can create a greater sense of empowerment and social responsibility.

Over the past two decades, the Internet has facilitated tremendous public access to information – including government-held and privately-held information. However, it can still be overwhelming to members of the public to attempt to find accurate, timely, and unbiased information that they need to understand the environmental issues that impact them. Further, many citizens are unaware of the need to seek out information. To facilitate truly meaningful participation, governments and other stakeholders must make a concerted effort to make information available and understandable to those who may be impacted by it and who should be involved in a decision-making process.

At the federal level, access to environmental information is controlled by the Freedom of Information Act (FOIA). At the state level, Hawai'i has the Uniform Information Practices Act (UIPA). Additional requirements for access to information are also found in specific statutes.

Public Participation in Agency Decision-Making

While access to information is critical to meaningful participation, there also should be mechanisms for citizens to actively share their opinions, concerns, and ideas about the information or decision being made. These participatory processes should be tailored to a broad range of specific circumstances. Indeed, at each step of the process, questions relating to the level of engagement required for each set of stakeholders will need to be answered. Public participation is not a single process, but rather a continuum along which there are a variety of

possible levels of engagement and interaction, or power-sharing, among stakeholders and decision-makers. The choice of where on this spectrum to locate a specific public engagement process or activity should reflect the goals of the project in engaging stakeholders.

The major points along the spectrum, or “ladder” of public participation, have been defined in different ways. In general, however, the following three major categories capture the essence of the continuum of increasing engagement and interaction:

- Informing the public;
- Consulting with the public; and
- Actively engaging the public.

The lowest level of participation is providing stakeholders and the public with the information that they need to understand the relevant environmental issues, how decisions related to those issues may affect them, and the potential solutions to those issues. This is a one-way flow of information, and it does not truly ask the public or stakeholders to participate in any meaningful way. However, access to information is a prerequisite for informed and successful public involvement, even if it is not actual “participation.” Access to information requirements at the federal and state level are discussed above.

At the level of consultation, decision-makers ask the public to provide feedback or respond to proposals or alternatives. This may include providing the public a chance to comment on the proposed regulations or draft policies. It may also involve conducting surveys or interviews to determine public views on priority marine issues or mechanisms for addressing them. In essence, this is a “two-way” communication in which stakeholders’ opinions and values are asked for and duly considered, even if they are not necessarily incorporated into final project design and implementation. The majority of the participatory processes that enable stakeholders and the public to become engaged in regulatory decision-making take place at the level of consultation.

Beyond presenting the public with alternatives and asking for feedback, active involvement entails engaging the public in defining the issues to consider in the project context and how to address those issues. This may involve formal or informal discussions with stakeholder groups to help shape how decisions will be undertaken and actions conducted, to identify priority issues, and to develop solutions cooperatively with agency staff. It also may involve stakeholders taking responsibility for implementing decisions and monitoring their results. Finally, projects may institutionalize public involvement, such as through stakeholder advisory committees or resource co-management institutions.

Access to Justice: Taking Legal Action to Enforce Environmental Protections

In addition to the agency processes described above, the public can engage agencies and industries through other legal avenues including petitioning the government to take action (e.g., listing endangered species) or suing the government or others to prevent or stop harm to the environment after exhausting administrative remedies. Some federal laws contain citizen suit provisions that allow any person to commence a civil action against an agency or person in violation of the act.

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

Freedom of Information Act (FOIA)

At the federal level, access to environmental information is controlled by FOIA. Unless the information falls under one of nine exemptions, FOIA requires that all government records should be made publicly available on request by any individual, corporation, or organization. These exemptions include information that relates to: (1) national security; (2) internal rules or practices; (3) statutory exemptions; (4) trade secrets; (5) memoranda; (6) privacy; (7) law enforcement; (8) financial records; and (9) oil exploration.¹¹⁵

¹¹⁵ 5 U.S.C. §552.

Administrative Procedure Act (APA)

The federal APA establishes the general consultation requirements applicable to all federal agencies. Agencies are required to provide information and solicit comments on all proposed and final agency decisions (including the development of regulations); incorporate public comments into the decision-making process; and establish an appeals process for certain decisions.¹¹⁶

National Environmental Policy Act

Another common way in which the public becomes involved in decision-making is through the environmental assessment (EA) and environmental impact statement (EIS) processes under NEPA. NEPA requires all federal government agencies to undertake an EIA process to determine whether their actions will have significant environmental effects and to consider the related social and economic effects of their proposed actions.¹¹⁷ Private citizens or companies can also be required to undertake an EIA when they require a permit issued by a federal agency. The NEPA process is primarily overseen by the Council on Environmental Quality (CEQ), which promulgates the relevant regulations for agencies to follow in implementing EIA.¹¹⁸

Rather than responding to environmental impacts as they occur, the EA process enables decision-makers to anticipate the consequences of their actions and avoid or minimize adverse effects. EAs are not aimed at specific environmental outcomes, but rather at ensuring a more open and inclusive decision-making process to arrive at a better substantive result. A significant element of this precautionary approach is public disclosure of information regarding activities that have potential environmental impacts and the solicitation of public input at various stages of the EA.

¹¹⁶ 5 U.S.C. §§ 551 et. seq. (2000).

¹¹⁷ COUNCIL ON ENV'T QUALITY, A CITIZEN'S GUIDE TO THE NEPA: MAKING YOUR VOICE HEARD (Dec. 2007), http://ceq.eh.doe.gov/nepa/Citizens_Guide_Dec07.pdf.

¹¹⁸ For detailed guidance on the public participation requirements and opportunities available through NEPA, see *id.*

Public participation is required at several stages of the NEPA process, although the extent to which it is undertaken is often left to agency discretion. When preparing an EA, NEPA requires agencies to involve the public “to the extent practicable.” Thus, public participation at this stage is largely a discretionary process. Not all agencies systematically provide information related to an EA. If a finding of no significant impact (FONSI) is made, CEQ regulations require that the FONSI be published in the Federal Register and that it be available for public review for thirty days. If an EIS is prepared, a Notice of Intent (NOI) will be published in the Federal Register to make public information related to the scoping process.

Scoping entails a determination of which impacts should be considered as well as which alternatives (and often, which mitigation measures) should be assessed in the EIS. At this stage, agencies are required to identify and invite the participation of interested persons. The methods for doing this are left to the discretion of the agency.

Once a draft EIS has been prepared, it is made available for public comment for at least forty-five days. During this time, the agency may also conduct public hearings and request comments from certain governmental and other stakeholders. When the comment period is finished, the agency must analyze the comments received, conduct further analysis as necessary, and then prepare a final EIS.

In the final EIS, the agency must respond to all substantive comments it received, providing an explanation of how they are addressed or why they are not addressed. If monitoring and/or mitigation measures are adopted in the final Record of Decision (ROD), those must also be made available to the public for monitoring purposes.

Puwalu Series: An Example of Participation Challenges

Recent efforts to engage the Native Hawaiian community in managing ocean (and other natural) resources, include the Wespac-led Puwalu Series that sought Native Hawaiian input into natural resource management including the development

of ecosystem-based fishery management plans.¹¹⁹ At the first Puwalu meeting, the invitees proposed the development of moku councils that would manage natural resources for Native Hawaiian tenants.¹²⁰ The Puwalu series has been criticized by state officials, cultural organizations, and environmentalists as an effort to protect narrow fishing industry interests rather than being inclusive and a broadly participatory process.¹²¹

Clean Water Act Citizen Suit Provision

Section 505 of the CWA provides that any citizen may commence a civil action on his own behalf against any person, including a government agency, who is alleged to be in violation of the specific requirements of the CWA or against the EPA Administrator for failure to perform a nondiscretionary duty.¹²² This “citizen suit” provision provides an important enforcement mechanism for environmental advocacy groups and other citizens that supplements state and federal actions. Citizens can seek injunctive relief, civil penalties, and reimbursement of court costs and attorneys’ fees.¹²³ When citizen suits are settled, the fines can be allocated towards improvement of the affected water body, or credited towards the industry’s installation of new pollution control mechanisms.¹²⁴

It is important to note that there are potential issues with relying on the citizen suit provisions of the CWA as an enforcement mechanism. First,

¹¹⁹ WESTERN PACIFIC FISHERY MGMT. COUNCIL, REPORT ON THE PUWALU SERIES (Feb. 2007).

¹²⁰ *Id.* at 3. [119]

¹²¹ See, e.g., Christopher Pala, *Fisheries Management: Conservationists and Fishers Face Off Over Hawaii’s Marine Riches*, 317 SCIENCE 306 (2007). William Aila, Director of Na Imi Pono stated that “it appears that WESPAC has been attempting to hide their illegal activity under the cover of Native Hawaiian practices, creating divisions within the Hawaiian community, and creating a climate in which it erroneously appears that Hawaiians are discriminating against non-Hawaiians.” Na Imi Pono et al., Press Release: Environmental and Cultural Organizations Call for Wespac Congressional Hearing and the Resignation of Wespac Executive Director, Kitty Simonds (June 20, 2007), http://www.mcbi.org/news/Kitty_resignation.pdf.

¹²² 33 U.S.C. §1365 (2000).

¹²³ *Id.*

¹²⁴ OHIO ENV’T COUNCIL, WATERSHED WATCHDOG: GUIDE TO CLEAN WATER ACT CITIZEN SUITS, http://greenways.morpc.org/documents/OEC_Citizen_Suit_Guide.pdf.

litigation is almost always a costly undertaking. Despite the fact that litigants are entitled to recover court costs and attorney's fees, it can still be prohibitively expensive for advocacy groups and individuals.

Second, the CWA defines "citizen" as "a person or persons having an interest which is or may be adversely affected."¹²⁵ To gain the necessary standing to bring a suit under this provision, a person or group must show that: (1) it has suffered an "injury in fact" that is (a) concrete and particularized and (b) actual or imminent, rather than conjectural or hypothetical; (2) the injury is "fairly traceable" to the challenged action of the defendant; and (3) it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision.¹²⁶ Jurisdiction for citizen suits will be denied for past violations. There must be a "good faith allegation of an ongoing violation."¹²⁷ This requirement can be satisfied by establishing that a violation was occurring when the suit was filed unless it can be shown that there is "no real likelihood of repetition" of the violation.¹²⁸

Additionally, there is a requirement to prove that a court decision, whether providing injunctive relief or damages, can actually redress the harm brought to the person or entity bringing the citizen suit. When the violation has ceased, injunctive harm is no longer a viable option. Monetary damages that are delivered into the public coffers are unlikely to provide the required relief. As such, this requirement can be a significant barrier to gaining standing in a CWA citizen suit.

¹²⁵ 33 U.S.C. §1365(g) (2000).

¹²⁶ *Friends of the Earth, Inc. v. Laidlaw Environmental Services (TOC), Inc.*, 528 U.S. 167, 180-81 (2000) (citing *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560-61 (1992)); *see also* Plurality Opinion (Plurality op.) at 13 (quoting *Mottl v. Miyahira*, 23 P.3d 716, 724 (2001)); *Ka Pa Akai O Ka Aina v. Land Use Comm'n*, 7 P.3d 1068, 1079 (2000) (quoting *Citizens*, 979 P.2d at 1126).

¹²⁷ *Gwaltney of Smithfield v. Chesapeake Bay Found.*, 484 U.S. 49 (1987).

¹²⁸ *Chesapeake Bay Found. V. Gwaltney*, 688 F. Supp. 1078 (E.D. Va. 1988), *modified*, 890 F.2d 690 (4th Cir. 1989), *followed in* *Sierra Club v. Union Oil*, 853 F.2d 667 (9th Cir. 1988).

STATE MANAGEMENT

The Uniform Information Practices Act

The State of Hawai'i passed the UIPA in 1988 to ensure public access to state information. The UIPA also creates the Office of Information Practices that is tasked with implementing the law and helping citizens to access information. The UIPA lists categories of records that are available to the public including, among others:

- Agency rules and general policies;
- Final opinions and adjudicated orders;
- Land ownership, transfer and lien records, including real property tax information and state land leases;
- Environmental test results;
- Agency meeting minutes required by law to be public;
- Building permit information;
- Water service consumption data of the boards of water supply;
- Rosters of licensee or permit holders;
- Information collected for the purpose of making information available to the public; and
- Information from transcript, minutes, report, or summary of a public proceeding.¹²⁹

Exceptions to the public disclosure requirement include records that would invade an individual's privacy, records related to litigation; records that if disclosed would frustrate a legitimate government function (e.g., law enforcement records); and records that are protected from disclosure by law; legislative committee working papers and work product.¹³⁰ To assist agencies in fulfilling their duties related to UIPA, the Office of Information Practices published the UIPA guidance document, *Hawai'i's Open Records Law*.¹³¹

¹²⁹ HAW. REV. STAT. § 92F-12 (2007).

¹³⁰ HAW. REV. STAT. § 92F-13 (2007).

¹³¹ STATE OF HAWAII, OFFICE OF INFO. PRACTICES, HAWAII'S OPEN RECORDS LAW (2005), <http://www.hawaii.gov/oip/UIPABooklet-PDF.pdf>.

Hawai'i Environmental Policy Act (HEPA)

At the state level, HEPA requires all state agencies to adopt procedures for making information public, to make all agency statements of policy or interpretation, as well as all final opinions and orders available for public inspection.¹³² All proposed rulemakings are required to be published on the website of the Office of the Lieutenant Governor along with instructions on how to access information related to the rulemaking.¹³³ Prior to the adoption, amendment or repeal of any agency rule authorized by law, thirty days notice must be given for a public hearing. The Act specifies what must be included in such notice and that it must be sent directly to all those who submit a timely written request for advance notice of rulemaking proceedings.¹³⁴ All interested persons must be given an opportunity to submit data, views, or arguments, either orally or in writing, and the agency must “fully consider” all such submissions.¹³⁵ When issuing a final decision, the agency must furnish a concise statement of the principal reasons for and against its determination on request.

Marine and Coastal Zone Advocacy Council

MACZAC is an public advisory body that informs the efforts of the HICZMP as authorized under HRS 205A-3.5. MACZAC has five working groups: (1) coastal parking access; (2) shoreline certification; (3) commercial boating regulations and harbor facilities; (4) ocean resources management; and (5) culture resources management.

Hawaii Citizen Suit Provisions

At the state level, Hawai'i has no specific statute providing for citizen suits.¹³⁶ However, Article 11, Section 9 of the Hawai'i Constitution states:

Each person has the right to a clean and healthful environment, as defined by laws relating to environmental quality, including control of pollution and conservation,

¹³² HAW. REV. STAT. § 91-2 (2007).

¹³³ HAW. REV. STAT. § 91-2.6 (2007).

¹³⁴ HAW. REV. STAT. § 91-3 (2007).

¹³⁵ *Id.*

¹³⁶ For a description of state citizen suits, see STATE ENVIRONMENTAL RESOURCE CENTER, ISSUE: CITIZEN SUITS, <http://www.serconline.org/citizensuits/stateactivity.html>.

protection and enhancement of natural resources. ***Any person may enforce this right*** against any party, public or private, through appropriate legal proceedings, subject to reasonable limitations and regulation as provided by law.¹³⁷

However, the federal courts have held that the provision does not give individuals a new substantive right to sue—instead it removes a barrier to standing to sue.¹³⁸

OPTIONS FOR PUBLIC PARTICIPATION

One way to expand marine conservation is through increased public participation in the creation, implementation, and enforcement of laws, policies, and regulations, as well as through stakeholder engagement in on-the-ground volunteer actions.

Option 1. Provide timely and accurate information to stakeholders.

For stakeholders to participate meaningfully, they need access to timely and accurate information. Environmental education programs aimed at various stakeholder groups on specific marine conservation issues can be an important aspect of the behavior changes required to sustain Hawai'i's marine resources. Additionally, increased transparency and information-sharing among the relevant government and non-governmental institutions could facilitate better coordination of current activities and prevent duplication of efforts and wasting of precious resources.

Option 2. Expand efforts that empower stakeholders.

Many of the efforts to reinvigorate *ahupua`a* are based on the notion of co-management of natural resources. Expanding these efforts and creating

¹³⁷ Emphasis added.

¹³⁸ See, e.g., *Stop H-3 Ass'n V. Lewis*, 538 F. Supp. 149, 175 n.3 1 (D. Haw. 1982), *rev'd on other grounds*, 740 F.2d 1442 (9th Cir. 1984), *cert. denied*, 471 U.S. 1108(1985); see also *Fiedler v Clark*, 714 F.2d 77 (9th Cir. 1983).

formal mechanisms for empowering stakeholders to enforce natural resource regulations can be an important means for supplementing scarce government resources. Including stakeholders in decisions and expanding co-management approaches can achieve higher compliance of management measures in comparison to top-down approaches because resource users believe the system to be credible.¹³⁹

Option 3. Participate in management decisions.

The public can also participate in marine management decisions by providing feedback on draft plans, regulations, and policy documents. In doing so, they can challenge existing assumptions and provide valuable insight into different perspectives and alternatives. The following table lists some of the existing or potential opportunities to provide public input on management plans and decisions.

Description	Dates
Management Plan and Environmental Assessment for Papahānaumokuākea Marine National Monument. ¹⁴⁰	Announced May 2008
Hawai'i Coastal Zone Management Program, Draft Coastal and Estuarine Land Management Plan	Draft submitted to NOAA, currently open for comments
Western Pacific Fishery Management Council, Bottomfish and Groundfish FMP Amendment 14	Comment period closed Feb. 25, 2008.
US EPA Tentative Document Decision on the Renewal of CWA 301(h) Variance for the Sand Island Wastewater Treatment Plant.	Available on EPA Region 9 website. Comment

¹³⁹ See, e.g., Thomas Dietz, Elinor Ostrom, & Paul Stern, *The Struggle to Govern the Commons*, 302 SCIENCE 1907 (2003) (describing the top down New England groundfish fishery as a failure due to lack of management credibility in comparison to the lobster fishery that takes a more local approach is has a high degree of credibility among resource users).

¹⁴⁰ Papahānaumokuākea Marine National Monument, *Management Plan*, at <http://hawaiireef.noaa.gov/management/mp.html>.

	period closed February 29, 2008.
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Managers, industry, NGOs, and citizen's groups in Hawai'i have advocated for more collaborative management approaches. However, there is tension among these constituents about the purpose of collaborative bodies, their authority, and particularly their membership. For example, Wespac sponsored a conference series in February 2007 in partnership with the Association of Hawaiian Civic Clubs (AOHCC). The goal of the series was to “increase participation of the Hawaiian community in the conservation and management of Hawai'i’s resources through the creation of a community and cultural consultation process within the governance structure.” This *puwala* series sought input from Native Hawaiians on fishery management, but allegedly excluded environmental advocacy groups. The Wespac has since faced sharp criticism including allegations of unethical and illegal conduct by several of these environmental organizations. In June 2007, a complaint filed with the Inspector General for the Department of Commerce alleged that the Wespac engaged in lobbying by hosting and facilitating *puwala* series that were organizing meetings used to influence the Hawai'i State Legislature on certain bills in the 2007 legislative session. These allegations are currently under investigation.¹⁴¹

The Department of Planning and Permitting (City and County of Honolulu) has developed a “Neighborhood Board Information Handbook” that indicates when and how neighborhood boards

¹⁴¹ Keiko Bonk, Letter of Complaint to Inspector General Johnnie E. Frazier Re: Western Pacific Regional Fishery Management Council (May 21, 2007), <http://nwhinetwork.net/media/pdf/BonkIGltr.pdf>. In the complaint, Bonk alleged that Wespac “engage[s] in a number of activities that I believe to be illegal and unethical. The most serious of these activities is using federal money to finance a legislative campaign in the State of Hawaii.” *Id.* Wespac found the allegations to be without merit and continue to support the executive director, Kitty Simonds. Western Pacific Fishery Management Council, Press Release: Federal Management Council Recommends Management Measures for Pelagic Fisheries in the US Pacific Islands (June 22, 2007), http://www.wpcouncil.org/press/2007.06.22_PressRelease_138CMpelagics.pdf

can participate in land-use planning decisions (Table 7) as well as land-use zoning decisions.

Table 7.¹⁴² Land Use Management Opportunities

Program	Provide Written Comments	Testify: Planning Comm’n Hearing	Testify: City Council Hearing
Chapter 343, Hawai‘i Revised Statutes <ul style="list-style-type: none"> • Draft EA • Prep Notice (in prep for an EIS) • Draft EIS • Supplemental EIS 	X X X X		
State Land-use District Boundary Amendment <ul style="list-style-type: none"> • if > 15 acres • if < 15 acres 	X X	X	
Oahu General Plan Amendment	X		X
Special Area Plan adoption, amendment	X		X
Development Plan reviews and revision (every five years) Text, map exhibits, corresponding Public Infrastructure Map	X	X	X
Development Plan Amendment initiated by Director or City Council	X	X	X

for the state’s tourism-based economy,¹⁴³ Hawai‘i ranks 48th in the nation for spending on fisheries and wildlife.¹⁴⁴ For example, DLNR receives less than one percent (approximately \$76 million) of the state’s \$8.9 billion budget.¹⁴⁵ The *Comprehensive Wildlife Conservation Strategy* provides an example of the magnitude of disparity between funding needs and funding: the amount needed to recover twenty-one forest birds that are endangered or threatened would cost \$2.5 billion over thirty years, or \$83 million annually—more than DLNR’s entire annual budget.

LAWS AND INSTITUTIONS

FEDERAL SOURCES OF SUPPORT

Fees

Fees are assessed for entry into national parks, and the federal government has the authority to assess and collect fees for special use permits in the HIHWNMS to cover the cost of issuing permits, cost of monitoring activities, and the fair market use of the resource.¹⁴⁶ It, however, cannot collect general user fees. The special use permit fees can be collected for activities in the sanctuary with the exception of fisheries.¹⁴⁷ The collected fees can be used to administer the program and manage the resource.

Fines, Penalties, and Liability

A responsible party is liable for injury to natural resources—not just the costs associated with clean up in the case of hazardous or oil spills—under the OPA, the CWA, CERCLA, and the NMSA. Damages include money or in-kind contributions used to restore the environment to the state it was in prior to the injury. In some instances, where onsite restoration is not appropriate, offsite in-kind restoration occurs.

E. LICENSING, FEES, AND FINANCING

One of the greatest challenges for conserving and protecting the marine environment is finding the financial resources to support the needed actions. Despite the importance of the marine environment

¹⁴² Adapted from City and County of Honolulu, *Neighborhood Information Handbook* at 11 (2006), available at <http://www.honoluluapp.org/aboutdpp/view.pdf>.

¹⁴³ See, e.g., NRA: VOL. 1, *supra* note 26.

¹⁴⁴ CONSERVATION STRATEGY, *supra* note 2, at 3-4

¹⁴⁵ *Id.*

¹⁴⁶ 16 U.S.C. § 1431 et. seq. (2000).

¹⁴⁷ 16 U.S.C. § 1441 (2000).

STATE SOURCES OF SUPPORT

Taxes

The *Transient Accommodations Tax*, assessed on visitor accommodations, supports the work of the Hawai'i Tourism Authority (HTA), whose mission is “[t]o strategically manage Hawai'i tourism in a sustainable manner consistent with our economic goals, cultural values, preservation of natural resources, community desires and visitor industry needs.”¹⁴⁸ In fulfilling this mission, one of the goals of the HTA is “[t]o respect, enhance and perpetuate Hawai'i's natural resources to ensure a high level of satisfaction for residents and visitors.”¹⁴⁹ In 2006, HTA had a budget of \$2,000,000 to accomplish this goal by supporting projects identified by the Natural Resource Advisory Group and twenty-two community projects.¹⁵⁰ In 2007, HTA is funding natural resource protection through grant-making, with \$1,000,000 allocated to support the natural resources program.¹⁵¹ The grant requires a 1:1 match of cash or in-kind contributions.

Counties also may impose taxes to support conservation. On Kaua'i, a one half of one percent of the real property taxes are deposited into the *Public Access, Open Space, Natural Resources Preservation Fund* that is used to acquire land for a variety of purposes including “protection of significant habitats or ecosystems; ... preserving forests, beaches, coastal areas, and agricultural lands; ... protecting watershed lands to preserve water quality and water supply; and conserving land in order to reduce erosion, floods, landslides, and runoff.”¹⁵² A nine-member advisory commission, the Public Access, Open Space, and Natural Resources Preservation Fund

¹⁴⁸ HAWAII TOURISM AUTH., WHO WE ARE, <http://www.hawaii-tourismauthority.org>.

¹⁴⁹ HTA, 2006 Annual Report to the Hawaii State Legislature (2006), available at <http://www.hawaii-tourismauthority.org>.

¹⁵⁰ *Id.* Project descriptions are available at the HTA website (<http://www.hawaii-tourismauthority.org>).

¹⁵¹ HTA, Request for Proposals for the Natural Resources Program, RFP No. HTA-08-02 (2007).

¹⁵² For more information, see COUNTY OF KAUA'I, OPEN SPACE COMMISSION, <http://www.kauai.gov/Government/BoardsampCommissions/OpenSpaceCommission/tabid/294/Default.aspx>.

Commission administers and prioritizes expenditures of the Fund.¹⁵³

Fees

Fees provide one mechanism to pay for marine conservation. Examples of fees collected in Hawai'i include entrance fees to the Hanauma Bay Nature Preserve (\$5 for non-residents over the age of 13), cruise ship passenger dockage fees (\$1.85 per person), and commercial fishing license fees (\$50 for residents and \$200 for non-residents).

Fines and Penalties

Fines and penalties are assessed under several programs that relate to the marine environment. In many instances, those that injure the environment are responsible for the cost of restoration. For example, under Hawai'i Administrative Rules § 13-146-3 persons that damage public or private property on state park lands are liable for restoration of or restitution for damages, confiscation of tools and equipment and guilty of a petty misdemeanor. Violations of pollution discharge permits may lead to civil and administrative penalties of up to \$25,000 for each day an offense is committed.¹⁵⁴

NON-GOVERNMENTAL SOURCES OF SUPPORT

Volunteer Support

NGOs alone or in collaboration with state and/or federal agencies may seek additional funding for marine conservation through volunteer programs. Two such collaborative programs in Hawai'i are the “Adopt-A-Buoy” Program, led by the Malama Kai Foundation, and the Big Island Reef Fund.¹⁵⁵

In addition to NGOs accepting donations, several state and federal programs accept donations to support conservation programs. For example, the NMSA states that the Secretary of Commerce may accept donations and funds for support in administering the program.¹⁵⁶

¹⁵³ *Id.*

¹⁵⁴ HAW. REV. STAT. § 342D-11 (2007).

¹⁵⁵ For more information, see the Malama Kai Foundation website, at <http://www.malama-kai.org/index.htm>.

¹⁵⁶ 16 U.S.C. § 1442(c) (2000).

OPTIONS FOR LICENSING, FEES, AND FINANCING

Lack of sufficient funding is consistently identified as a common barrier to marine conservation for state and federal agencies, as well as for citizen groups, NGOs, and academic institutions. Interviewees commented on the need for additional support for existing programs and efforts in addition to funding new projects or programs. This section identifies options such as imposing new fees to generate the necessary funds to support marine conservation—approaches that are often politically challenging. As such, most approaches described in this section will require efforts to generate sufficient political will to support legal and regulatory changes.

Option 1. Seek additional funding from resource users.

User fees provide a mechanism for shifting the burden of the costs of conservation, restoration, and preservation of the marine environment (including management and enforcement actions) on those who are reaping the benefits. In some instances, fees are paid into funds that can only be used for designated activities that would advance specific conservation objectives. In other cases, fees paid are added to the treasury and their application to marine conservation initiatives depends on the political priorities of the state or political sub-division controlling the allocation of funds.

1. Mandate additional fees for recreational activities such as diving and access to state coastal parks and reserves.

Existing coastal parks and reserves could charge fees or increase fees for those that already charge fees for parking and access to the resource as is seen in Hanauma Bay. The state of Hawai'i imposes few fees for marine recreational activities and access to marine and coastal resources. Fees that are imposed are small in comparison to the value of the resource. For example, the most popular visitor snorkel site, Hanauma Bay Nature Preserve on O'ahu, charges \$1 for parking and \$5

for non-residents over the age of 13 (those under 13 and residents pay no entrance fee).¹⁵⁷ A recent survey by van Beukering et al. (2004) found that snorkelers and divers were willing to pay on average an additional \$2.81 per dive or snorkel trip for conservation of the resource.¹⁵⁸

Resource user fees are increasing in popularity as a way to support administration and conservation of state parks and recreation areas.¹⁵⁹ For example, in the late 1990s, San Francisco Parks and Recreation Department received over \$37 million annually from user fees—thirty-eight percent of its budget.¹⁶⁰ In the two largest fee generating cities, New York and Chicago, the majority of the user fees come from parking.¹⁶¹ The drawback to charging user fees is that it may exclude low income people. Since raising fees can be politically unpleasant, one author recommends the following steps to minimize complaints:

- Provide high quality
- Highlight the value
- Provide alternatives for low income people
- Institute increases on a rolling basis at the beginning of the season
- Pre-inform the politicians¹⁶²

Another study that found user fees to be a success in provided need conservation dollars to support marine protected areas in Indonesia makes the following recommendations when creating a user fee system:

- Involve tourism sector in the process
- To apply system evenly, focus on potential fee-evaders—e.g., certain operators or sectors

¹⁵⁷ City & County of Honolulu, Dep't of Parks and Recreation, Amended Rules and Regulations Relating to Visitor Use Levels and Controls at Hanauma Bay Nature Preserve, § 6(a).

¹⁵⁸ Pieter van Beukering, Herman Cesar, Jan Dierking & Scott Atkinson, *Recreational Survey in Selected Marine Managed Areas in the Main Hawaiian Islands* (2004).

¹⁵⁹ Peter Harnik, *Paying for Urban Parks Without Raising Taxes* (1998)

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Id.*

- Make sure funds directly support conservation of park where fees imposed
- Outreach and education is needed to explain fees and rationale for them
- Transparency is important
- Locals may contribute more to system than might be expected¹⁶³

2. Mandate increased cruise ship port fees.

Cruise ship visitation of the Hawaiian Islands has increased dramatically in the last decade. For example, cruise ships first arrived in Maui in the mid-1990s, and today more than 300 ships come to port in Maui each year.¹⁶⁴ In addition to environmental concerns about the discharge of pollutants into the marine environment and the general impacts of greater numbers of tourists visiting the islands, the expanding cruise ship industry has placed additional burdens on already busy ports. For example, Kahului Harbor—Maui’s major port for cruise ships and commercial shipping vessels—has exceeded 25 year projections for traffic in just five years.¹⁶⁵ In Hawai‘i, cruise ships passengers pay \$1.85 in dockage fees.¹⁶⁶ Some feel that these fees should be higher to cover the cost of environmental and other impacts that come with increased ship traffic and visitors to the islands.

Many U.S. states and other countries charge cruise ships considerably more for dockage and passenger fees than Hawai‘i. For example, Alaska recently passed a law requiring each passenger to pay a \$50 head tax for cruises in Alaska’s waters. The tax includes a \$4 fee to support “Ocean Rangers,” whose job it is to ensure that cruise ships comply with existing environmental laws

¹⁶³ M. V. Erdmann, *Developing a User Fee System as a Sustainable Financing Option for Bunaken National Marine Park*, http://www.icriforum.org/itmems/CD1/Powerpoints/Securing_Sustainable_Funding_for_Management/Optimized%20Bunaken_MERdmann.ppt#256,1,Developing a User Fee System as a Sustainable Financing Option for Bunaken National Marine Park.

¹⁶⁴ Shannon Wianecki, *Harboring Doubts and Dreams*, NŌKA‘OI MAUI MAGAZINE (Jan. 2006), http://www.nokaoimagazine.com/features/10_01/Harboring_Doubts_and_Dreams.html.

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

related to pollution.¹⁶⁷ In Seattle, passengers pay \$14 in fees.¹⁶⁸ In San Francisco, passengers pay \$5-10 for port-of-call visits, and cruise ships pay an additional dockage fee that varies by length and period of time at berth.¹⁶⁹

3. Mandate increased fees for resource extraction.

The Division of Aquatic Resources charges fees for a commercial fishing license (\$50 for residents, \$200 for non-residents), bait license (\$50), Kona crab/lobster closed season sales license (\$50), special marine product license (\$50), aquaculture facility license (\$50), and a special permit license. No fees are assessed for non-commercial marine fishing. While charter fishing boats are required to have a license, the recreational fishers on the vessels do not. Recreational fishing licenses are not without precedent in Hawai‘i, however. A recreational fishing permit is required for freshwater fishing.¹⁷⁰ Currently, tourist must pay \$20 for a 30-day license, and residents 15 to 60 years of age pay \$5. Existing fees were last raised in 1999.

Many states charge for a recreational fishing license and make annual or short-term licenses available.¹⁷¹ For example, California has one-day, two-day and ten-day sport fishing licenses.¹⁷² States may charge different fees according to whether the fisher is a resident or non-resident.¹⁷³

¹⁶⁷ See Anne Sutton, *Alaska Cruise Ships Trigger New Taxes*, THE HONOLULU ADVERTISER (May 6, 2007), <http://the.honoluluadvertiser.com/article/2007/May/06/bz/FP705060342.html>; see also Cruise Ship Law Blog, *Cruise Ship Tax Bill Passes in Alaska*, http://blog.lipcon.com/2006/08/cruise_ship_tax_bill_passes_in.html.

¹⁶⁸ Wianecki, *supra* note 164.

¹⁶⁹ Jennifer Stanley, Legislative Analyst Report: Cruise Ship Terminal at Piers 30 and 32 (Report II) (June 30, 2003), http://www.sfgov.org/site/bdsupvrs_page.asp?id=18360.

¹⁷⁰ HAR § 13-74-10.

¹⁷¹ See, e.g., NORTH CAROLINA DIV’N OF MARINE FISHERIES, NORTH CAROLINA COASTAL RECREATIONAL FISHING LICENSE TYPES,

<http://www.ncfisheries.net/recreational/NCCRFLtypes.htm>;

See also CALIFORNIA DEP’T OF FISH & GAME, 2008 SPORT FISHING LICENSES,

<http://www.dfg.ca.gov/licensing/fishing/fishdescrip.html>.

¹⁷² *Id.*

¹⁷³ *Id.* Resident fee is \$38.85 for the year and the non-resident fee is \$104.20 in California.

Also, states may assess additional fees for certain types of fisheries or for fishing in certain areas. California has a wide number of fees ranging from a \$12.60 one-day sport fishing license to a \$10,656.00 annual fee for a commercial fishing vessel using traps to take, possess or land tanner crabs.¹⁷⁴ While Hawai'i does assess fees for commercial and baitfish fishing, these other programs offer potentially expansive options for increasing revenues from the large numbers of recreational fishers in the islands.

5. Divert, increase, or create taxes to support marine conservation.

Taxation is often an incredibly unpopular maneuver but not impossible. The residents of Kaua'i demonstrated their willingness to dedicate tax dollars to conservation in the voter-approved amendment to the County Charter establishing a Public Access, Open Space, Natural Resources Fund that is funded by a minimum of 0.5 % of the county's real property taxes.¹⁷⁵ The fund is to be used for acquiring property. In the case of Kauai, the actual tax revenue generated is an obstacle to the success of the approach. The taxes that support the fund do not generate enough revenue to purchase expensive property on Kaua'i, especially coastal property.¹⁷⁶ A recent recommendation from the Commission tasked with determining the use of these funds called for an increase in property tax revenues from 0.5 % to 2.0 %.¹⁷⁷

4. Seek additional voluntary support.

In addition to mandated fees, voluntary support is another approach. Since 1991, the "Adopt-a-Buoy" Program is one such program that has raised funds for the installation of mooring buoys

at coral reef sites.¹⁷⁸ Malama Kai Foundation, DLNR, and DBEDT work in partnership to implement this program. The program asks individuals and businesses to contribute \$250-750 to support mooring buoys. The Big Island Reef Fund is another program seeking voluntary support for marine conservation efforts. It was created in partnership by several NGOs and DAR in response to the van Beukering et al. (2004) study, which indicated a willingness on the part of divers and snorkelers to pay additional fees. A program like the Big Island Reef Fund could be developed on other islands that are seeing increasing tourism including Maui and Kaua'i.

The New York Department of Parks and Recreation provides one example of "voluntary fees."¹⁷⁹ Users of recreational centers are asked to voluntarily pay an annual fee that gives them access to the center and a recreation card. Those that cannot afford the fee are asked to fill out a form and are granted a card as well. Interviews with the Department staff indicated that most users were willing to pay the annual fee, recognizing how it supported the maintenance of the facilities.

¹⁷⁴ CALIFORNIA DEP'T OF FISH AND GAME, 2007-2008 COMMERCIAL FISHING LICENSE FEES, <http://www.dfg.ca.gov/licensing/commercial/commdescrip.html>.

¹⁷⁵ County of Kauai, Ordinance No. 812 (Dec 15, 2003).

¹⁷⁶ See County of Kauai, Public Access, Open Space & Natural Resources Preservation Fund Commission, 2006 Report to the Kauai County Council and Mayor Brian Baptiste: Including Recommendations for Priority Projects at iv (2006), <http://www.kauai.gov/Government/BoardsampCommissions/OpenSpaceCommission/tabid/294/Default.aspx>

¹⁷⁷ *Id.*

¹⁷⁸ MALAMA KAI, ADOPT A BUOY PROGRAM, <http://www.malama-kai.org/buoys/funding.htm>.

¹⁷⁹ Harnik, *supra* note 159.

IV. LAND-BASED ACTIVITIES

The marine environment does not exist in isolation—it is profoundly influenced by terrestrial and freshwater environments through natural and man-induced processes such as erosion, freshwater outflow, and atmospheric deposition. This is especially true in Hawai‘i, where the most inland part of the state is only twenty-nine miles from the shore. Human activities on land often alter the amounts, types, and mechanisms through which materials are delivered to the ocean. For example, upland deforestation and coastal land development can increase sedimentation rates in the ocean. Physical alterations from stream channelization are associated with urban and mix-use agricultural areas throughout Hawai‘i. This often means there is less vegetation present and higher potential for siltation and erosion. On the other hand, damming freshwater rivers and streams can block natural delivery of sediments to the sea. Higher proportions of impervious surfaces resulting from development in urban and suburban areas have also significantly contributed to increased runoff. Fertilizers, vehicle emissions and sewage outflows deliver excess nutrients to the marine environment, which can adversely affect species such as corals that require low nutrient environments to survive.

While land, freshwater, and marine environments are tightly intertwined in an ecological sense, the laws, policies, and institutions that manage these environments typically consider them in isolation. Only a few, typically non-regulatory, programs attempt to build bridges across the land-freshwater-marine interface to provide the governance linkages needed to effectively conserve and manage Hawai‘i’s natural resources.

Strategies to conserve Hawai‘i’s marine environment—especially the fragile coral reef ecosystems that are heavily influenced by land-based activities—should consider the linkages between land, freshwater, and ocean and incorporate land-based conservation measures and

considerations. The following Part describes land-based laws and institutions, concentrating especially on those laws, policies, and institutions that may influence marine conservation. This Part includes:

A. Land-Use

1. Planning and Zoning
2. Coastal Parks, Protected Areas, and Beaches

B. Water Quality

1. Water Quality
2. *Ahupua`a* Management and Watershed Approaches
3. Point Source Controls
4. Nonpoint Source Controls
5. Diversion and Retention
6. Habitats at the Interface: Buffer Zones and Wetlands

A. LAND-USE

Coastal water quality is of crucial importance to the State of Hawai‘i. It is vital to the state’s economy, Native Hawaiian practices, leisure and recreation, a diverse array of tourism-based activities, and ecosystem and species health and diversity.¹⁸⁰ The health of Hawai‘i’s coastal waters and marine ecosystems in turn depends on the health of the watersheds of which they form a part. Land-based activities impact the quality and quantity of the freshwater streams that feed coastal wetlands and flow into the ocean. Pollutants are transported through surface water runoff, as well as groundwater discharge into coastal waters. These land-based sources of pollution constitute a

¹⁸⁰ Hawaii Coastal Zone Management Program, *Hawaii’s Coastal Nonpoint Pollution Control Management Plan* (June 1996), available at http://www.state.hi.us/dbedt/czm/czm_initiatives/6217.html.

major threat to the health of Hawai'i's marine ecosystems. Coastal development can result in beach loss and narrowing ecological damage to natural resources and habitats. Coastal hardening can produce coastal water quality impacts through increased turbulence and turbidity, and the direct flow of domestic sewage products into coastal waters because of the prevalence of sewage soil filtration (septic and cesspool systems) on shoreline plots. In heavily armored sectors, sand impoundment can lead to general sand volume decreases causing or exacerbating sector-wide erosion trends. According to the *Comprehensive Wildlife Conservation Strategy*, primary land-based threats to the coastal environment include the conversion of coastal lands to residential properties, the introduction of invasive species—including mangroves (*Bruguiera gymnorrhiza* and *Rhizophora mangle*) and pickleweed (*Batis maritima*)—off-road vehicles, and arson.¹⁸¹

Hawai'i's terrestrial environment is approximately 4.1 million acres in size. Almost half of this area is managed by state or federal government.¹⁸² The state manages more than 1.15 million acres for protection of natural resources, agriculture, recreation, and infrastructure. An additional 200,000 acres is managed by the Hawai'i Department of Hawaiian Home Lands as a trust for Native Hawaiians.¹⁸³ The federal government owns or manages 671,000 acres of land and the remaining is private land of which twenty percent is owned by seven landowners (Kamehameha Schools, Parker Ranch, Castle and Cooke, Inc., Alexander and Baldwin, Inc., James Campbell Estate, C. Brewer and Company, Ltd., and Dole Food Company, Inc.).¹⁸⁴

The Great Mahele (division) in 1848 resulted in the creation of a fee ownership system and lands were divided among King Kamehameha III, the chiefs, native tenants, and the territorial government.¹⁸⁵ Hawaiians who did not file a

claim with the Land Commissioner before February 14, 1848 forfeited their land to the federal government.¹⁸⁶ In all, the Hawaiian government was granted 1.5 million acres “subject to the rights of native tenants.” Through a series of legislative actions, Native Hawaiians lost control of all but approximately 200,000 acres. Today, Native Hawaiian rights to natural resources are protected by Hawai'i's Constitution, statutes, and case law.¹⁸⁷ These traditional rights relate to both land-use and fishing and must be considered when developing marine conservation strategies.

Today, there is a major trend in Hawai'i's land-use patterns away from agriculture and towards resort-residential development and large-lot developments. Tourism is increasing rapidly and with tourists come the need for accommodations and expanding infrastructure. Increased military activity is also likely to increase the demand for housing and infrastructure development on conservation district lands.¹⁸⁸

The following section describes: (1) planning and zoning; and (2) coastal parks, protected areas and public access. “Planning and Zoning” covers state land-use laws as well as federal-state partnership programs that work to manage the development of Hawai'i's lands. “Coastal Parks, Protected Areas, and Public Access” considers state and federally-owned or operated lands that are held in trust for the public. These include state and federal parks and wildlife refuges or sanctuaries. This section also considers the rights of the public to access all beaches. Marine parks, including Marine Life Conservation Districts and federal sanctuaries, are considered in the subsequent Part V, “Marine Activities.”

1. PLANNING AND ZONING

Hawai'i considers its entire terrestrial environment as part of the “coastal zone,” recognizing the close connection among the forested watersheds and the marine environment.¹⁸⁹ Therefore this Assessment

¹⁸¹ CONSERVATION STRATEGY, *supra* note 2, at 3-8.

¹⁸² CONSERVATION STRATEGY, *supra* note 2, at 3-1.

¹⁸³ *Id.* at 3-1 – 3-2.

¹⁸⁴ *Id.* at 3-2

¹⁸⁵ See, e.g., Jocelyn Garavoy, “*Ua Koe Ke Kuleana O Na Kanaka*” (*Reserving the Rights of Native Tenants*): Integrating Kuleana Rights and Land Trust Priorities in Hawaii, 29 HARVARD ENVTL. L. REV. 523 (2005).

¹⁸⁶ *Id.* at 526.

¹⁸⁷ *Id.* at 530.

¹⁸⁸ CONSERVATION STRATEGY, *supra* note 2, at 3-2

¹⁸⁹ HAW. REV. STAT. § 250A (2007);

considers planning and zoning generally in addition to highlighting laws, policies and institutions that are specifically coastal or marine in nature.

zone management program that is approved by the Secretary of Commerce. According to OCRM, CZMA aims to:

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

With the exception of federally-owned lands, land-use planning and control is largely a state activity. Federal government influences and supports state land-use through incentive-based programs. Programs especially relevant to the conservation of the marine environment include the Coastal Zone Management Program, the National Sea Grant Program, the Coastal and Estuarine Land Conservation Program, and the Smart Growth Program.

EPA, Smart Growth Program

EPA's Smart Growth Program helps communities protect their natural environment using development strategies that promote conservation as well as economic well-being. In addition to conducting research and providing reports and publications to help regions protect natural resources, the Program also works with communities through grants and technical assistance. For example, the Smart Growth Program provides information about coastal brownfield development in its report, *Policy Lessons from the Coastal Brownfield Development of Fields Point, Providence, Rhode Island*. Recently, EPA signed an MOU with NOAA to provide Smart Growth implementation assistance to coastal communities. To date, six community projects are being supported.

Office of Ocean and Coastal Resource Management (OCRM), NOAA

In 1972, Congress enacted the Coastal Zone Management Act (CZMA). Administration of the national Coastal Zone Management Program is overseen by OCRM. The CZMA creates a voluntary partnership between the federal government and coastal states. In fiscal year (FY) 2006, OCRM distributed \$66 million to state coastal programs. In exchange for grant money, coastal states and territories must develop a coastal

- Preserve, protect, develop, and, where possible, restore and enhance the resources of the nation's coastal zone for this and succeeding generations;
- Encourage and assist the states to exercise effectively their responsibilities in the coastal zone to achieve wise use of land and water resources, giving full consideration to ecological, cultural, historic, and aesthetic values, as well as the need for compatible economic development;
- Encourage the preparation of special area management plans to provide increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas and improved predictability in governmental decision-making; and
- Encourage the participation, cooperation, and coordination of the public, federal, state, local, interstate and regional agencies, and governments affecting the coastal zone.¹⁹⁰

State coastal zone management programs are expected to “comprehensively manage their coastal resources and to balance competing land and water uses while protecting sensitive resources.”¹⁹¹ The Secretary of Commerce has an obligation to review the performance of coastal states in implementing and enforcing approved CZM programs through a public process and can suspend funding if the state is not adhering to the plan or the terms of any grant or cooperative agreement funded under the CZMA.¹⁹² If

¹⁹⁰ NOAA, OFFICE OF OCEAN AND COASTAL RES. MGMT., COASTAL PROGRAMS: PARTNERING WITH STATES TO MANAGE OUR COASTLINE, <http://coastalmanagement.noaa.gov/programs/czm.html>.

¹⁹¹ NOAA, OFFICE OF OCEAN AND COASTAL RES. MGMT., THE NATIONAL COASTAL ZONE MANAGEMENT PROGRAM, http://coastalmanagement.noaa.gov/programs/coast_div.html.

¹⁹² 16 U.S.C. § 1458(c)(1) (2005)

compliance is not achieved, the Secretary may withdraw approval of the program.¹⁹³

In order to ensure that federal and state coastal management activities are consistent, the CZMA includes a provision requiring federal actions that are reasonably likely to affect any land or water use or natural resource in a state's coastal zone to be consistent with that state's enforceable policies under a federally approved state coastal zone management program.

In 1990, Congress created the Coastal Zone Enhancement Program under §309 of the CZMA. Section 309 provides incentives to states to make changes in any of nine areas of coastal enhancement: wetlands; coastal hazards; public access; marine debris; cumulative and secondary impacts; special area management plans; ocean/Great Lakes resources; energy and government facility siting; and aquaculture. Under the Section 309, states are required to conduct an assessment of their coastal management activities for each of the nine enhancement areas every five years to facilitate their targeting of the Program's funds. In consultation with OCRM, state coastal programs then develop five-year strategies to achieve changes in each of the enhancement areas.

NOAA, Coastal and Estuarine Land Conservation Program (CELCP)

CELCP provides matching funding to states to acquire property through fee simple titles to land or through establishment of conservation easements to protect ecologically valuable portions of coastal and estuarine lands. NOAA allocates funding on a competitive basis according to uniform evaluation criteria. In FY 2007, CELCP was slated to distribute approximately \$66 million to state coastal programs.¹⁹⁴ In order to qualify for funding, coastal states must meet specific eligibility requirements as outlined in guidelines provided by NOAA. The state must prepare an approved State Coastal and Estuarine Land Conservation Plan to identify priority conservation needs and provide clear guidance for

the process of nominating local coastal land conservation projects for the national competition.

NOAA, National Sea Grant Program

The National Sea Grant Program was established in 1966 by the National Sea Grant College and Program Act. The Program supports 30 state university based programs in the U.S. The Program supports research and outreach related to the marine environment, which includes activities related to coastal development.

STATE MANAGEMENT

State Land-Use

Hawaiian land-use regulation is a complex system of state and county laws. In addition, several federal laws affect land-use, such as CWA wetlands protection provisions. Hawai'i's State Land Use Law was passed in 1961 in response to growing concerns about development patterns throughout the islands.¹⁹⁵ Hawai'i was the first among the fifty states to promulgate such state-wide planning legislation, and remains unique in the extent of state control over land-use regulation. The State Land Use Law encourages those uses to which various lands are best suited, promotes appropriate patterns of human settlement, discourages development of valuable and finite lands, and is structured to preserve and protect the state's valuable land resources.¹⁹⁶ These goals are achieved through the administration of a state-wide framework for land-use planning and management that classifies all state lands into one of four districts: Conservation, Agricultural, Rural, and Urban. The initial boundaries of these districts were set by the LUC.

Today approximately ninety-five percent of Hawai'i is zoned for agricultural or conservation uses. Although the majority of lands zoned for conservation purposes are covered by forests, some contain grasslands, coastlines, cliffs, offshore islets, and wetlands. Conservation District lands comprise approximately forty-eight

¹⁹³ 16 U.S.C. § 1458(d) (2005).

¹⁹⁴ NOAA, OCEAN AND COASTAL RES. MGMT., FUNDING, <http://coastalmanagement.noaa.gov/funding/welcome.html>.

¹⁹⁵ HAW. REV. STAT. § 205 (2007).

¹⁹⁶ I HAWAI'I LAND USE COMM'N, PRESENTATION: LAND USE COMM'N'S OVERVIEW OF HISTORY, NEED, PURPOSE & COMPOSITION, http://luc.state.hi.us/ovrvw_files/frame.htm.

percent of Hawai'i's lands. Conservation District lands mainly include those lands in existing forest and water reserve zones and include areas necessary for protecting watersheds and water sources, scenic and historic areas, parks, wilderness, open space, recreational areas, habitats of endemic species, and all submerged lands seaward of shoreline. They also include all lands subject to floods and soil erosion. As such, these lands are of particular importance to marine conservation in Hawai'i. Conservation District lands are administered at the State level by the BLNR, a seven-member board under the auspices of the DLNR. One exception to this is the Special Management Areas (SMAs), which are administered by the counties.

Within Conservation Districts, there are five designated sub-zones: Protective, Limited, Resource, General, and Special.¹⁹⁷ Other than the Special subzones, the zones are arranged according to a hierarchy of environmental sensitivity (with Protective being the most sensitive). Each of the different sub-zones has identified land uses, and regulations outline the required permits for each type of use allowed in that sub-zone.¹⁹⁸ Most applications for major permits require an EA or an EIS, which may require a public hearing. Public hearings are also required for any permit application for proposed use of Conservation District lands for commercial purposes; for changes of sub-zone or boundaries of the District; on applications related to the Protective sub-zone; and all other applications for which the BLNR Chairperson determines a hearing to be in the public interest.

Approximately forty-seven percent of Hawai'i's lands are classified as Agricultural District lands, which are administered by the counties. According to state law, Agricultural District lands can be used for the cultivation of crops, orchards, forage, and forestry; farming activities or uses related to animal husbandry, aquaculture, and

game and fish propagation; bona fide agricultural services and uses that support agricultural uses (such as farm buildings, employee housing, mills, and storage facilities); small-scale scientific and environmental data collection and monitoring facilities; agricultural parks; and open area recreation facilities (not including golf courses or golf driving ranges).¹⁹⁹

In recent history, sugarcane and pineapple crops have dominated Hawai'i's agricultural industry; however, these crops are declining and being replaced with more diversified crops including annuals such as taro and onions, orchards, and pastures.²⁰⁰ A recent study found that this diversification could lead to a major increase in erosion, especially in agricultural lands that plant annuals and orchards.²⁰¹ Another major issue has been the tendency of Hawai'i's counties to allow non-agricultural uses and developments to occur on Agricultural District lands through the issuance of special use permits by counties, rather than boundary changes that would require the LUC to engage in an extensive quasi-judicial process.²⁰²

An example of this is the Keopuka project—a development on 660 acres of agricultural land that would include 125 house lots, an 18-hole golf course, and other facilities with only seventy-five acres retained for agricultural production.²⁰³ The issue of future use of agricultural land is likely to be a growing challenge with the overall decline of agricultural production on such designated lands and increasing pressure for development with expanding populations.²⁰⁴

¹⁹⁹ HAW. REV. STAT. § 205-2(d) (2007).

²⁰⁰ See, e.g., S. A. El-Swaify, *Impacts of Land Use Change on Soil Erosion and Water Quality—A Case Study from Hawaii*, in 12TH ISCO CONFERENCE PROCEEDINGS 267 (2002), <http://www.tucson.ars.ag.gov/isco/isco12/VolumeIII/ImpactsofLandUseChange.pdf>.

²⁰¹ *Id.*

²⁰² Nathan Poh kea Roehrig, *Comment: Urban Type Residential Communities in the Guise of Agricultural Subdivisions*, 25 HAWAII L. REV. 199 (2002).

²⁰³ *Id.* at 199.

²⁰⁴ See, e.g., HAWAII LAND USE LAW: OBSERVATIONS AND COMMENTARY BLOG, HOW MUCH AGRICULTURAL LAND DOES HAWAII NEED? (March 11, 2008), <http://hilanduse.blogspot.com/2008/03/how-much-agricultural-land-does-hawaii.html>.

¹⁹⁷ HAW. ADMIN. R. § 13-5.

¹⁹⁸ Among the allowable permits are those granted for emergencies, temporary variances, and non-conforming uses. Such permits are only allowed for emergency reconstruction or rehabilitation or activities not within the identified land uses but deemed appropriate by the BLNR under special and unique circumstances.

With respect to marine conservation in Hawai'i, the lack of clarity about development of agricultural lands could inhibit appropriate assessment of the amount and type of potential polluted runoff, as well as projected erosion rates that are likely to occur from these lands. It could also promote long-term development patterns not compatible with state policy and undermine conservation efforts.

Rural District lands comprise only approximately 0.03 percent of Hawai'i's lands. There are three significant differences between Rural and Agricultural lands: (1) homes can be single-family dwellings on Rural lands; (2) there is a smaller (.5 acre) minimum lot size; and (3) golf courses are allowed on Rural lands. Finally, Hawai'i's Urban District lands comprise approximately 4.7 percent of the islands' landmass. The Urban Districts are entirely under county jurisdiction and controlled by county zoning regulations.

County Land-use Planning and Management

Hawai'i Revised Statute § 46-4 grants the four Hawai'i counties the power to zone lands within their jurisdiction. Zoning must be accomplished in the context of a long range, comprehensive general plan. Each General Plan addresses erosion control, polluted runoff, and other issues directly related to marine ecosystem health in areas not designated Conservation District lands in different ways. For example, the Kaua'i General Plan states that it is a general policy within the county to regulate the location and intensity of environmental impacts and specifically aims to, among other things: reduce annual post-development sediment in runoff; work with other government agencies and community organizations to reduce all types of nonpoint source water pollutants; protect areas susceptible to erosion; promote the use of permeable surfaces for parking and driveways and limit increases in impervious areas; and manage land use and earth-moving activities from a watershed perspective.²⁰⁵

One land use designation of particular significance to Hawai'i's marine ecosystem is that of special management areas. SMAs are specifically designed to protect coastal areas within

²⁰⁵COUNTY OF KAUA'I, GENERAL PLAN, Ch. 3.

Conservation District lands. Through their SMA permitting processes, the counties assess and regulate development proposals in compliance with coastal zone management objectives and SMA guidelines set forth by the State in the coastal zone management law. This legislation requires the counties to institute SMA permitting processes that regulate developments along the coast in ways that minimizes adverse environmental and ecological impacts and ensures consistency with the State's CZM policies and requirements and that County's General Plan.²⁰⁶ The statute also lists specific impacts that are to be minimized by the county authority implementing the permitting process, such as filling of wetlands, developments that would adversely affect water quality. As the SMAs are independently implemented in each county, the boundaries of the areas vary from one-hundred yards to several miles inland from the shoreline.²⁰⁷

Counties have the power to acquire property and to dispose of it, except that counties may not dispose of "property bordering the ocean."²⁰⁸

Land Use Commission

The LUC is a quasi-judicial body administratively assigned to the DBEDT. The LUC categorizes all land in the State into one of the four land classifications: Conservation, Agricultural, Rural, and Urban. Today, the LUC's primary role is to ensure that land areas of state concern are considered in land-use planning. Through a quasi-judicial process, the Commission presides over petitions for boundary amendments (district boundary amendment) submitted by private entities and county agencies over 15 acres. However, the LUC carries no enforcement powers. Rather the county DOPP have the affirmative duty to enforce all LUC conditions and orders.²⁰⁹

²⁰⁶HAW. REV. STAT. § 205A-22 (2007).

²⁰⁷HAW. CZM PROGRAM, COASTAL ZONE MGMT, A PARTICIPANT'S GUIDE TO THE SPECIAL MANAGEMENT AREA (SMA) PERMIT PROCESS IN THE STATE OF HAWAII (2006)

²⁰⁸HAW. REV. STAT. § 46-1(16)(B) (2007).

²⁰⁹Lanai Company, Inc. v. Land Use Comm'n and Lanaians for Sensible Growth, 97 P.3d 372 (Haw. 2004).

Coastal Zone Management Program, Office of Planning

To comply with the federal CZMA, the Hawai'i State Legislature passed Public Law 92-583, the Hawai'i Coastal Zone Management Act of 1977 (HICZMA). The HICZMA contains a number of wide-ranging policies and objectives intended to guide the conservation and development of land and water resources within Hawai'i's coastal zone.

Hawai'i's designated coastal zone includes all land areas of the state and extends three miles seaward from the shoreline²¹⁰ to the limit of the state's police power. HICZMP, within the OP, coordinates a network of state and county agencies implementing land and water use controls, resource management, and environmental protection to achieve coastal management and protection goals. To implement this network, the law requires that coastal zone objectives and policies are binding on all agencies. At least 58 state laws and county ordinances and rules are incorporated into the HICZMP.

The HICZMP, with support from several state and federal agencies, NGOs, and citizens, updated the Ocean Resources Management Plan (ORMP) in 2006. The ORMP addresses land-based issues including water quality, runoff, erosion and other hazards, infrastructure, and public access to the beach. It identifies key threats and makes recommendations about how to achieve comprehensive and integrated ocean and coastal management.

Marine and Coastal Zone Advisory Committee (MACZAC)

The State CZM legislation establishes a public advisory body, MACZAC, composed of not more than twelve members representing the various geographic areas of the State of Hawai'i, as well as the following sectors: business, environment, practitioners of Native Hawaiian culture, terrestrial and marine commerce, recreation, research and tourism.

²¹⁰ The shoreline is defined as the "upper reaches of the wash of the waves, other than storm or seismic waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth, or the upper limit of debris left by the wash of the waves." HAW. ADMIN. R. §13-222-2.

Office of Conservation and Coastal Lands (OCCL), DLNR

The OCCL oversees the public and private lands that make up the Conservation District, which includes beach and submerged lands extending to the three-mile state jurisdictional limit. The OCCL marine management activities include permit processing, prosecution of land-use violations, resolution of shoreline encroachments, administration of contested cases involving conservation district use permits (CDUPs), and shoreline certifications. The OCCL provides information, direction and guidance to coastal landowners, concerned citizens, and resource agencies on current best practices for shoreline use and management through the development, implementation, and monitoring of Coastal Management Policy and Procedures.²¹¹

OCCL's Coastal Lands Program leads several marine conservation projects including Coastal Lands Program Coastal Erosion Management Plan (COEMAP) and shoreline renourishment projects. It is conducting a small-scale (10,000 cubic yards) sand-pumping project at Waikiki Beach. The purpose of the project is to re-nourish Waikiki Beach and demonstrate the effects of offshore sand retrieval in Hawai'i for future beach restoration projects. The project was anticipated to last approximately 20 to 30 days and dredging was completed on January 5, 2007.²¹² Developed in 2000, COEMAP provides a framework for community discussion and assessment of coastal erosion and beach loss in Hawai'i. The objective of COEMAP is to "outline socioeconomic and technical mechanisms for conserving and restoring Hawai'i's beaches in a framework of mitigating erosion impacts and reducing exposure to coastal hazards for future generations."²¹³

²¹¹ STATE OF HAWAII DEP'T OF LAND AND NATURAL RES., OFFICE OF CONSERVATION AND COASTAL LANDS, <http://www.hawaii.gov/dlnr/occl/>.

²¹² STATE OF HAWAII DEP'T OF LAND AND NATURAL RES., OFFICE OF CONSERVATION AND COASTAL LANDS KUHIO BEACH NOURISHMENT PROJECT, <http://www.hawaii.gov/dlnr/occl/waikiki.php>.

²¹³ STATE OF HAWAII DEP'T OF LAND AND NATURAL RES., LAND DIV., COASTAL LANDS PROGRAM, HAWAII COASTAL EROSION MANAGEMENT PLAN, <http://www.hawaii.gov/dlnr/occl/files/coemap.pdf>.

Hawai`i 2050 Sustainability Task Force

Created by Act 8 (SB1592 CD1) of the Hawai`i State Legislature, the Task Force submitted recommendations to the legislature on creating a Hawai`i 2050 Sustainability Plan. The Plan is set to be completed and submitted to the Legislature in December 2007 and finalized in 2008.

Draft Hawai`i Coastal and Estuarine Land Management Plan

In accordance with NOAA guidelines under the federal CELCP program, in 2006, the HICZMP developed a draft *Hawai`i Coastal and Estuarine Land Management Plan*. The draft *Plan* provides a description of existing CELCP projects (coastal sites that have been purchased for conservation purposes with the assistance of congressional CELCP funds); identifies priority areas for future inclusion in the CELCP; and describes the existing state plans and programs that the Plan will build upon. Existing CELCP projects in Hawai`i include the following sites: Waihe`e Coastal Dunes and Wetlands, Mū`olea Point, Pūpūkea-Paumalū Natural Area, Honu`apo Estuary, and Kīlauea Bay. Priority areas for future inclusion in the program will be those ecologically significant lands that can be effectively managed or protected, and those lands that advance the realization of goals of other state land conservation programs.

NON-GOVERNMENTAL APPROACHES***University of Hawai`i Sea Grant College Program***

Hawai`i's Sea Grant Program focuses on sustainable development in its theme program: Coastal Communities and Economies. It is working to integrate Smart Growth management approaches with coastal management for marine resource protection.²¹⁴ With funding from the EPA, the Hawai`i Sea Grant Program with state and federal agencies created a "Smart Growth SWAT Team" that worked with developers in Kapolei and Kailua to make conservation-minded decisions in the development of coastal

properties.²¹⁵ As a result of these consultations, D. R. Horton altered its Kapolei development plan to achieve sustainability objectives. The members of the SWAT Team continue to work with the City and County of Honolulu to revise the city's building and development codes and ordinances to promote sustainable development. Beyond Hawai`i, success has led the EPA to establish a program that enables other Sea Grant Programs to follow Hawai`i's model to achieve coastal Smart Growth.

The Sea Grant Program continues to work with EPA to achieve sustainable development. Current projects include one to address transportation oriented development along the new light rail system for Honolulu and another to create a new mixed use development in Moiliili.

Hawai`i's Thousand Friends

Hawai`i's Thousand Friends focuses on land-use management to ensure protection of the environment, human health, and cultural and natural resources. Its activities include on-the-ground restoration and protection, advocacy, litigation, and education. For example, it provides a website of Hawai`i's environmental laws to empower Hawai`i citizens with knowledge of these laws.²¹⁶ Hawai`i's Thousand Friends has sued on several occasions over developments slated for Special Management Areas). For example, the organization sued the City in a 1982 lawsuit alleging that the Special Management Area Permit for Kawainui Marsh was invalid because the City did not conform with the CZMA and the HAPA when developing homes in the region. In 1984, the court held that the permit was invalid because it was not in conformity with the state statutes.

Land Use Research Foundation of Hawaii

The Land Use Research Foundation is a membership organization for Hawai`i landowners and developers.²¹⁷ Its mission is to promote and advance the interests of its members in the area of land use laws and regulations.

²¹⁴ See, e.g., Peter Rappa & Stephen Meder, *Smart Growth Hawaiian Style*, PROCEEDINGS OF THE 14TH BIENNIAL COASTAL ZONE CONFERENCE NEW ORLEANS, LOUISIANA (JULY 17- 21 2005).

²¹⁵ *Id.* at 2-3.

²¹⁶ HAWAII'S THOUSAND FRIENDS, KNOWLEDGE OF THE LAWS, <http://www.hawaiis1000friends.org/>.

²¹⁷ LAND USE RESEARCH FOUNDATION OF HAWAII, <http://www.lurf.org/index.html>

2. COASTAL PARKS, PROTECTED AREAS, AND BEACHES

In addition to the newly designated Papahānaumokuākea Marine National Monument in the Northwest Hawaiian Islands, thirty one percent of Hawai'i is designated for long-term resource protection with 643,134 acres of Forest Reserves, 365,000 acres of National Park lands, 94,900 acres of state wildlife sanctuaries, and 657,048 acres of emergent and submerged National Wildlife Refuges.²¹⁸ Many of these sites are adjacent to the ocean or include the nearshore environment, so management of these land-based resources has a direct impact on the health of the marine environment.

National, state, and county parks and protected areas serve important roles in conserving natural resources and providing residents and visitors with recreational opportunities. However, misuse or mismanagement of these resources can result in significant degradation of land-based and marine resources. A study of Hawai'i's state parks found that 110 sites (both terrestrial and aquatic) were heavily impacted by visitor use—from vandalism to lack of facilities necessary to support the influx of visitors.²¹⁹

Over the last half century, nearly one-quarter of Hawai'i's beaches have been “significantly degraded,” and erosion rates throughout the state range between 0.5 and 1.0 feet per year. O'ahu is the most significantly degraded with 17.1 miles (24%) of shoreline narrowed (10.7 miles) and 6.4 miles lost since the 1940s. Waikiki Beach on O'ahu is one of the most famous examples of an eroding beach with 100,000 cubic yards which have receded into the ocean since 1951. Beach erosion on Waikiki has filled in reefs and changed surf breaks. Similarly, Maui has lost one-third of its beaches. In Kihei, 5,500 feet of shoreline has severely eroded.²²⁰ Coastal erosion is likely to be

exacerbated by the effects of climate change, including sea level rise.

Beach and coastal erosion mitigation attempts typically include the installation of a structural barrier like a seawall or revetment. This shoreline “hardening” interferes with the natural cycle of beach erosion and increases turbulence in near shore waters which decreases water clarity. It also reduces coastal access, damages ecosystems, and destroys coastal dunes. Beach replenishment is another option. A project on Lanikai Beach, O'ahu, added approximately 10,000 cubic yards of sand to the beach. This was the first large-scale use of an alternative solution to the construction of permanent shoreline structures.²²¹

While not directly related to marine conservation, public access to the beach and marine environment is an important consideration when considering conservation actions. The oceans and beaches are public resources, and public access to the beach can influence marine conservation in positive and negative ways. Those with first-hand knowledge and experience in the ocean may be more likely to support marine conservation efforts. On the other hand, public access can lead to over-use and over-exploitation. Hanauma Bay is often cited as an example of this dichotomy.

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

National Park Service (NPS)

The NPS manages eight national parks and historic sites on the main Hawaiian Islands. The Ala Kahakai is a 175-mile National Historic Trail that includes marine resources such as fishponds, nearshore reefs, estuarine ecosystems, coastal vegetation, and sea turtle habitat. A comprehensive management plan for the trail is under development. All of Hawai'i's National Parks have coastal or oceanic resources. These include: Haleakalā National Park, Hawai'i Volcanoes National Park, Kalaupapa National Historical Park, Kaloko-Honokōhau National Historical Park, Pu'uhonua O Honaunau National

²¹⁸ CONSERVATION STRATEGY, *supra* note 2, at 3-3.

²¹⁹ HAWAII TOURISM AUTH., NATURAL RESOURCES ASSESSMENT REPORT, VOL. II, http://www.hawaiiitourismauthority.org/documents_upload_path/reports/Natural_Resources_Assessment_-_Volume_II.pdf

²²⁰ SUMMARY REPORT, *supra* note 244.

²²¹ *Id.*

Historical Park, Puukohola Heiau National Historic Site, and the USS Arizona Memorial.

National Estuarine Research Reserve (NERR)

NOAA manages the NERR system, a network of 27 estuaries, as authorized under the CZMA. It is a federal-state partnership program—the federal government provides funding, guidance, and technical assistance to coastal states. To create a NERR, the coastal state governor must nominate an area and satisfy several requirements. The area must be a representative estuarine ecosystem and suitable for long-term research, and the law of the coastal state must provide long-term protection for the resource.²²² Once established, the federal government provides matching funds for acquiring lands and conducting activities. In FY 2006, OCRM distributed \$66 million to state coastal programs and \$26 million to the NERRs. The most recent NERR was designated in 2006 with the creation of the 185,708 acre Mission-Aransas Reserve in Texas. Hawaii does not currently have a designated NERR; however, it has had a NERR in the past.

STATE MANAGEMENT

Hawai'i Tourism Authority (HTA)

Pursuant to Hawai'i Revised Statutes § 201B, the HTA developed a Tourism Strategic Plan that considers Hawai'i's natural resources including marine resources. In conjunction with this, HTA funded two studies of Hawai'i's natural parks and uses these studies as the basis for funding Natural Resource Program projects designed to conserve and protect Hawai'i's natural resources.

Division of State Parks, DLNR

The Division of State Parks, within the DLNR, manages Hawai'i's State Park System as authorized under Hawai'i Revised Statutes § 184-1 et seq. DLNR has the authority to designate new parks from government owned land with approval from the governor; acquire county parks for the state park system with consent of the county council and may establish new parks by

acquisition of property in the name of the State.²²³ DLNR may charge user fees for permits and parking.²²⁴ Entrance fees may also be assessed for entrance to Diamond Head State Monument. DLNR may impose fines of up to \$5,000 for injury to wildlife or habitat.²²⁵ State parks that include beaches and marine environments include:

- Hawaii: Kealakekua Bay State Historical Park, Kona Coast (Kekaha Kai) State Park, MacKenzie State Recreation Area, and Old Kona Airport State Recreation Area
- Kaho'olawe: None
- Kauai: Polihali State Park, Na Pali Coast State Park, Ha'ena State Park, and Ahukini State Recreation Pier
- Lanai: None
- Maui: Makena State Park, Wai'anapanapa State Park, and Hapuna Beach State Recreation Area
- Moloka'i: None
- Oahu: `Aiea Bay State Recreation Area, Hanauma Bay State Underwater Park, He'eia State Park, Ka'ena Point State Park, Kahana Valley State Park, Kaka'ako Waterfront Park (built over former municipal landfill), Kewalo Basin, La'ie Point State Wayside, Makapu'u Point State Wayside, Malaekahana State Recreation Area, Sand Island State Recreation Area

Division of Forestry and Wildlife (DOFAW), DLNR

The DOFAW manages Hawai'i's Natural Area Reserve System (NARS). NARS were established under Hawai'i Revised Statutes § 195-1 to protect and preserve Hawai'i's unique natural resources “both for the enjoyment of future generations, and to provide base lines against which changes which are made in the environments of Hawai'i can be measured.” There are nineteen reserves that protect more than 109,000 acres. The NARS with ocean and coastal environments include: Manuka and Pu'u O `Um on the Big Island; `Ahihi-Kina'u on Maui; Ka'ena Point on O'ahu; and Hono O Na Pali on Kaua'i. In accordance with HAR §13-209-

²²² Coastal Zone Management Act of 1972, as amended, § 315.

²²³ HAW. REV. STAT. § 184-2.

²²⁴ HAW. REV. STAT. § 13-146-5.

²²⁵ HAW. REV. STAT. § 184-5.5.

3, small groups may access the reserves for hiking and nature study, but no camping is allowed.²²⁶ Other prohibited activities include: removing, injuring or killing plants or animals (except game animals), introducing non-native species, removing geological or paleontological features, construction, operating motorized vehicles, and anchoring in the Ahihi-Kinau natural area reserve, among others. Special permits may be granted by DLNR for prohibited activities.²²⁷

Natural Area Reserves System Commission

The NARS Commission has the powers and duties to establish criteria for determining areas suitable for the reserves system, conduct studies, make recommendations to the governor and DLNR, establish policies and criteria related to reserve management, and advise the governor and DLNR on issues related to the reserve system.²²⁸ The Commission is comprised of 13 members: 6 scientists, one hiking organization representative, one hunting organization representative, BLNR chairperson, superintendent of Education, Office of Planning director, Board of Agriculture chairperson, and the University of Hawai'i president.²²⁹

Natural Area Partnership Program, Reserve Fund, and Heritage Program

Hawai'i law creates mechanisms for private support for the Natural Area Reserve System.²³⁰ The Partnership Program enables private land owners to donate property to the NARS and the Reserve Fund can be used to provide a match for private funds used to manage the donated property.²³¹ The Reserve Fund, also used to identify, establish and manage NARS, is supported through public and private sources (no specific source of money is identified under the Act).

Funding State Parks

Hawai'i Revised Statutes Section 184-3.4 establishes a State Parks Special Fund from monies collected from park user fees, leases or concession agreements, sales, gifts or

contributions, and the transient accommodations tax revenues. The transient accommodations tax revenues must be used in accordance with the master plan developed in coordination with the HTA.²³² Under Hawai'i Revised Statutes §184-3.5, the Park Acquisition Trust Fund is used by DLNR to acquire lands for the state park system through the condemnation of private lands. Money to support the trust fund comes from contributions, gifts, bequests, and appropriations. The Aina Hoomalu State Parks Program is established under Hawai'i Revised Statutes § 184-31 to develop interpretive programs for parks that contain unique and significant natural or cultural history or features.

Department of Business, Economic Development and Tourism (DBEDT)

DBEDT uses “adopt-a-park”, “adopt-a-beach” and “adopt-a-trail” programs to support recreation and resource management agencies capacities by bringing in outside sources of funding.²³³

Public Access to Beaches and Shorelines

The public has the right to access and transit along all beaches and shorelines in the State.²³⁴ Counties primarily develop and maintain public access to and along the shorelines.²³⁵ The DLNR under its Na Ala Hele Program manages and maintains the public rights-of-way that are part of the Na Ala Hele trail system.²³⁶

Anchialine Pools

While not protected by specific law, DAR manages anchialine pools on state lands and the NPS manages the pools in national parks. Anchialine pools are brackish water pools at the interface of the ocean and terrestrial environment formed by lava tubes. The pools contain rare and unique fauna and are threatened by habitat damage and invasive species.²³⁷

²³² HAW. REV. STAT. § 184-3.4(2)

²³³ SUMMARY REPORT, *supra* note 244.

²³⁴ HAW. REV. STAT. §§ 115-4, -5

²³⁵ HAW. REV. STAT. §§ 46-6.5, 115-5, -7

²³⁶ HAW. REV. STAT. § 264-1. For more information, see

STATE OF HAWAII DEP'T OF LAND AND NATURAL RES., PUBLIC ACCESS ON BEACHES AND SHORELINES, <http://www.hawaii.gov/dlnr/Public%20Access%20on%20Beaches%20and%20Shorelines.pdf>.

²³⁷ See USGS, *Inventory of Anchialine Pools in Hawai'i's National Parks*,

²²⁶ HAW. ADMIN. R. § 13-209-4

²²⁷ HAW. ADMIN. R. § 13-209-5.

²²⁸ HAW. REV. STAT. § 195-7.

²²⁹ HAW. REV. STAT. § 195-6

²³⁰ HAW. REV. STAT. §§ 195-6.5, -9

²³¹ HAW. REV. STAT. § 195-6.5.

NON-GOVERNMENTAL APPROACHES

Several NGOs support the natural resources of federal, state and county parks and beaches through donations, purchases, and volunteer activities.

The Nature Conservancy (TNC)

TNC partners with state and federal agencies to protect and preserve natural resources related to the marine environment through partnerships with state and federal agencies to help manage or expand existing federal or state protected lands and purchase and management of private lands. TNC works at a variety of sites on the islands of Hawai'i, Maui, Lana'i, Kaua'i, Moloka'i, and O'ahu to protect beaches and terrestrial environments including watersheds.²³⁸

In protecting watersheds, TNC not only helps manage as an associate partner, but it also owns lands that comprise a portion of many watershed partnerships. For example, TNC's forest preserves in South Kona and Ka'u make up part of the 'Ōla'a-Kīlauea Partnership on the Big Island, and its land in the Waikamoi Preserve is a part of the East Maui Watershed Partnership in Maui. In addition, TNC's land in both the Pelekunu Preserve and the Kamakou Preserve make up a part of the East Moloka'i Watershed Partnership on the Island of Moloka'i.²³⁹

State Parks Volunteer Partners

Volunteer partners have curator agreements with the Division of State Parks to assist in the care of

http://biology.usgs.gov/pierc/Plants,_Insects_&_Ecosystems/Anchialine_pools.pdf

²³⁸ See THE NATURE CONSERVANCY, PLACES WE PROTECT, <http://www.nature.org/wherework/northamerica/states/hawaii/preserves/>. TNC sites include Kamehame Beach, Kohala Watershed Partnership, Kona Hema Preserve, Ka'u Preserve, 'Ōla'a-Kīlauea Partnership on Hawaii; East Maui Watershed Partnership, Waikamoi Preserve, West Maui Mountains Watershed Partnership, and Kapunakea Preserve on Maui; Lana'i Forest and Watershed Partnership on Lana'i; Kanaele Bog and Kaua'i Watershed Alliance on Kaua'i; East Moloka'i Watershed Partnership, Pelekunu Preserve, Kamakou Preserve and Mo'omomi Preserve on Moloka'i; and Honouliuli Preserve and Ko'olau Mountains Watershed Partnership on O'ahu.

²³⁹ *Id.*

Hawai'i's parks. Volunteer partners include the following groups who support the parks through site maintenance, education, restoration, and management:

- Luiiau 'Ohana at Kohala Historical Sites State Monument on the Big Island
- Na Kahu Hikina A Ka La at Wailua River State Park on Kaua'i
- Hui Maka'ainana o Makana at Ha'ena Coast State Park on Kaua'i
- Na Pali Coast 'Ohana at Na Pali Coast State Wilderness Park on Kaua'i
- Na Kanaka Maoli O Hawai'i Nei at 'Iao Valley State Park on Maui
- North Pu'u o La'i Wetland Association at Makena State Park
- 'Ahahui Malama I Ka Lokahi at Kawai Nui Stat Park Reserve on O'ahu
- Pa'i Foundation at Keaiwa Heiau State Recreation Area on O'ahu
- Joslyn Ka'awa at Makiki State Recreation Area on O'ahu
- Na Hoa o Pu'u o Mahuka at Pu'u o Mahuka Heiau State Historical Site on O'ahu
- Kailua Hawaiian Civic Club at Ulupo Heiau State Historical Park on O'ahu
- Pa Ku'i A Holo at Ulupo Heiau State Historical Park on O'ahu

OPTIONS FOR LAND-USE

Overarching Obstacles

Through interviews and additional research, ELI identified several overarching obstacles to conserving the marine environment through protection and management of terrestrial environment. Interviewees identified the following obstacles:

- There are few cities and counties with the necessary tax base to support and implement land-use regulations.
- Property rights concerns abound including potential takings claims and especially

challenges related to historical property ownership.

- The general attitude towards natural resources is that they are an asset but not a responsibility.
- The tourism industry is causing major impacts through development, and it is difficult to garner support for conservation among owners, many of whom are not based in Hawai'i.
- Dense development along the coast lead to increased impermeable surfaces and other infrastructure challenges (see, e.g., section on point sources of pollution).

In many instances existing laws, regulations, and policies, as mandated or as implemented, do not go far enough to provide adequate protection under state or federal environmental management. For instance, the Clean Water Act excludes nonpoint sources of pollution from its permitting program, making it difficult to devise mechanisms to regulate land-use so as to prevent nonpoint sources of pollution. Another example is coastal land-use. The coast (and the developments near it) is protected through the creation of set-back rules that determine how close a structure can be to the coast. Under current practices, setback rules in Hawai'i do not consider future sea-level rise scenarios in light of climate change. Some of these obstacles may limit the success of the options described below.

Option 1. Preserve buffer zones and coastal areas to prevent land-based sources of marine pollution.

1. Acquire land or conservation easements that protect riparian and coastal lands.

Governments, NGOs, or individuals can protect coastal lands and important watersheds to reduce land-based sources of marine pollution. This can be achieved through individual action, public-private partnership, or by state government. This approach is currently being used in Hawai'i by a number of organizations, public-private partnerships, and citizens to protect the terrestrial environment. A Hawai'i Seascape could

encourage expansion of existing programs or redirecting current efforts to include adequate consideration of the marine environment in deciding appropriate lands to protect. Because of the high cost of coastal lands, financial realities limit the ability to buy land. Conservation easements, however, can protect important buffer zones and coastal environments in the absence of outright purchases.

HRS §175A-5 creates the Land Conservation Fund that provides matching funds through a competitive grant program to state agencies, counties, and NGOs to acquire lands or easements for one of the following: watershed protection; parks; coastal areas, beaches and ocean access; natural areas; habitat protection; agricultural production; cultural and historic sites; open space and scenic resources; and recreational and public hunting areas. Awards were \$3.6 million and \$4.7 million in 2006 and 2007, respectively.

The U.S. Fish and Wildlife Service administers the National Coastal Wetlands Conservation Grants program that provides matching funds to states for acquisition, restoration, or enhancement of coastal wetland ecosystems. It focuses on landscape-scale conservation including community-based approaches and multilateral partnerships.²⁴⁰ In 2007, Hawai'i received \$2.4 million in funding for the restoration of Pouhala Marsh, Mana Plain in Kaua'i, and Nu'u Coastal Wetland Refuge.

Other programs that could be sources of funding for land acquisition or conservation easements include the Forest Legacy Program, the Recovery Land Acquisition program, Coastal and Estuarine Land Conservation Program, and the Wetlands Reserve Program.²⁴¹

The NERR program could provide an opportunity to protect, preserve and research important estuarine environments in Hawai'i. It is actively

²⁴⁰ David H. Gordon and Susan A. Mangin, *Landscape-Scale Conservation: The FWS Coastal Program*, 29(6) NATIONAL WETLANDS NEWSLETTER 1, 5 (2007).

²⁴¹ For a more comprehensive list of programs and opportunities, see DLNR, *Federal and State of Hawai'i Incentive Programs for Land Management on Private Lands*, <http://www.state.hi.us/dlnr/dofaw/LAP/landowner%20assist%20table.pdf>.

expanding program that provides 50-70 percent matches to NERR lands and activities. Hawai'i was once home to a NERR—the Waimanu Valley NERR on the Island of Hawai'i—which was withdrawn from the NERR system on May 1, 1996. The Kailua Bay Advisory Council has considered obtaining a NERR designation for the Ko'olaupoko Watershed in its Action Plan.²⁴²

Incentives for conservation easements could encourage expansion of land acquisition and easements. One approach would be to pass a state law allowing state-level tax credits for conservation easements to protect lands that provide key buffers for coastal waters. States that take such an approach include California, Colorado, Connecticut, Delaware, Georgia, Maryland, Mississippi, North Carolina, New Mexico, New York, South Carolina, and Virginia.²⁴³

2. Continue to protect and restore existing coastal parks and protected areas.

This option recognizes that the federal and state government has designated terrestrial parks and protected areas in Hawai'i that already act as buffers and filters for land-based activities. In addition to expanding protections, a Hawai'i Seascape should continue to support existing parks and areas. State and federal agencies have an obligation to protect parks and protected areas once these areas have been designated. NGO, individuals, or the private sector can support and enhance the state and federal government's role through volunteer approaches. For example, volunteer programs, such as “adopt-a-park” and “adopt-a-trail,” allow visitors to support the management and protection of Hawai'i's natural resources.

In its *Natural Resources Assessment*, the Hawai'i Tourism Authority (HTA) described decreasing funding with rising costs related to increasingly complex regulations as a major challenge for

protection of state park natural resources. It also found that state agencies and counties did not coordinate or cooperate in the management of the same resources. HTA identified the following additional obstacles in the *Natural Resources Assessment*:

- Poor quality of facilities (including deferred maintenance, vandalism, lack of parking, and difficulty finding and accessing sites) negatively impacted natural resources.²⁴⁴ For example, at some sites where restrooms were unavailable or in disrepair, visitors make their own “restrooms” in secluded areas within or on the perimeter of the site;
- At some sites, unpaved parking lots near coastal areas is leading to siltation and run-off into the marine environment. Black Pot Beach Park along Kaua'i's Hanalei Bay is an example of a popular beach where visitors park directly on the sand.²⁴⁵
- Many beach sites lack adequate safety and educational signage. Most sites within designated resource protection areas (Natural Area Reserves and MLCs) have standard signs. However, the *Natural Resources Assessment* found that these signs are often “weather beaten and outdated, offering little interpretive information about appropriate activities within fragile resource areas and how visitors can help to protect the resources”. Also, “only a small handful of sites” have adequate interpretive displays that explain the significance of sites within Hawai'i's “rich history;”²⁴⁶
- Conflicts and overlaps between State and County zoning and planning requirements;
- Uncertainty over purpose and allowable uses on Agricultural District lands; and

²⁴² Kailua Bay Advisory Council, *Ko'olaupoko Water Quality Action Plan* (2002), http://www.kbac-hi.org/Page/reports/mp_final/MP_final.pdf

²⁴³ For more information, see Hawai'i Island Land Trust at <http://www.hawaiilandtrust.org/land-conservation-workshop.html>.

²⁴⁴ STATE OF HAWAI'I DEP'T OF BUS., ECON.DEV. & TOURISM, RESEARCH AND ECONOMIC ANALYSIS DIV., PLANNING FOR SUSTAINABLE TOURISM, PART I: SUMMARY REPORT (April 2006), <http://www.hawaii.gov/dbedt/info/visitor-stats/sustainable-tourism-project/drafts/STPsummary.pdf> [hereinafter SUMMARY REPORT].

²⁴⁵ *Id.*

²⁴⁶ *Id.*

- Limited public participation in long-range planning processes.

The HTA made the following management recommendations for state action that relate to natural resources conservation:

- Increase interagency cooperation and coordination;
- Apply for federal grants that may support park conservation (e.g., Transportation Enhancement and Scenic Highways); and
- Establish and impose user fees.

In its natural resources assessment, the HTA made several recommendations that relate to potential leveraging of non-governmental actors (industry, citizen or organization) to help achieve protection. These include the following:

- Share responsibility for resource management with the private sector through lease agreements;
- Expand programs such as “adopt-a-park” to increase public involvement in resource protection and care;
- Facilitate voluntary support;
- Partner with communities to increase surveillance of parks to prevent illegal activities

The Hawai‘i Seascape could build on HTA’s recommendations and consider their utility and practicality beyond state parks programs.

3. Utilize mitigation funds and natural resource damage settlements to protect coastal ecosystems.

State and federal government could use mitigation funds to strategically protect coastal areas. In some instances mitigation funding is awarded to grantees for on-the-ground restoration activities.

Mitigation includes restoration, creation, enhancement, or preservation of natural resources to compensate for impacts to natural resources. Several laws require mitigation of injuries to natural resources when injuries are intentional such as occurs with dredge and fill operations or accidental as occurs with hazardous materials or

oil spills. These laws include federal laws such as the Clean Water Act, the Oil Pollution Act, and the Comprehensive Environmental Response, Compensation and Liability Act and the Hawai‘i Environmental Response Law (HRS §128D-1 et seq.). While mitigation must relate to the injury, there are opportunities for offsite mitigation in some instances. In some instances, mitigation activities identified through a public scoping process that allows the public to submit (and in some instances undertake) restoration activities.²⁴⁷

In Hawai‘i, three recent cases have resulted natural resource damage settlements in the marine environment: the 2005 coral reef grounding of *M/V Cape Flattery* with actions to prevent an oil spill that damaged the marine environment, the 1996 Chevron Product Company oil pipeline rupture into Pearl Harbor, and the 1998 Tesoro Corporation crude oil hose failure that spilled bunker fuel off of Barber’s Point on O‘ahu.

In implementing a Hawai‘i Seascape, the possibility of targeting funding and restoration activities to protect priority sites could be one way to extend limited resources to protect key land based (and at sea) resources.²⁴⁸ A recent ELI publication, *Mitigation of Impacts to Fish and Wildlife Habitat: Estimating Costs and Identifying Opportunities*, examines the ability to use mitigation funds strategically to protect fish and wildlife habitat identified in state wildlife action plans.²⁴⁹ Hawai‘i’s wildlife action plan, *Hawai‘i’s Comprehensive Wildlife Conservation Strategy*, could be used along with other plans that prioritize marine conservation to inform how mitigation funds are spent.

²⁴⁷ See, e.g., DAMAGE ASSESSMENT, REMEDIATION, AND RESTORATION PROGRAM [hereinafter DARRP] NORTHEAST REGION, NOAA, RESTORATION ACTIVITIES: CASE: ATHOS SPILL, PA, NJ AND DE, <http://www.darrp.noaa.gov/northeast/athos/restore.html>; see also, DARRP SOUTHWEST REGION, NOAA, RESTORATION ACTIVITIES: CASE: CAPE MOHICAN, CA, <http://www.darrp.noaa.gov/southwest/cape/restore.html>.

²⁴⁸ For an examination of using mitigation funds for fish and wildlife habitat protection, see ENVIRONMENTAL LAW INSTITUTE, *MITIGATION OF IMPACTS TO FISH AND WILDLIFE HABITAT: ESTIMATING COSTS AND IDENTIFYING OPPORTUNITIES* (2007).

²⁴⁹ *Id.*

4. Identify and designate those coastal areas that are critical habitat for endangered species.

Federal and state agencies have the responsibility to list endangered species and designate critical habitat under the federal Endangered Species Act and Hawai'i's endangered species law, HRS §§ 195D-4 et seq. Citizens and NGOs can petition the state and federal government to take actions to list endangered species and critical habitat.²⁵⁰ In many instances, conservation actions are multi-purpose—protecting target species or habitats and indirectly protecting associated species and habitats. Protection of endangered and threatened species that occur in riparian and coastal habitats may directly protect the marine environment, as many coastal species play a direct role in the food web of the marine environment (e.g., shorebirds, sea turtles, and seals). Protection of riparian and coastal habitats may also indirectly protect the marine environment by providing buffers and filters for land-based pollutants.

The ESA requirement that federal agencies actions must not jeopardize the continued existence of endangered species includes actions that would destroy the habitat upon which the species depends. This would seem to provide the necessary protection for endangered species whether or not critical habitat is designated. However, a 2006 study identifies the added benefits of designating critical habitats.²⁵¹ First, habitat loss and modification are the leading causes of designation. Second, empirical evidence demonstrates that species with designated critical habitat were twice as likely to have increased in numbers, and the designation correlates with increased knowledge about the species. Third, species with designated critical habitats were also more likely to have recovery plans. And finally, designating critical habitat allows for the protection of habitat that was historically but is currently not occupied by the endangered species.

²⁵⁰ This approach is discussed further in the context of protected species and habitats, Section III(A).

²⁵¹ Hagen & Hodges, *Resolving Critical Habitat Designation Failures: Reconciling Law, Policy, and Biology* 20 CONSERVATION BIOLOGY 399 (2006).

5. Petition to list anchialine pool species as threatened or endangered under federal or state law and designate critical habitat.

Anchialine pools are home to rare and endemic shrimp species. The pools are threatened by exotic species and, where the land is not protected by state or national parks, the species in these pools are threatened by habitat damage. As stated by the USGS, “[s]everal of these unique species are candidates for endangered species status.”²⁵² Listing these species and designating critical habitat under the ESA and the state endangered species law would provide the strongest available environmental protection. Also, such a listing decision would likely have indirect positive benefits for nearby habitats and species.

6. Utilize existing coastal and marine public areas to educate the public about how best to utilize all marine resources to achieve sustainability and conservation objectives.

A healthy Hawai'i Seascape depends upon residents and tourists complying with existing laws and regulations, as well as conducting themselves in a manner consistent with resource conservation and protection in the absence of a legal mandate. Educating residents and tourists about environmental protection is one important way to achieve this compliance.²⁵³ Parks, protected areas, and beaches provide the public (residents and visitors) with the opportunity to enjoy Hawai'i's coastal and marine resources. These public spaces can be used to educate residents and visitors about the importance of marine and coastal conservation and provide tips on how to achieve this. The downside of public sites is that human impact even from non-consumptive activities such as hiking, swimming, and surfing can be extensive.

To address these challenges, some sites have worked to provide visitors with information about how to best use the resources in order to prevent

²⁵² USGS, *Inventory of Anchialine Pools in Hawai'i's National Parks*, *supra* note 252

²⁵³ See, e.g., Mark B. Orams, *The Effectiveness of Environmental Education: Can We Turn Tourists into “Greenies”?*, 3 PROGRESS IN TOURISM & HOSPITALITY RESEARCH 295 (1999).

degradation. The most extensive of these programs is the marine underwater park, Hanauma Bay, described in further detail in the Protected Species and Marine Habitats section.²⁵⁴

Option 2. Prohibit or limit damaging activities.

1. Consider marine impacts, including cumulative impacts, when making land-based permitting decisions.

State and federal agencies regulate use of the environment, in large part, by issuing permits for otherwise prohibited activities. The permit system, therefore, is an important one for marine conservation. Federal and state agencies, NGOs, industries, and citizens all have a role to play in limiting the damages caused by permitted activities. To protect the marine environment, permitting agencies and applicants should identify and advance the adoption of alternatives that minimize impacts (including cumulative impacts) to marine environment when conducting NEPA and other permit reviews. See Options for Environmental Assessments and Impact Statements for additional information.

2. Take legal action to ensure land-use decisions conform to Hawai'i and federal environmental laws.

NGOs, citizens, and the regulated community can make use of the legal system to ensure land-use decisions conform to Hawai'i and federal environmental laws. Using the judicial process, concerned citizens and NGOs can ensure that proper procedures are followed when state and federal agencies issue permits for various land-use activities. Relevant federal laws include the Administrative Procedure Act (APA) and the National Environmental Policy Act (NEPA) that apply to federal permitting decisions. Under the APA, federal agencies must ensure that their actions—such as issuing regulations, conducting EAs or EISs, or making permit decisions—are not

²⁵⁴ Hanauma Bay is both an example of how educational programs can decrease visitor impacts and enhance visitor enjoyment as well as an example of how excess visitor usage can cause severe impacts on marine resources.

arbitrary and capricious. Hawai'i state law includes an administrative procedure act and an environmental review law that applies to state agency decisions including permitting decisions.

While procedural requirements do not mean that the agency has to choose a certain environmental outcome, they do compel agencies to implement the law as required and explicitly and transparently consider the myriad environmental impacts of their decisions, which can result in more protective decisions.²⁵⁵ Many examples exist in the marine and terrestrial environment of the use of citizen suits to achieve environmentally sound decisions.²⁵⁶ In Hawai'i, for example, the Nuclear Regulatory Commission's Atomic Safety and Licensing Board will hold a hearing to determine whether the NRC staff violated NEPA when it refused to prepare an EA or EIS for the building of a nuclear irradiator at Honolulu International Airport.²⁵⁷

3. Advance sustainable coastal development.

This approach is one that can be adopted by the development community and advanced through public-private partnerships. NGOs and citizens can advocate for the development and implementation land-use laws, regulations, and ordinances that reflect sustainable practices. Hawai'i Sea Grant, with funding and support from EPA, is leading efforts in Hawai'i to advance sustainable coastal development. It has worked successfully with developer D.R. Horton to achieve sustainable development objectives in the new Kapolei development. Also, it is currently working the City and County of Honolulu to change development codes and ordinances to

²⁵⁵ See, e.g., Lois J. Schiffer & Timothy J. Dowling, *Remark: Reflections on the Role of the Courts in Environmental Law*, 27 ENVTL L. 327 (1997); Marcia Valiante, 'Welcomed Participants' or 'Environmental Vigilantes'? *The CEPA Environmental Protection Action and the Role of Citizen Suits in Federal Environmental Law*, 25 DALHOUSIE L. J. 81 (2002); Susan George, William J. Snape, III & Rina Rodriguez, *The Public in Action: Using State Citizen Suit Statutes to Protect Biodiversity*, 6 U. BALT. J. ENVTL L. 1 (1997).

²⁵⁶ For examples, see *id.*

²⁵⁷ EARTHJUSTICE, VICTORIES: NRC TO REVIEW HONOLULU IRRADIATOR, http://www.earthjustice.org/our_work/victory/nrc_honolulu_irradiator_review.bin

better reflect sustainability principles. To date, Hawai'i Sea Grant has not formally consolidated lessons learned; however, there has been information sharing among the Smart Growth community locally and nationally. One possibility would be to extract specific lessons learned and share them with other developers and city and county planners in Hawai'i beyond Honolulu County.

Option 3. Plan for marine conservation

1. Consider marine conservation objectives explicitly in land-use plans.

Counties are tasked with developing and updating county and regional plans. In developing or revising such plans, counties should consider marine conservation objectives explicitly through the use of tools such as buffer zones to protect watersheds, erosion control, and other land-based approaches to conserving the marine environment.²⁵⁸

2. Develop nature-friendly ordinances.

Two interviewees noted that there is a need for the development or clarification of codes and ordinances to address sustainability. Ordinances and zoning laws that are particularly important for marine conservation include setback laws, riparian buffer zones, and special area management laws in the coastal zone.

Ordinances can achieve multiple objectives if properly designed. Some conservation ordinances that could consider marine conservation objectives include those that relate to floodplain management, wetlands and waterways, stormwater management, sediment and erosion control, steep slope limitations, forest conservation, and vegetation controls.²⁵⁹ McElfish (2004) describes

²⁵⁸ For a greater discussion of how to plan for biodiversity, see ELI, *PLANNING FOR BIODIVERSITY: AUTHORITIES IN STATE LAND-USE LAWS* (2003).

²⁵⁹ For an in-depth discussion of developing ordinances with biodiversity in mind, see JAMES M. McELFISH, JR., *NATURE-FRIENDLY ORDINANCES: LOCAL MEASURES TO CONSERVE BIODIVERSITY* (2004). While this book targets biodiversity broadly, many of the descriptions and recommendations could

key biodiversity elements for such conservation ordinances that could be adapted for marine conservation.²⁶⁰ Ordinances should be developed in light of potential climate change impacts. Employing standards that err on the side of caution and allowing regular review and adaptation of ordinances could help Hawai'i counties adapt to changing conditions.

3. Adopt coastal Smart Growth approaches.

Efforts are underway at NOAA, Sea Grant, and EPA to develop and implement coastal community Smart Growth principles. A recent presentation identifies the following *Elements of Waterfront and Coastal Community Smart Growth*:

- Encourage working waterfronts and water dependant uses that promote a stable, year-round waterfront community.
- Effectively use land to maximize waterfront and water-based activities in appropriate areas.
- Accommodate seasonal population fluxes while retaining the livability and affordability of the community.
- Assure physical and visual access to and from the waterfront for the public.
- Protect, preserve, and enhance coastal character while capturing local opportunities for growth.
- Protect natural coastal features and processes by designing with respect for the sea and the land-sea interface.
- Encourage revitalization of waterfronts.
- Encourage waterborne transportation options to compliment land-based options.
- Facilitate state and federal waterfront permit processing at the local level.
- Seek participation from diversity of sectors to represent the values and legacy of the public trust of coastal waters.²⁶¹

apply to properly regulate land-use practices so as to limit marine impacts.

²⁶⁰ *Id.* at 115-138.

²⁶¹ Pam Rubinoff, Lynn Richards, & Mike Klepinger, *Elements of Waterfront and Coastal Community Smart Growth*, <http://www.smartgrowthonlineaudio.org/np2007/324b.pdf>.

Option 4. Incorporate Native Hawaiian approaches and traditions

The recent upsurge in traditional Hawaiian approaches to land-use management (*moku* and *ahupua`a* management) provide an opportunity to protect the marine environment through traditional community-based management approaches. Traditional Native Hawaiian approaches to management are often viewed as aligning with marine conservation goals and provide a mechanism for making use of local knowledge and skills to ensure their realization.

In interviews and in online materials, state agencies as well as NGOs and citizens have expressed the desire and goals to move toward more traditional approaches to land-use and watershed management. For example, the TIM School (University of Hawai`i) is working to infuse Hawaiian traditions into the tourism industry—both for tourists and tourism operators—a process that could lead to better care and protection of the marine environment. The Hawai`i Seascape could capitalize on this upsurge in interest as a way to achieve marine conservation and support the interests and needs of Hawai`i communities.

In other regions of the world, research has demonstrated that social taboos and rituals and related informal institutions can help preserve biological diversity.²⁶² For example, spearfishing at night and gill netting is taboo among some communities in Vanuatu.²⁶³ In some parts of Oceania, biologists have worked with local village systems to expand the list of taboo species in instances where additional protection of some species is needed.²⁶⁴

²⁶² Johan Colding & Carl Folke, *The Taboo System: Lessons about Informal Institutions for Nature Management*, 12 GEO. INT'L ENVTL L. REV. 413 (2000). It is important to note, however, that this is not true in all circumstances—some cultures and traditions can have detrimental environmental effects. *Id.* at 425.

²⁶³ *Id.*

²⁶⁴ *Id.* at 441.

B. FRESHWATER

Hawai`i's watersheds have unique characteristics that distinguish them from other watersheds in the mainland. The islands do not have extensive river basin systems—each island is a discrete hydrologic system of streams and drainage areas.²⁶⁵ Each hydrographic area contains a number of small watersheds ranging in size from one to eighty square miles. Most rivers and streams are short and subject to flash flows. The watersheds are steep, with some at forty to seventy degree slopes, and the soil highly erodible in many places. Streams run from the mountains to the ocean, resulting in stretches of coastline with several smaller streams as opposed to larger riverine estuaries. This topography has restricted most human activities and development to the lowland and coastal areas of the islands.

Trade winds establish the dominant rainfall pattern in Hawai`i. Clouds release their moisture as they reach the islands' steep volcanic mountains. The greatest rainfall occurs on the windward (east and north) sides of the islands.²⁶⁶ These winds become warmer and drier and rainfall lessens farther down the mountains and onto the plains on the leeward sides of the islands, producing a semi-arid climate in these areas. The interaction between topography and wind patterns also produces large variations in rainfall over relatively short distances.

The health of Hawai`i's coastal waters and marine ecosystems cannot be separated from the health of the watersheds of which they form a part. Land-based sources of pollutants, including sediments, nutrients, and others, constitute a major threat to the health of Hawai`i's coral reef ecosystems. These pollutants are transported through surface water runoff, as well as groundwater discharge into coastal waters.

²⁶⁵ STATE OF HAWAII, DEP'T OF HEALTH, CLEAN WATER BRANCH, HAWAII POLLUTED RUNOFF CONTROL IMPLEMENTATION PLAN (2000) [hereinafter IMPLEMENTATION PLAN], <http://www.hawaii.gov/health/environmental/waste/sw/water/cleanwater/prc/index.html>.

²⁶⁶ STATE OF HAWAII DEP'T OF LAND AND NATURAL RES., ANNUAL REPORT TO THE TWENTY-FIRST LEGISLATURE 2001 REGULAR SESSION ON ACT 152: "RELATING TO WATERSHED PROTECTION" [hereinafter DLNR, ANNUAL REPORT]

Water quality improvements throughout the United States have traditionally focused on controlling discrete, or point, sources of pollution. While this approach has yielded tremendous results, it has failed to address many problems that continue to degrade water quality and impact public health. Nonpoint source pollution (or polluted runoff), habitat degradation, and introduction of invasive species all threaten watershed health. Fragmented authority over these and related issues has contributed to duplicative or uncertain mandates that undermine effective implementation and enforcement of water management controls. Finally, lack of full stakeholder involvement has led to management decisions being made without consideration of the full panoply of relevant information and perspectives.

Since the 1980s, a variety of state, federal, and tribal governments have attempted to overcome these issues by using a “watershed approach” to water resources management, including a more focused approach to addressing nonpoint sources and the linkages between land-use and water quality. The watershed approach has particular resonance in Hawai‘i, where traditional land-use practices were structured around *ahupua`a*, the “complete estate, running from the sea to the mountains and hence providing a share of all the different products of the soil and sea.”²⁶⁷ There has been a recent resurgence of interest in reinvigorating the concept of *ahupua`a* and integrating it with modern management.

Over the decades since Statehood, Hawai‘i’s water quality improvements have reflected the general trends seen throughout the United States. Pursuant to the national NPDES permitting program, Hawai‘i initially focused on achieving higher water quality through control of discrete discharges of pollutants into lakes, rivers, estuaries, wetlands, groundwater, and coastal waters. As throughout the U.S., however, this focus on controlling point sources of pollution has not been able to address the full spectrum of sources of water quality impairment. While point

source discharges remain an issue in some areas of Hawai‘i, the greatest threat to the state’s coastal water quality comes from diffuse land-based sources of pollution. This “nonpoint source pollution” is caused by rainfall moving over and through the ground. As the runoff moves, it picks and carries pollutants into streams, rivers, wetlands, and coastal waters.

The impacts of nonpoint sources of pollution are particularly pronounced in Hawai‘i, where the unique hydrological conditions—heavy rainfall, porous volcanic soil, steep terrain, and short stream length—provide little chance for filtration of pollutants before reaching coastal waters. Pollutants also degrade wetlands and riparian areas, damaging their capacity to absorb and filter polluted runoff. This is further exacerbated by the loss of Hawai‘i’s coastal wetlands to urbanization and other improperly managed development and land-use practices. Indeed, the state agency tasked with water quality control, the CWB, has stated that the “major new challenges foreseen over the next 5-10 years are in the area of polluted runoff control.”

This Section covers the following topics:

1. Water Quality
2. *Ahupua`a* Management and Watershed Approaches
3. Habitats at the Interface: Wetlands and Buffer Zones

1. WATER QUALITY

Many of the tools in the federal CWA focus on setting and achieving water quality standards (WQS) and controlling point sources of pollution. These form an important basis for water quality management and control in Hawai‘i. This subsection focuses on regulatory requirements and programs for setting and achieving WQS and controlling point sources and nonpoint sources of pollution in the freshwater and marine environment.

Pursuant to the CWA, the NPDES permit program controls water pollution by regulating point

²⁶⁷ Morgan, T., HAWAII: A CENTURY OF ECONOMIC CHANGE (1948).

sources that discharge pollutants into waters of the United States. Point sources are defined by the CWA as “any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.”²⁶⁸ The definition explicitly excludes agricultural stormwater and irrigation return flows from the definition. Most pollution comes from a combination of point sources and nonpoint sources or nonpoint sources alone.

Due to the success of the point source programs, nonpoint source pollution is now the major causes of surface water impairment in Hawaii. Hawaii manages nonpoint source pollution under state law, the CWA, and the CZMA by developing and implementing nonpoint source management plans. Nonpoint source pollution comes from diffuse sources and is caused by rainfall moving over and through the ground. As the runoff moves, it picks up various pollutants and ultimately carries them to coastal waters.

Most of Hawaii’s waterbodies have variable water quality due to stormwater runoff.²⁶⁹ During dry weather, most estuaries and streams have good water quality that supports their designated uses pursuant to federally-approved state water quality objectives.

In Hawaii, land-based activities constitute the main source of polluted runoff, mostly caused by agriculture, forestry, urban, marina, and hydromodification activities.²⁷⁰ The most common types of nonpoint pollution, which can be anthropogenic or from natural causes, in Hawaii are: sediments; nutrients (fertilizers); toxic chemicals; pathogens; acidity from volcanic activity; and freshwater inflows (resulting from seepage of groundwater into coastal waters due to

the porous nature volcanic rock). Sediments from eroded soils often increase the turbidity of coastal waters and can impact the health of critical marine habitats such as coral reefs. Researchers estimate that the six major islands produce over 1.1 million tons of sediments annually.²⁷¹ Nutrients, often in the form of fertilizers, also wash into coastal waters and lead to eutrophication and depletion of oxygen in marine habitats. Moreover, toxic chemicals contained in runoff (mainly metals, petroleum-based products, and pesticides) continue to threaten marine environments throughout the State.

A U.S. Geological Survey (USGS) study of O`ahu demonstrates the sources of nonpoint source pollution.²⁷² The USGS found high concentrations of solvents in the ground and surface waters near military bases. It found high concentrations of fumigants (particularly under areas that were used for pineapple cultivation) near agricultural lands. Certain insecticides are detected frequently and at higher concentrations in storm flows, indicating that they are mainly washed off or flushed from soil during rainstorms and can be carried to marine waters.

Nutrient loads from agricultural sources often exceeded state water quality guidelines. Coral reefs and associated estuaries are highly susceptible to nutrient and sediment loads above natural background levels. Nutrient concentrations found in the USGS study were 100 to 1,000 times the nutrient guidelines for coral reefs.

Organochlorine insecticides were used for termite control in urban areas through the 1980s. They persist today in streambed sediments and fish at concentrations exceeding aquatic life and wildlife guidelines. Organochlorine tends to accumulate in fish flesh and pose risks to fish-eating birds and wildlife. Streams can transport significant amounts of these contaminants to coastal waters.

²⁶⁸ 33 U.S.C. § 1362(14).

²⁶⁹ See, e.g., Clean Water Branch, *Excerpts from 2000 305(b) Report*, at <http://hawaii.gov/health/environmental/water/cleanwater/reports/2000-305b/reports/2000-305b/index.html>.

²⁷⁰ HICZMP, HAWAII’S COASTAL NONPOINT POLLUTION CONTROL MANAGEMENT PLAN (June 1996), <http://hawaii.gov/dbedt/czm/initiative/nonpoint.shtml>.

²⁷¹ *Id.*

²⁷² U.S. Geological Survey, *Water Quality on the Island of O`ahu 1999-2001* (2004). While the study was conducted solely on O`ahu, the Hawaii State Department of Health Clean Water Branch has stated that the study is reflective of water quality conditions throughout the State. Similar data sets are needed for Hawaii’s other Islands.

While little can be done to control the current amounts present in soils, erosion controls can prevent contaminated sediments from entering stream flows and ultimately estuaries and nearshore marine waters.

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

WATER QUALITY

Water Quality Standards and Designated Uses

Pursuant to the federal CWA, states are required to develop water quality standards that define the water quality goals for a particular body of water (or a portion thereof) by designating the use or uses to be made of the water and set measurable criteria necessary to protect those uses. If a water body is deemed impaired, the state develops a strategy to attain the relevant WQS under the Total Maximum Daily Load (TMDL) Program. Point sources of pollution are managed through the NPDES program and a variety of measures and approaches are used to address the more complex challenge of regulating nonpoint sources of pollution.

Environmental Protection Agency, Office of Water, Office of Oceans, Coasts and Estuaries

Executive Order 13158 required the EPA, relying upon existing CWA authorities, to issue new science-based regulations, as necessary, to better protect beaches, coasts, and the marine environment from pollution. EPA protects coastal areas through a watershed approach, and its regulatory and cooperative management programs.

POINT SOURCES

National Pollutant Discharge Elimination System (NPDES)

As authorized by the CWA, the NPDES permit program regulates discharges of point sources into waters of the United States. In most cases, the state administers the NPDES permit program, with approval and oversight by EPA.

Point sources are discrete conveyances, such as pipes or man-made ditches. Industrial, municipal,

and other facilities, must obtain NPDES permits if their discharges go directly to surface waters. CWA Section 401 requires that, prior to issuing any permit or license that might result in the discharge of a pollutant into waters of the U.S., a federal agency must obtain from the state in which the project is proposed a certification that the discharge is consistent with the CWA, including all applicable state WQS. This includes Section 404 permits being issued by the U.S. Army Corps of Engineers. Section 402(p) of the CWA requires that authorized states issue NPDES permits for stormwater discharges. Hawai'i State DOH administers stormwater discharge permits as part of its state NPDES program, described below under State Management.

National Pretreatment Program

Wastewater includes sewage and the water flowing from household pipes including sinks, showers, and appliances. Three types of treatment are possible: (1) primary treatment removes wastewater solids including trash, debris, and sewage sludge; (2) secondary treatment is a biological filter that removes organic waste using anaerobic microbes; and (3) tertiary treatment is the highest level of treatment that utilizes chemicals and filters to attain water that is theoretically drinkable.²⁷³ To discharge into the marine environment, secondary treatment is required unless a variance from EPA is attained.

Publicly owned treatment works (POTWs) receive wastewater collected from homes, businesses, and industrial facilities and treat these waters before discharging them. POTWs are regulated by the National Pretreatment Program.²⁷⁴ The National Pretreatment Program administers the General Pretreatment Regulations, which require all large POTWs (those that treat more than 5 million gallons of wastewater daily) and those small POTWs that have significant industrial discharges

²⁷³ CWA, 301(h). For a description of the process, see SURFRIDER, ENVIRO A TO Z: SEWER SYSTEMS AND SEWAGE TREATMENT, http://www.surfrider.org/a-z/sewage_treatment.htm.

²⁷⁴ 40 CFR 403. The National Pretreatment Program is officially part of the NPDES Program.

to establish local pretreatment programs.²⁷⁵ These local programs are required to enforce all national pretreatment standards, as well as any more stringent requirements necessary to protect site-specific conditions.

The responsibility for implementing the National Pretreatment Program falls to local municipalities.²⁷⁶ EPA provides national guidance on the application of national pretreatment standards, as well as on the development of local pretreatment standards.²⁷⁷ Municipalities have the lead responsibility for ensuring compliance with local and national pretreatment requirements. The CWA provides for pretreatment enforcement by states and the federal government, and regional EPA staff can inspect and report on local facilities. Hawai'i's state pretreatment program is discussed below.

NONPOINT SOURCES

Nonpoint Source Pollution Management

The 1987 Amendments to the CWA provide a financial mechanism for states to address nonpoint source pollution. Under Section 319 of the CWA, states that develop a nonpoint source pollution management plan (NPS Plan) are eligible for federal grant funding on an annual basis. Grant recipients are required to supply a forty percent match of cash or in-kind services. NPS Plans must be updated every five years and must identify the state waters that are impaired or threatened by nonpoint pollution sources, develop short- and long-term goals for addressing these waters, and identify best management practices (BMPs) to address nonpoint source pollution. BMPs are meant to identify the most common types of stressors, the categories of the sources of those stressors, and sources in general. BMPs can include both targeted and statewide interventions. NPS Plans should also identify strategies for

working with other agencies and private partners; identify federal lands and activities that must be managed in a manner consistent with the Plan; and include a monitoring and evaluation plan. Section 319 grants can also be used to develop and implement total maximum daily loads (TMDLs) in watersheds where nonpoint sources make a significant contribution to the pollutant loads causing water quality impairment.

Coastal Nonpoint Pollution Control Program

Section 6217 of the federal Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) created a Coastal Nonpoint Pollution Control Program to be jointly administered by NOAA and EPA. The Program establishes a number of management measures that are designed to control nonpoint pollution from six sources: forestry, agriculture, urban areas, marinas, hydromodification, and wetlands/vegetated shorelines. The federal Coastal Nonpoint Program focuses on pollution prevention, rather than costly and complicated clean-up measures, and encourages states to focus their initiatives at the local level.

TOTAL MAXIMUM DAILY LOAD

If a water body is deemed impaired and listed in a state's 303(d) report, the state is required to develop a strategy to attainment of the relevant water quality standard. Where implementation of technology-based controls, such as a pollutant elimination discharge permit with a technology-based discharge limitation, are sufficient to rectify the problem then they are put into place as a first order approach. However, because nonpoint sources are often contributing to pollutant loads, then a different type of strategy must be used. Pursuant to the CWA, such strategies must consist of a TMDL or its functional equivalent.

TMDLs are pollutant budgets for all sources that might contribute to a particular water body or segment thereof, including nonpoint and natural sources. TMDLs prescribe an "allowable load" for each relevant pollutant for the entire water body or segment in question. This expresses the loading rate that would be consistent with attainment of state WQS. Despite the name, loading rates can be expressed in daily, weekly,

²⁷⁵ U.S. EPA, *Introduction to the National Pretreatment Program* (1999), available at <http://www.epa.gov/npdes/pubs/final99.pdf>.

²⁷⁶ 40 CFR 403.8(a).

²⁷⁷ A comprehensive list of these guidance documents can be found at http://cfpub.epa.gov/npdes/docs.cfm?document_type_id=1&view=Policy%20and%20Guidance%20Documents&program_id=3&sort=name.

monthly, or even annual loads, depending on the pollutant. TMDLs can also be seasonal, to allow for different rates of loading at different times of the year when relevant conditions may vary.

The allowable load is allocated among the sources of the pollutant. “Wasteload allocations” (WLAs) are made for point sources and “load allocations” for nonpoint sources. States must submit TMDLs to EPA for approval.

Under the NPDES permitting program, each point source is required to have a WLA assigned to it under its individual permit (or a group of sources pursuant to a general permit). Even though the CWA does not require states to regulate nonpoint sources of pollution, it does require states to develop TMDLs for water bodies (or segments) for which nonpoint sources are a significant contributor to the pollutant loads. As such, TMDLs are a mechanism for states to understand the fraction of pollutant loads emanating from nonpoint sources and how much they would need to be reduced to attain the relevant WQS. States are left to allocate pollutant caps under TMDLs as they see fit, as long as the total allocations are under the allowable load.

TMDLs are calculated for each pollutant, but EPA encourages states to “bundle” TMDLs and calculate them on a watershed basis to realize programmatic efficiencies, take a more holistic view of the sources and implications of multiple pollutant loads, and promote the involvement of multiple stakeholders. Although in Hawai`i, the smaller scale of the waterbodies makes location less of an issue, load location does matter and local exceedances of WQS must be avoided. Additionally, in calculating TMDLs, states must consider the “reserve capacity” for each pollutant, or how much of the allowed load to allocate to future growth and development needs. Hawai`i’s TMDL program is discussed in the section on State Management.

STATE MANAGEMENT

WATER QUALITY

State Water Quality Standards

The Department of Health’s authority to manage state water quality includes broad inspection authority, emergency powers to act in the face of imminent peril to the public, authority to pursue civil action for water pollution violations, and authority to conduct and supervise research programs.²⁷⁸ All state and county health officers have the authority to enforce state water pollution requirements. Section 342D-88 authorizes the DOH, with the approval of the governor, to issue revenue bonds at such times and in such amount or amounts, not to exceed \$250,000,000 in aggregate principal, as may be necessary to carry out the purposes of the law.

Those who violate the water pollution laws may face penalties and potential prison terms ranging from small penalties to up to \$50,000 a day per offense for knowing violations.²⁷⁹

Hawai`i has a state revolving fund loan program to finance pollution prevention and control.²⁸⁰ The funds are available to enable counties and state agencies to plan, design, and construct POTWs in accordance with the federal CWA; enable eligible parties to implement nonpoint source management programs; and enable eligible parties to implement conservation and management plans established under the National Estuary Program. Since coming into effect, the DOH has issued over \$317 million in low-interest loans to the four counties. Projected loans for 2008 total \$161,425,000.

New Statewide Monitoring Strategy

Hawai`i Revised Statutes Section 342D-55 grants the DOH the authority to impose monitoring and recordkeeping requirements on owners or operators of any effluent source, works, systems or plants. The statewide monitoring strategy is currently being revised. Major components of the new monitoring program plan will be:

²⁷⁸ HAW. REV. STAT. § 342

²⁷⁹ HAW. REV. STAT. § 342D-11.

²⁸⁰ HAW. REV. STAT. § 342D-83.

- Routine monitoring of public beaches, followed by management action when bacteria levels are significantly above water quality standards;
- Collection of surface water chemistry data to determine if long-term trends in water quality are present; and
- Assessment of the condition of the State’s streams and watersheds.

These data are used to prepare reports required by EPA: the CWA Section 303(d) List of Water Quality-Limited Segments, and the CWA 305(b) Report on the State of the State’s Waters. Data are also summarized and will be placed on the CWB web site on a quarterly basis. These reports are prepared in the spring of even-numbered years and are made available to the public.

Currently, the CWB monitors microbial activity and water chemistry. For microbial sampling, CWB monitors shoreline waters to ensure water safety for swimmers, surfers, divers, and other recreational users.²⁸¹ CWB visits 363 coastal stations on a rotational basis—core sites are monitored twice-weekly and rotational sites are monitored bi-weekly.²⁸²

POINT SOURCES

State NPDES Program

Hawaii law prohibits the discharge by any person, including a public body, of “any water pollutant into state waters,” except in compliance with the law or a permit or variance granted by the Hawaii DOH.²⁸³ Hawaii’s NPDES program is administered by the CWB in the State pursuant to Hawaii Administrative Rule Section 11-55. Permits may be issued to facilities not currently capable of compliance as long as the permit includes a schedule of compliance with specific deadlines.²⁸⁴ Permits are also required to maintain

effluent limitations, standards, and pretreatment standards required by the CWA, and any more stringent limitations necessary to achieve compliance with State water quality standards or federal water quality requirements.²⁸⁵

Stormwater Regulation

The CWB is responsible for administering the state’s stormwater management plan. State stormwater requirements are mirrored after the federal NPDES program, requiring that stormwater be treated to the maximum extent practicable. No numeric requirements for stormwater pollutant removal have been established at the state level, but regional and municipal regulations are in place.

State Wastewater Program

The DOH Water Quality Division’s Wastewater Branch administers programs and regulations related to public and private wastewater treatment works, individual wastewater systems, and the water pollution control revolving fund. DOH works in partnership with the four counties to implement wastewater management.

Hawaii has two facilities discharging directly into ocean waters of the State: Honouliuli Wastewater Treatment Plant (WWTP), which receives sewage and other wastewater from residences and businesses in the southern portion of O’ahu and discharges into Mamala Bay; and Sand Island WWTP, which receives wastewater mainly from residences in Honolulu and discharges into East Mamala Bay. Both facilities use primary treatment only and operate under federal waivers from national secondary treatment standards for POTWs.

EPA Region 9 recently issued a tentative decision to deny the City and County of Honolulu’s application to extend this permit variance and require the facility to achieve all federally required standards for POTWs. Under the variance application, most of the discharges would consist of primary effluent—a lower quality of effluent than the plant has actually been discharging under the current variance. Due to the failure of this

²⁸¹ STATE OF HAWAII, DEP’T OF HEALTH, 2006 STATE OF HAWAII WATER QUALITY MONITORING AND ASSESSMENT REPORT: INTEGRATED REPORT TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND THE U.S. CONGRESS PURSUANT TO SECTIONS §303(D) AND § 305(B), CLEAN WATER ACT (P.L. 97-117) [hereinafter 2006 WATER QUALITY REPORT] at Chapter 1—Marine Waters 9 (2008).

²⁸² *Id.*

²⁸³ HAW. REV. STAT. § 342D-50(a).

²⁸⁴ HAW. ADMIN. R. § 11-55-15(d).

²⁸⁵ HAW. ADMIN. R. § 11-55-19.

proposal to meet the certain variance criteria,²⁸⁶ EPA has preliminarily denied the application. The public comment period officially closed on August 27, 2007.

The Sand Island permit variance expired in 2003, and EPA has since required the facility to meet a construction schedule for improved treatment before a new permit can be issued. Construction was completed in 2005, and EPA has been monitoring the operation to gather the relevant data for the permit since then. EPA announced in December 2007 that it proposed not to renew the permit variance to exempt the Sand Island Wastewater Treatment from secondary treatment requirements.²⁸⁷

Hawai'i Revised Statutes, §342D-54 grants the DOH the authority to administer grants to wastewater treatment works that conform to the State Water Pollution Control Plan and that are certified to receive such financial assistance by the Department. If federal grant funds are available, the applicant for assistance is required to pay sixty percent of the nonfederal share of the "estimated reasonable cost" of the approved wastewater treatment works (as defined in the CWA). If federal grant funds are not available, DOH may make grants up to one hundred per cent of the estimated cost of the project.

Other Wastewater Programs

Cesspools are used more widely in Hawai'i than in any other state. Cesspools, which are essentially underground holes used for disposal of human

wastes, are not designed to treat the raw sewage that are discharged into them. They have a high potential to contaminate marine and freshwater through their release of pathogens, total suspended solid, and nitrates. They may also contain other contaminants of concern, including phosphates, chlorides, grease, viruses, and chemicals used to clean cesspools such as trichloroethane and methylene chloride. Due to these risks, EPA regulations prohibit the construction of new "large-capacity" cesspools and require all existing large-capacity cesspools be closed by April 5, 2005.

NONPOINT SOURCES

Coastal Zone Management Program

The Coastal Zone Act Reauthorization Amendments of 1990 required Hawai'i, as one of the states with a federally-approved CZM program, to develop and implement a coastal nonpoint pollution control program, to be approved by NOAA and the EPA. State programs must be developed jointly by the HICZMP and the CWB. The Hawai'i Coastal Nonpoint Pollution Control Program (HICNCP) and Management Plan was approved in 1998.

DOH Polluted Runoff Control Program

Pursuant to CWA requirements, the CWB developed *Hawai'i's Nonpoint Source Pollution Management Plan* in 1990. A statutory basis for DOH's polluted runoff control activities was established in 1993 with the adoption of Chapter 342E (HRS), "Nonpoint Source Pollution Management and Control." Chapter 342E authorizes the DOH to administer, enforce, and carry out all laws, rules, and programs relating to nonpoint source pollution in Hawai'i. DOH's work includes: regulatory activities; cooperative management approaches; convening public forums; funding public initiative projects; proposing legislation, alternate funding mechanisms and new programs; and reviewing environmental assessments and impact statements.

Together the CWB and the HICZMP developed the *Hawai'i's Implementation Plan for Polluted Runoff Control (PRC Implementation Plan)* in 2000. The *PRC Implementation Plan* is both the

²⁸⁶ The federal Clean Water Act includes specific criteria the discharger must meet in order to receive a variance from secondary treatment under section 301(h) of the CWA. The criteria that Honouliuli's discharges would not meet include: maintenance of water quality that allows recreational activities in and on the water; maintenance of water quality that allows protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife; and meeting water quality standards (or federal guidance values for pollutants without standards).

²⁸⁷ EPA Region 9, *News Release: EPA Proposes to Not Renew City and County of Honolulu Wastewater Permit Variance for the Sand Island Treatment Plant* (Dec. 12, 2007), <http://yosemite.epa.gov/opa/admpress.nsf/8b770facf5edf6f185257359003fb69e/d702ad9f1cb85cf7852573ad006bde45!OpenDocument>.

culmination of planning undertaken by the DOH on polluted runoff control and a mechanism for integrating the work of the HICZMP on coastal nonpoint pollution control. It was developed in conjunction with several stakeholder meetings and incorporates the comments received on the drafts put forth for public comment. The Plan is meant to be reviewed and updated every five years.

The *PRC Implementation Plan* outlines Hawai'i's short- and long-term goals for controlling nonpoint source pollution. Each of the goals is accompanied by action items and measures of success for each item. The first major goal is to, “[e]nsure that Hawai'i's coastal waters are safe and healthy for people, plants, and animals and protect and restore the quality of Hawai'i's streams, wetlands, estuaries, and other inland waters for fish and wildlife, recreation, aesthetic enjoyment and other beneficial uses by 2013.” The *PRC Implementation Plan* divides its implementation schedule for this goal into three phases. Phase I was to be completed by 2003, Phase II by 2008, and Phase III by 2013.

In addition to the development of strategies, the State will continue to develop BMPs for various land-uses, focusing first on those with the greatest impact on water quality. Specifically, DOH and HICZMP will: work with counties to develop and monitor the use of BMPs in urban areas; work with Soil and Water Conservation Districts to develop and evaluate the effectiveness of BMPs in agricultural areas with an emphasis on soil erosion control and nutrient management; promote the restoration and stabilization of highly erodible areas through BMPs; promote and expand the use of BMPs that prove effective; and develop mechanisms to track BMP implementation. The State included plans to create and implement educational programs targeting a variety of stakeholder groups. Finally, under this major goal, the DOH will continue to work with the Coral Reef Initiative to facilitate implementation of activities that reduce the impacts of nonpoint source pollution on Hawai'i's coral reefs.

The second major goal is to, “[i]dentify impaired water bodies and restore their designated uses through a Statewide approach to watershed management within 15 years.” The *PRC*

Implementation Plan focuses on the development of watershed assessments and plans to address the major sources of nonpoint pollution in priority watersheds and to develop partnerships among government and nongovernmental entities to implement these plans effectively. A key action item will be to convene an inter-agency group within each watershed that will assist with development of watershed restoration action strategies that implement BMPs in priority watersheds and facilitate communication of the results among watershed initiatives. Educational programs are also to be developed to achieve this goal, focusing on promotion of CWA §319 grant applications and community-based watershed activities. Additionally, the State planned to implement water quality monitoring in its designated priority watersheds, prepare and keep on track a TMDL development schedule for CWA §303(d) listed waters, and continue to improve water quality monitoring state-wide.

The third major goal in the *PRC Implementation Plan* is to, “[d]evelop and implement economically achievable management measures, as identified in Section 6217 of the Coastal Zone Act Reauthorization Amendments, which are appropriate to Hawai'i's physical, economical, cultural, and social environment by 2013.” Activities include the development a fifteen-year strategy for the six nonpoint source categories identified in *Hawai'i's Coastal Nonpoint Pollution Control Program*: agriculture, forestry, urban areas, marinas and recreational boating, hydromodification, and wetlands. The *PRC Implementation Plan* and strategy will outline both regulatory and non-regulatory (incentive-based) measures that the State will use to implement its management measures. Additionally, the State will implement the 57 management measures set forth in the *Coastal Nonpoint Pollution Control Management Plan* in a phased manner with priorities based on state, county, federal and other stakeholder input.

Under the *PRC Implementation Plan* DOH and the HICZMP will continue to act as the lead agencies, but plan to enter into formal partnerships in order to execute many of the activities necessary to implement the Plan. The Plan identifies a list of stakeholders and the purposes for which the lead

agencies might enter into such partnerships with each one.

Hawai'i's Local Action Strategy to Address Land-Based Pollution Threats to Coral Reefs
See *Ahupua'a* Management Section.

TOTAL MAXIMUM DAILY LOAD

Pursuant to the CWA, Hawai'i assesses state waters in order to prepare a §303(d) list of impaired waters and a §305(b) water quality report, which the State has combined into a single report according to federal guidance. The report includes likely contributors to water quality impacts, derived from information gathered by the CWB, the DOH Environmental Planning Office and Epidemiology Branch, the USGS North American Water Quality Assessment Program (NAWQA), the DLNR, and information derived from academic research.²⁸⁸ These data are used to determine which of the State's waterbodies and segments of waterbodies are impaired and "water quality limited." Water quality limited segments are those waters that do not and will not meet state WQS even after effluent limitation requirements on point source discharges have been applied. Segments are delineated by the DOH using a number of factors, including hydrological characteristics, existing water quality, population distribution, sewer districts, and so on. When segments are designated as water quality limited, it reflects the amount of flow, the type and quantity of pollutants, the degree of violation of water quality standards, and the interactive and dispersive capacity of the receiving waters.

The most recent §303(d) list was developed in 2006 and approved by EPA in 2008. It lists 93 streams and 209 marine areas as impaired.²⁸⁹ Waterbodies are prioritized as "high," "medium," or "low" for TMDL development depending on the severity of the pollution levels (number of

pollutants and levels in which they were found), designated uses of the waters, degree of public interest, type and location of waterbody, and vulnerability of the waterbody.²⁹⁰

In the marine environment, the most common pollutant was turbidity, occurring in 154 water bodies, and the source is believed to be polluted runoff.²⁹¹ Fifty-six water bodies were impaired due to high *Enterococcus* loads.²⁹² In the forty-three newly listed impaired water bodies, pollutants included *Enterococcus*, total nitrogen, nitrate plus nitrite, total phosphorus, turbidity, chlorophyll a, and ammonium nitrogen.²⁹³ As of the 2006 report, shoreline chemistry sampling was halted due to personnel and resource limitations but was expected to begin again in late 2006. No sampling is reported for offshore environments.

NON-GOVERNMENTAL APPROACHES

Surfrider Foundation

Local Surfrider chapters nationwide, including chapters based in Kaua'i, Maui, and O'ahu, work to protect the state's water quality. Surfrider organizes volunteers to test local water quality for turbidity, salinity, and fecal coliform. The purpose of the "Blue Water Task Force" is to:

- provide concerned citizens with the opportunity for hands-on involvement with an environmental problem solving effort;
- gather coastal water samples on a regular basis to determine pollution patterns in the near shore environment;
- raise public awareness regarding the extent and severity of coastal water pollution;
- use the data collected to bring polluters into compliance; and

²⁸⁸ A full description of the data used and the methods used to collect the data is provided in STATE OF HAWAI'I, DEP'T OF HEALTH, 2004 LIST OF IMPAIRED WATERS IN HAWAII PREPARED UNDER CLEAN WATER ACT §303(D) (2004). 006 WATER QUALITY REPORT, *supra* note 281..

²⁸⁹ In 2004, 59 streams and 139 coastal stations were listed. 2006 WATER QUALITY REPORT, *supra* note 281 at "Executive Summary."

²⁹⁰ *Id.*

²⁹¹ *Id.*

²⁹² *Id.*

²⁹³ *Id.*

- develop a model program that could influence national legislation and enforcement.²⁹⁴

University of Hawai'i Water Research Center

The University of Hawai'i Water Research Center is housing several research projects of relevance. One such project, led by Dr. Clark Liu, is developing modeling techniques of hydrologic analysis for Hawai'i's watersheds. Another research project is developing a methodology for maximizing the value of groundwater.

Hawai'i Sea Grant Program

The Hawai'i Sea Grant Program is undertaking several research and outreach initiatives. In Kaneohe Bay, which is listed as moderately to severely water quality impaired by the DOH, researchers are studying the precise impacts of stormwater nutrient loading under a variety of conditions. Also in Kaneohe Bay, research is being undertaken to provide a descriptive and predictive understanding of the linkages among microbial community composition and dynamics, biogeochemical cycling, and environmental forcing in the waters of Kaneohe Bay, Hawai'i. In Hilo Bay—one of the most troubled watersheds in Hawai'i—Sea Grant researchers are quantifying how the amount, quality, and detrital processing of organic matter differs in time and space in the Wailuku River (the main source of inflow into the Bay). This study will generate baseline water quality data for the Wailuku River which are necessary for developing a long-term nutrient monitoring program and a restoration plan for Hilo Bay.

One of Section 319 grants funded the Mauna Kea Water and Soil Conservation District to address soil erosion in the Pelekane Bay Watershed by improving land management practices and restoring vegetative ground cover.²⁹⁵

Nonpoint Education for Municipal Officers (NEMO)

Originally an outgrowth of the Long Island Sound Study National Estuary Program, NEMO seeks to

²⁹⁴ SURFRIDER FOUNDATION, BLUE WATER TASK FORCE, <http://www.surfrider.org/whatwedo3c.asp>.

²⁹⁵ PELEKANE BAY WATERSHED MANAGEMENT PLAN (2005).

help communities protect natural resources through research-based educational outreach programs that emphasize natural resource-based land-use planning and better site design.²⁹⁶ A National NEMO Network was founded in 2000, when fifteen programs met for the first NEMO conference.²⁹⁷ In 2005, NEMO held scoping workshops in Hawai'i and Maui in collaboration with the University of Hawai'i's Sea Grant Program. After these successful workshops, the Hawai'i Sea Grant Director signed a charter making Hawai'i a member of the National NEMO Network in 2005. Although Hawai'i's NEMO Program is still in a formative stage, its first major project is the development of fact sheets addressing water quality issues. These fact sheets will be available on the Hawai'i NEMO website to help inform future development decisions.²⁹⁸

The Center for Sustainable Future

The Center for Sustainable Future engages in various projects to educate the public on nonpoint source pollution. The Center has constructed a park at Kaelepulu Pond in Kailua to demonstrate BMPs to control polluted runoff.²⁹⁹ The Center also is working to update the 2002 Koolaupoko Restoration Action Strategy to meet EPA requirements of a Watershed Basin Plan. The project covers twenty-one sub-watersheds from Kaneohe to Waimanalo and will address numerous impaired waters.³⁰⁰

²⁹⁶ NONPOINT EDUCATION FOR MUNICIPAL OFFICERS, BRIEF HISTORY, <http://nemo.uconn.edu/about/history.htm>.

²⁹⁷ NONPOINT EDUCATION FOR MUNICIPAL OFFICERS, HAWAII NEMO PROGRAM, http://nemonet.uconn.edu/programs/about_members/hi/hawaii.htm.

²⁹⁸ UNIV. OF HAWAII, SEA GRANT COLLEGE PROGRAM, CTR. FOR SMART BUILDING AND COMMUNITY DESIGN, <http://www.soest.hawaii.edu/seagrant/CSBCD/projects/nemo.html>.

²⁹⁹ See Kaelupulu Pond, <http://library.thinkquest.org/J0110028/splash.htm>

³⁰⁰ STATE OF HAWAII, DEP'T OF HEALTH, CLEAN WATER BRANCH, POLLUTED RUNOFF CONTROL PROGRAM. END OF YEAR REPORT (2005), <http://www.hawaii.gov/health/environmental/water/cleanwater/wqsmaps/cleanwater/prc/index.html>.

2. AHUPUA`A MANAGEMENT AND WATERSHED APPROACHES

Watersheds are highly dependent on upland forests to sustain water quality and ensure recharge of groundwater resources. Maintaining forest and vegetative cover is key to preventing serious erosion, pollution, and siltation of Hawai'i's marine environment. Following rains, contaminant levels from land-based pollution sources are often found in higher concentrations in estuaries and nearshore waters.

Since the 1980s, a variety of state, federal, and tribal governments have attempted to use a “watershed approach” to water resources management, including a more focused approach to addressing nonpoint sources of pollution and the linkages between land-use and water quality. As defined by the EPA, a watershed approach takes a basin-wide (watershed) perspective, involving all relevant stakeholders, and strategically addressing priority water resource goals and includes the following guiding principles:

- Partnerships with those most affected by the management decisions;
- Focusing activities within a specific geographic area; and
- Employing sound science-based management techniques.³⁰¹

Taking a “watershed approach” facilitates integration of the various ecological, political, social, cultural, and economic considerations that impact the successful management of water quality and related environmental issues. A key element of the watershed approach is participation of stakeholders who depend on and impact their collective resources—water managers, communities, the private sector, and others—in the decision-making and management of those resources. This ensures that various priorities and perspectives are balanced and that decisions are made taking into account all relevant information.

³⁰¹ EPA, WATERSHED APPROACH FRAMEWORK, <http://www.epa.gov/owow/watershed/framework/>.

Habitat destruction, invasive species introduction, intensive resource use, and surface runoff containing high levels of sediments, bacteria, nutrients, and other pollutants have caused alterations in the aquatic community structure in many of Hawai'i's watersheds. Today, nine watershed partnerships on six islands work together to conserve and protect forested watersheds.³⁰²

The relatively recent focus of the EPA and State agencies on watersheds as the logical units for integrated natural resource management and community-based conservation initiatives has been accompanied in Hawai'i by increased awareness and interest in understanding how the traditional Hawaiian concept of *ahupua`a*³⁰³ and the practices surrounding it might provide a common base of cultural values upon which to build local watershed management practices in Hawai'i. Theoretically self-sustaining, these wedge-shaped pieces of land formed the basic governance units for Native Hawaiians in the past.³⁰⁴

Ahupua`a were subunits of *moku*, districts which were larger wedge-shaped units of land running from mountaintop to the sea and were the largest units of land on each of the *mokopuni*, or islands. Each *ahupua`a* was run by an *ali`i*. The *ahupua`a* extended elements of Hawaiian spirituality into the natural landscape—a belief system that emphasized the interrelationship of elements and beings. The *ahupua`a* contained those interrelationships in daily and seasonal activities. Within each *ahupua`a*, families had strips of land,

³⁰² CONSERVATION STRATEGY, *supra* note 2, at 3-2.

³⁰³ The term *ahupua`a* comes from the altar (*ahu*) marking the seaward boundary of the area on which the sculptured head of a pig (*pua`a*) was placed at the time of the collection of tribute to the god Lono and his earthly representative the high chief (*ali`i nui*) during the *Makahiki*, or annual harvest festival. S.A.K. Derrickson et al., *Watershed Management and Policy in Hawaii: Coming Full Circle*, AM. WAT. RES. ASSOC. (2002). Each *ahupua`a* was theoretically self-sufficient, and its size based on the relative availability of natural resources. “*Ahupua`a*”, <http://www.hawaiihistory.com>.

³⁰⁴ Although all *ahupua`a* were not wedge-shaped, running from a smaller area at the top of the mountain to a larger expanse of land along the shore and into the sea, most followed this pattern.

or *`ili* to cultivate. Wild resources within the *ahupua`a* were open to all who lived there.³⁰⁵

These resources were gifts from the gods, and therefore their stewardship had ethical and religious implications, which were formalized in the practice of *kapu* (taboo). *Kapu* on natural resource-related activities, such as closed fishing seasons, was regulated closely by traditional leaders. Resource use and the management of land and water were based on an extensive set of cultural and religious norms.³⁰⁶ Within this system, land and water could not be owned, only used.

The arrival of Europeans and the subsequent privatization of Hawai'i's resources, coupled with the decline in Native Hawaiian population and the incorporation of Hawai'i into a cash-based economy, resulted in the demise of the *ahupua`a* and its effective system of natural resource stewardship.

This Section describes watershed management and the concept and traditional practice of *ahupua`a*. It discusses the ongoing efforts to reinvigorate traditional practices and integrate them into current watershed management activities throughout the State.

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

Environmental Protection Agency (EPA)

EPA has provided support to watershed management efforts to integrate all the aspects impacting the health of watersheds and their living resources through capacity-building, funding, and programs aimed at fostering innovation in non-traditional management practices (e.g., market-based incentives and water trading).

³⁰⁵ Williams, J., FROM THE MOUNTAINS TO THE SEA: EARLY HAWAIIAN LIFE, (1997), available at <http://ulukau.org/elib/cgi-bin/library?c=english&l=en>.

³⁰⁶ Derrickson, *supra* note 303.

Watershed Protection and Flood Prevention Program, Natural Resource Conservation Service, USDA

The Watershed Protection and Flood Prevention Act (Public Law 83-566) was enacted in 1954 to address the natural resource and economic damage suffered in the nation's watersheds from flooding and sedimentation. Over the years, the Act has been expanded to address a broad range of natural resource and environmental issues through the Watershed Protection and Flood Prevention Program of the USDA Natural Resource Conservation Service (NRCS). Through the watershed program, local sponsors receive financial and technical assistance to develop watershed plans that focus on engendering appropriate land-use and conservation practices. Projects can be used to address a number of natural resource-related issues, including agricultural water management and water quality. Pursuant to this program, Hawai'i has one project in the Lower Hamakua Ditch Watershed that provides irrigation and water conservation assistance to local farmers to help maintain agricultural and rural use of the area.³⁰⁷

Clean Water Action Plan

The *Clean Water Action Plan* was drafted by federal agencies on the 25th anniversary of the CWA to reinvigorate federal, state, and local efforts to address the outstanding issues related to water pollution in the country.³⁰⁸ The *Plan* commits federal agencies to supporting a cooperative approach to watershed management that targets those watersheds with the most critical water quality issues. In response to the *Plan*, Hawai'i prepared *The Hawai'i Unified Watershed Assessment*, which identifies priority watersheds throughout the State (see below).³⁰⁹

Community-Based Watershed Management under the National Estuary Program (NEP)

While Hawai'i does not have an estuary designated under the NEP, the Program may be a valuable resource for community-based watershed planning for Hawai'i. The NEP is a community-

³⁰⁷ See HAMAKUA DITCH PL-566 PROJECT - BIG ISLAND OF HAWAII, <http://www.watershedcoalition.org/Ditch.htm>.

³⁰⁸ See U.S. ENV'T PROT. AGENCY, CLEAN WATER ACTION PLAN, <http://www.epa.gov/history/topics/cwa/03.htm>.

³⁰⁹ IMPLEMENTATION PLAN, *supra* note 265.

based program administered by the EPA to assist with the restoration and maintenance of estuaries of national significance. The NEP was established under the 1987 Clean Water Act Amendments and is a voluntary program that facilitates partnerships among federal, state, and local organizations, industry, academia, and other stakeholders to create and implement a plan with specific actions tailored to the local needs.

STATE MANAGEMENT

Watershed Protection Board

In 2000, Hawai'i passed Act 152, Relating to Watershed Protection. This Act created a Watershed Protection Board comprised of the chairpersons of the DLNR, the Department of Agriculture, the county water managers from each of Hawai'i's four counties, and a U.S. Military representative.³¹⁰ The Board was charged with developing a master watershed plan that would, among other things: identify potential watershed management areas; develop criteria for eligible watershed management projects; designate watershed management projects to be undertaken; analyze the potential for using an equitable levy, assessment, or tax on water users to fund watershed protection efforts; and identify other potential sources of funding.

Due to timing and funding constraints, the DLNR and water board staff agreed to provide in-house staff resources and rely on existing compiled information to create the watershed protection master plan. In July 2000, the Watershed Protection Working Group was formed and determined a phased approach for the development of the master plan.

DOFAW Watershed Protection and Management Program

DOFAW is mandated by Hawai'i Revised Statute § 183 to “devise ways and means of protecting, extending, increasing, and utilizing the forests and forest reserves, more particularly for protecting and developing the springs, streams, and sources

of water supply to increase and make that water supply available for use...” Surface and groundwater quantity and quality are largely influenced by the surface on which rain falls and through which it percolates. The tremendous filtering capacity of forest lands provide effective and high quality groundwater recharge.

The mission of the DOFAW *Watershed Protection and Management Program* is to ensure water yields by protecting and enhancing the condition of Hawai'i's forested watersheds to retard rapid run-off of storm flows, prevent and reduce soil erosion, and improve filtration rates. The State's long standing policy of watershed protection has resulted in dramatic improvements from the degraded conditions which prevailed at the turn of the century. Management activities such as protective zoning, fencing, removal or control of feral animals, reforestation, and fire protection have reduced excessive erosion and loss of vegetative cover.

Division of Aquatic Resources (DAR), DLNR

The *Hawai'i LAS on Land-Based Pollution Threats to Coral Reefs*³¹¹ (LBP LAS) was the result of a collaborative planning process among federal and state government agencies that sought stakeholder input.³¹² Hawai'i's local action strategies are administered by the DLNR Division of Aquatic Resources (DAR) and the implementation of the LBP LAS is overseen by the steering committee formed to draft the Strategy. The Strategy was meant to:

- Provide a mechanisms to document, consolidate, and share ongoing efforts to address land-based pollution threats to Hawai'i's coral reefs;
- Identify new actions needed to address those threats for priority funding; and
- Improve coordination and collaboration between the relevant state and federal agencies.³¹³

³¹⁰ DLNR, *Annual Report to the Twenty-First Legislature 2001 Regular Session on Act 152 “Relating to Watershed Protection.*

³¹¹ *Hawaii's Local Action Strategy to Address Land-Based Pollution Threats to Coral Reefs* [hereinafter *LAS to Address LBP*] (March 2004).

³¹² The Steering Committee members of the LAS were: U.S. EPA; USDA, NCRS; NOAA; USFWS; DLNR; HI DOH; HI CZMP; and U.S. Geological Survey.

³¹³ *LAS to Address LBP supra* note 311.

The LBP LAS is watershed-based, and focuses on *ahupua`a* as the geographical area of focus. The overlying goal of the LBP LAS is to: “Reduce land-based pollution to improve coastal water quality and coral reef ecosystem function and health.” The objectives that are set forth to achieve this goal include:

- Reducing pollutant loads to surface and groundwater through site-specific actions and best management practices;
- Improving understanding of the links between land-based pollution and coral reef health through focused scientific research and monitoring; and
- Increase awareness of pollution prevention and control measures statewide.

The LBP LAS outlines short- (three-year) and long-term (ten-year) measures of success and proposed actions for priority funding that include watershed-specific actions, statewide actions, and actions that address multiple threats and will help to achieve the objectives of the Strategy.

Honolua, Maui; Kawela to Kapualei, Moloka`i; and Hanalei, Kaua`i were identified in the LBP LAS as demonstration *ahupua`a* for focused action, although the LBP LAS as a whole provides objectives and measures of success to serve as statewide guidance. Through consultations with reef scientists and stakeholders, ongoing actions in these areas were documented and priority areas for action highlighted. A specific action plan is provided for each priority *ahupua`a*. These are followed by an action plan for statewide research, monitoring and community awareness.

Contaminated surface water runoff from agriculture, suspended solids from soil erosion in upper watersheds, and nutrient and bacterial groundwater contamination from cesspools and septic systems in riparian areas were identified as primary concerns at all priority sites. In response, many of the actions directly relate to improved watershed management, further data collection and monitoring of polluted runoff, improved wastewater and stormwater treatment and control, and adopting best practices for agricultural land-uses impacting stream quality. Of all of the

priority actions in the three pilot *ahupua`a*, only four remain entirely unfunded. Eight of the projects are underway, but require further funding for completion.³¹⁴

The action plan for statewide research and monitoring outlined a number of activities related to attaining a better understanding of LBP throughout the state, as well as continuous monitoring of the effectiveness of activities taking place in the three pilot *ahupua`a*. The action plan for awareness-raising proposes to document the lessons learned and achievements of the pilot *ahupua`a* for widespread dissemination to serve as a catalyst for the development and implementation of pollution controls in other areas of the state. Currently, only some of these state-wide initiatives are partially funded.

NON-GOVERNMENTAL APPROACHES

Hawai`i Association of Watershed Partnerships (HAWP)

Established in 2003, HAWP is a mechanism for building public and private support for watershed protection. Nine partnerships, representing more than 50 public and private partners, are members of the Association. HAWP assists its members with raising the funds necessary to implement their management goals.

Watershed Partnerships

The East Maui Watershed Partnership (EMWP) was formed in 1991 to protect a 100,000 acre watershed that is the largest source of surface water in Hawai`i. The EMWP focuses on protection of upland forested areas to prevent soil erosion and maintenance of water quality throughout the greater watershed. Projects include fence construction and maintenance to prevent damage and soil erosion caused by ungulates, removal of invasive species, implementation of runoff and stream protection measures, and water quality monitoring. The EMWP conducts outreach and education throughout the watershed

³¹⁴ DLNR, Division of Aquatic Resources, Mauka Makai: *News from Hawaii's Land-Based Pollution Threats to Coral Reefs LAS*, Issue 1 (Oct.-Dec. 2006), <http://hawaiiconservation.org/newsservice.asp>

through classroom education, interpretive hikes and field studies, and educational displays at community events. Partners include the Nature Conservancy, the East Maui Irrigation company, Haleakala National Park, Haleakala Ranch Company (a cattle ranching operation), Hana Ranch Partners, the County of Maui Department of Water Supply, DLNR, Kipahulu `Ohana (an NGO devoted to maintaining traditional natural resource practices in Hawai'i), NCRS, and the USDA Resource Conservation and Development program. Funding for the partnership comes from the partners themselves, as well as federal, state, and private foundation sources.

Other watershed partnerships include:

- East Moloka'i Watershed Partnership
- Kaua'i Watershed Alliance
- Kohala Watershed Partnership
- Ko'olau Mountains Watershed Partnership
- Lana'i Forest and Watershed Partnership
- Leeward Haleakala Watershed Restoration Partnership
- Ola'a Kilauea Partnership
- West Maui Mountains Watershed Partnership

Ke Kia`i Project

The Ke Kia`i Project, overseen by the DOH PRCP and funded by a federal CWA Section 319 grant, aims to increase understanding of the role of traditional knowledge of the *ahupua`a* and its relationship to environmental stewardship through community-based education programs, habitat restoration, and the creation of a mural to demonstrate these concepts. Limited funding is a constraint.

University of Hawai'i at Manoa

The University of Hawai'i at Manoa, Department of Natural Resources and Environmental Management University of Hawai'i Hawaiian Internship Program; DOH; and the United States Department of Agriculture, Forest Service have a project to involve undergraduate students in all aspects of a watershed-based approach to coastal water quality management. This is a collaborative, multidisciplinary, hands-on training exercise in water quality science, environmental

planning, and economic evaluation. Students learn the methodology used by the DOH TMDL Program for water quality management at field sites on the islands of O`ahu and Hawai'i. The students are also encouraged to learn socially-acceptable and environmentally-appropriate methods of community development for a more holistic approach to watershed management.

Ala Wai Canal Watershed Project

The Ala Wai Canal Watershed Project supports and empowers a nonprofit organization as a partner to work with the community to identify and implement polluted runoff control projects necessary to achieve common environmental management goals of both communities and agencies.

Waipa Foundation

The Waipa Foundation is a non-profit organization on Kaua'i that is working to restore the Waipa *ahupua`a* on Kaua'i. The Foundation is a community and learning center with projects that include natural and cultural resource mapping by high school students, summer programs that target Native Hawaiian youths, and a pilot aquaculture program.

3. HABITATS AT THE INTERFACE: BUFFER ZONES AND WETLANDS

Hawai'i's unique hydrological conditions—heavy rainfall, porous volcanic soil, and steep terrain—create wetlands that are different from those found in any other region of the United States. Historically, Hawai'i contained approximately 59,000 acres of wetlands. Over twelve percent of the State's original wetland acreage, and over thirty percent of its natural lowland wetlands, have been lost.³¹⁵ Although the remaining wetlands cover less than three percent of Hawai'i's surface area, they perform important functions, including providing habitat for endemic and endangered species and spawning grounds for several species

³¹⁵ ENVIRONMENTAL LAW INSTITUTE, STATE WETLAND PROGRAM EVALUATION: PHASE II [hereinafter WETLAND PROGRAM EVALUATION] (June 2006), <http://www.eli.org>

of fish.³¹⁶ It is estimated that only one percent of the Pacific island recreational and commercial species are estuarine-dependent. However, several of the species that are estuarine-dependent are important to the economy of Hawai'i. These species include mullet, milkfish, shrimp, and the nehu, a tropical anchovy used as live bait in the pole-and-line skipjack tuna fishery.³¹⁷

Hawai'i's wetlands protect and maintain the water quality in other near-shore habitats, including the coral reefs occurring seaward of coastal wetlands. Wetlands protect these reef areas from sediment, turbidity, and pulses of fresh water during periods of heavy rain.³¹⁸ Wetlands also provide habitat for the prey of reef and open coastal fishes. Most estuaries in Hawai'i are within embayments that are not subject to rapid and efficient flushing.³¹⁹ As a result, silt and organic materials deposited from agricultural and urban runoff can accumulate and affect estuarine water quality.

Wetland losses are primarily attributable to urbanization, development, and improperly managed agricultural activities. Filling for construction and diversion of waters that would normally flow into wetlands are major issues. Many of the higher quality wetlands are in forested areas and are small and thus protected from development. Relatively few wetlands persist in coastal areas where they could assist with nonpoint source pollution abatement. Today, many of Hawai'i's streams are channelized for flood control and no longer support the riparian vegetation that is basis for wetlands and estuaries. During heavy rains, runoff carries pollutants, like chemicals, fertilizers and sediments, and it travels via streams and results in damage to offshore reefs as well as freshwater pollution.

³¹⁶ *Id.*; HAWAII CZM PROGRAM, HAWAII OCEAN RESOURCES MANAGEMENT PLAN (Dec. 2006), http://www.hawaii.gov/dbedt/czm/czm_initiatives/orm.html.

³¹⁷ NOAA, NAT'L MARINE FISHERIES SERV., HABITAT CONNECTIONS: WETLANDS, FISHERIES, AND ECONOMICS, <http://www.nmfs.noaa.gov/habitat/habitatconservation/publications/habitatconnections/habitatconnections.htm>.

³¹⁸ *Id.*

³¹⁹ IMPLEMENTATION PLAN, *supra* note 265.

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

Clean Water Act (CWA) § 404 Program

The principle regulatory authority governing the protection of wetlands at the federal level is the CWA Section 404 Program. Section 404 establishes a regulatory and permitting regime, administered jointly by the U.S. Army Corps of Engineers and the EPA, for dredging and for discharges of fill material into "waters of the United States." Pursuant to the CWA, states have the authority to enact their own regulatory (and non-regulatory) programs for wetlands and can adopt more stringent limitations than those established under the federal program.³²⁰

Wetlands Reserve Program, Natural Resources Conservation Service (NRCS), USDA

The USDA NRCS provides technical and financial support to help landowners in Hawai'i with their wetlands restoration efforts through the Wetlands Reserve Program (WRP).³²¹ WRP is a voluntary program that provides incentives in the form of technical and financial assistance for private landowners to restore, protect, and enhance wetlands on their property. WRP is reauthorized by the Farm Security and Rural Investment Act (2002).

To be eligible, wetlands must be restorable and suitable for wildlife benefits. Eligible types of lands include farmed wetlands; prior converted cropland; farmland that has become a wetland due to flooding; rangeland, pasture, or production forest land where the hydrology has been significantly degraded and can be restored; riparian areas that link protected wetlands; lands adjacent to protected wetlands that contribute significantly to wetland functions and values; and previously restored wetlands that need long-term protection. Other conditions apply to applications for conservation easements and applications are

³²⁰ 33 U.S.C. §1251 *et seq.*; 40 C.F.R. §§104-149.

³²¹ U.S. DEP'T OF AGRIC., NATURAL RES. CONSERVATION SERV., HAWAII AND AMERICAN SAMOA WRP FACTSHEET, ftp://ftp-fc.sc.gov.usda.gov/HI/pub/programs/wrp/HI_wrp_2006_fact_sheet_10_28_05.pdf.

ranked and evaluated by NRCS based on environmental benefits to be achieved by the proposed restoration efforts and cost-effectiveness of the planned activities. For permanent easements, USDA covers one hundred percent of the value of the easement and one hundred percent of the costs for restoring the wetland. For thirty-year easements, USDA pays seventy-five percent of the value determined for the easement and seventy-five percent of the costs of restoration. There are also other restoration cost-share agreements, in which USDA will pay up to seventy-five percent of the costs of restoration of lost or degraded wetlands. The NRCS works in partnership with the local Soil and Water Conservation Districts throughout Hawai'i to implement the program.

STATE MANAGEMENT

The basic elements of WQS—including designated uses, criteria, and an antidegradation policy—provide a legal basis for protecting wetland resources through Hawai'i's water quality management program. The primary state agencies participating in the regulation of wetlands are the DOH and the DLNR. Like many other states, Hawai'i relies largely on CWA Section 401 water quality regulations to regulate its wetlands.

Clean Water Branch (CWB) of the State Department of Health (DOH)

In Hawai'i, the CWB oversees CWA Section 401 water quality certifications. Individual certification applications must be filed for every project creating discharges that cannot be authorized pursuant to Hawai'i's conditional blanket Section 401 certification. DOH staff work with applicants to make sure the proposed discharges will meet Hawai'i's water quality standards. This cooperative approach has led to a nearly one hundred percent certification rate in the state. For each certified project, DOH creates mandatory, site-specific best management practices and monitoring and assessment plans to ensure that projects will maintain compliance with the relevant regulatory requirements.

Department of Land and Natural Resources (DLNR)

DLNR's Commission on Water Resources Management (CWRM), DAR, and DOFAW conduct wetland-related activities. As part of its oversight of water quantity issues, CWRM receives and processes permit applications for stream channel alterations, well drilling, pump installations, and diversion works construction, all of which can affect wetlands in specific projects.³²² DAR restores habitats, including wetlands, for aquatic species. DOFAW manages wetland habitats for native species and conducts habitat restoration and monitoring. DOFAW has no dedicated funding source for this work and relies on competitive, external grants secured by staff.

In 2006, DLNR was granted nearly \$650,000 to restore twenty acres and enhance sixty acres of coastal wetlands under the National Coastal Wetlands Conservation Grant Project. With additional funds from partners and the state, DLNR will focus this work in the Kawainui Marsh and associated uplands in Honolulu County (see below).

Clean Water Branch, DOH

Although the Clean Water Branch does not have funds dedicated specifically to wetland work, DOH funds the salaries of two engineers who work on Section 401 certifications with an equal combination of state and federal funds. Approximately ten percent of the applications the state reviews for Section 401 water quality certification are related to wetlands.

Kawainui Marsh Wildlife Plan

In 2007, the City of Kailua and the State of Hawai'i reach agreement on plans to restore Kawainui Marsh that include flood control measures.³²³ The Legislature approved \$920,000

³²² WETLAND PROGRAM EVALUATION, *supra* note 315.

³²³ Diana Leone, *Kawainui Marsh Wildlife Plan Pact Reached*, 12 HONOLULU STAR BULLETIN (April 11, 2007), available at <http://starbulletin.com/2007/04/11/news/story07.html>. The Ramsar Convention on Wetlands is an international convention for wetlands conservation. The Ramsar list is a list of internationally important wetlands. For more information, see Ramsar Convention Secretariat, *What is the*

in state funding to maintain and enhance the marsh over a two-year period.³²⁴ It has been named a “Wetland of International Importance” under the international Ramsar Convention. Multiple nongovernmental organizations have worked to protect the marsh including the following: `Ahahui Malama I Ka Lokahi, Kailua Hawaiian Civic Club, the Kawai Nui Heritage Foundation, Ameron Hawaii, Hawaii Audubon Society, Hawaii's Thousand Friends, and Kailua Historical Society.³²⁵

NON-GOVERNMENTAL APPROACHES

Several NGOs participate in marsh restoration including those described in the previous section.

Ducks Unlimited

Ducks Unlimited is conducting a wetlands conservation initiative in Hawai`i with the goal of protecting waterbird populations. It, along with its partners, has conducted six wetland conservation projects on the main Hawaiian Islands. This includes a 28 hectare tidal restoration project in Pouhala Marsh—a mitigation site for a 1985 oil spill in Pearl Harbor. Ducks Unlimited is helping to restore Kealia National Wildlife Refuge on Maui and is working to restore coastal wetlands on Moloka`i.

OPTIONS FOR FRESHWATER

In general, existing laws, regulations, and policies do a poor job of connecting land-based activities to ocean impacts. One of the main federal mechanisms for making this connection is by managing U.S. waters under the Clean Water Act. CWA provisions, including TMDLs and the NPDES permitting program, allow federal and state regulatory oversight of land-based activities that pollute freshwater and marine environments.

Ramsar Convention on Wetlands?, RAMSAR INFORMATION PAPER NO. 2, <http://www.ramsar.org/about/info2007-02-e.pdf>

³²⁴ Diana Leone, *The Rebirth of Kawainui Marsh* 12(155) Honolulu Star Bulletin (June 4, 2007),

<http://starbulletin.com/2007/06/04/news/story01.html>.

³²⁵ *Id.*

Option 1. Set standards appropriate for biodiversity.

Existing WQS do not directly consider the needs of coral reef or other marine species.³²⁶ The major stressors to reefs—including elevated nutrient levels, algal blooms, elevated turbidity/sediment loads, decreased light penetration, and long water residence times—are not specified in existing WQS. One way to address the water quality of the marine environment is to develop biocriteria based on the health and needs of the marine environment.

The Chesapeake Bay Program has been undertaking efforts to incorporate biological goals in establishing state water quality standards. For example, instead of a numerical turbidity target, turbidity targets relate to water clarity needs for submerged aquatic vegetation. To address aquatic life uses, Ohio has developed numeric standards that consider based on a biological integrity index as a way to determine if water quality standards are being met.³²⁷

These approaches could act as a model for the development of WQS in Hawai`i.

Option 2. Control nonpoint sources of pollution.

Nonpoint sources of pollution are particularly challenging to address through legal and regulatory mechanisms. The diffuse nature of the sources means that any one contributor may not cause significant environmental impacts, but in the aggregate nonpoint sources of pollution are major contributors to freshwater and marine pollution.

Unlike point sources of pollution, the CWA does not require permits for discharges of nonpoint sources. Nonpoint sources are addressed through

³²⁶ For a discussion of this challenge, see EPA Region 9 Presentation,

<http://www.epa.gov/region09/islands/conf05/present/harold-lao-hawaii.pdf>.

³²⁷ DIV`N OF SURFACE WATER, OHIO EPA, WATER QUALITY STANDARDS PROGRAM, <http://www.epa.state.oh.us/dsw/wqs/index.html>.

incentive-based programs that encourage states and individual actors to take actions.

1. Implement goals outlined in the DOH Implementation Plan for Polluted Runoff Control.

State agencies are seeking ways to support nonpoint source projects and programs and may offer opportunities for voluntary or incentive-based approaches to action. For example, according to the 2005 Annual Report of the PRC Program, the State wants to integrate PRCP watershed-related activities with other water quality programs and watershed-oriented programs, and activities of other State, local, and nonprofit partners. The CWB goals are to: “*Foster partnerships with other governmental, business, and nonprofit agencies involved in nonpoint source pollution control; promote community-based watershed management through education and voluntary compliance; provide federal dollars for demonstration projects relating to non point source control; encourage and support programs for environmental education; and promote pollution control projects in watersheds with water bodies that have been designated as impaired. Successful demonstration projects are promoted to encourage landowners to apply the same techniques as best management practices*” (emphasis added). Additional funding opportunities may be available through Section 319 grants and other state monies to implement nonpoint source pollution projects.

2. Use state law to regulate nonpoint source pollution.

Often regulatory controls for nonpoint pollution come from the state. An ELI publication on enforceable mechanisms for control of nonpoint sources states the following:

Standards are often supplied by a mixture of agriculture laws, forestry laws, fish and game laws, nuisance prohibitions, general water pollution discharge prohibitions, land-use planning and regulation laws, and criminal laws. Also, many state authorities are watershed-based, or targeted solely upon

critical areas, buffers, or particular impaired waters. In addition, state laws also often delegate standard setting, implementation, or enforcement duties to units of local government or conservation districts.³²⁸

ELI’s nonpoint source report summarizes Hawai’i’s laws (as of 1998) as follows:

Hawai’i prohibits the discharge of any pollutant to waters of the state except as authorized by law or permit. Hawai’i Rev. Stat. 342D-50. Hawai’i, moreover, has explicit authority to regulate nonpoint source pollution under a provision that allows the issuance of enforceable nonpoint source rules which may include “water quality standards for specific areas, types of nonpoint source discharge, or management measures.” Hawai’i Rev. Stat. 342E-3(a).

...

Some states’ right to farm provisions specifically do not protect agricultural operations from nuisance claims based on water pollution. e.g., Hawai’i Rev. Stat. 165-2]³²⁹

Option 3. Limit discharge of minimally-treated and untreated sewage into the marine environment.

Wastewater spills and releases into Hawai’i’s marine environment are a major concern for aquatic and human health and have been the subject of EPA and court action. In March 2006, approximately 48 million gallons of raw sewage was discharged into the Ala Wai Canal after heavy rains caused a failure in the Beachwalk Force Main that conveys untreated sewage to the Sand Island municipal treatment plant.³³⁰ It was the largest recorded spill of untreated sewage.³³¹ In response to this, the EPA and State of Hawai’i

³²⁸ ENVIRONMENTAL LAW INSTITUTE, ENFORCEABLE STATE MECHANISMS FOR THE CONTROL OF NONPOINT SOURCE WATER POLLUTION (1997).

³²⁹ *Id.*

³³⁰ *U.S. v. City and County of Honolulu*, Stipulated Order, <http://www.epa.gov/region09/water/npdes/pdf/honolulu-sewer/cch-stipulated-order.pdf>.

³³¹ See, e.g., Robbie Dingeman, *Raw Sewage Spill Largest in 20 Years*, THE HONOLULU ADVERTISER (April 1, 2006).

filed a complaint in district court against the City and County of Honolulu (CCH), alleging that CCH violated the Clean Water Act by discharging untreated sewage.³³²

In settling this dispute, the U.S. District Court for the District of Hawai'i approved a stipulated order in which the parties agreed that CCH would take actions to "evaluate, repair, rehabilitate or replace" the Beachwalk Main and other sections of the CCH sewage system that are vulnerable to failure.³³³ CCH will ensure that the force mains (pressurized pipes in the sewage pipe network that carry sewage from residences and industries to the treatment plant) are in proper working condition, and replace them where necessary. The sewer line near Waikiki beach is slated to be complete by the end of 2012. A new Ala Moana Force Main No. 3 and a new Kaneohe/Kailua Force Main are to be completed by the end of 2014. CCH must conduct and submit to EPA and DOH an assessment of the Waimalu and Kahala Force Mains to determine whether to repair, rehabilitate, or replace these mains by January 31, 2009. All work on these Mains is to be completed by the end of 2016. Also, Honolulu was to develop site-specific Spill Contingency Plans by the end of January 31, 2008.

These actions are in addition to a 1995 consent decree in which Honolulu agreed to improve its sewage system. Work under the 1995 consent decree is ongoing and expected to be completed in 2019. In cases where there are any conflicts in compliance milestones between the consent decree and the stipulated order, the stipulated order notes where it shall legal precedence, but otherwise the effects of the consent decree are unaffected.³³⁴

In addition to these changes, several additional approaches may help limit discharge of minimally-treated and untreated sewage into the marine environment

³³² U.S. v City and County of Honolulu, Stipulated Order (2007).

³³³ *Id.*

³³⁴ *Id.*

1. Deny permit variances for Hawai'i's publicly owned treatment works (POTWs).

Federal law generally requires all POTWs to meet primary and secondary treatment standards.³³⁵ However, section 301(h) of the federal Clean Water Act allows the EPA to grant variances from secondary treatment requirements to municipal treatment plants on a case-by-case basis.³³⁶ Two POTWs in the City and County of Honolulu conduct only primary treatment before discharging into the ocean. The U.S. EPA is currently reviewing the applications by Honolulu for CWA 301(h) variances for two municipal wastewater treatment plants: the Honouliuli Wastewater Treatment Plant (HWWTP) and the Sand Island Wastewater Treatment Plant (SIWWTP). The EPA has proposed to deny both applications.³³⁷

The HWWTP treats approximately 27 million gallons a day of sewage and other wastewater from residences and businesses in the southern portion of Oahu.³³⁸ The plant discharged treated wastewater from Barbers Point outfall, approximately 8,760 feet offshore.³³⁹ HWWTP is currently operating under a 1991 permit that contains a 301(h) variance allowing for less than full secondary treatment. Since the initial permitting, CCH has updated this plant to enable the reuse of treated water for irrigation and industrial processes, some of which were made

³³⁵ Primary treatment generally involves screening out of large objects, removing grit, and allowing wastewater to settle. Secondary treatment of wastewater entails the use of a variety of biological treatment techniques to remove most of the waste's organic matter prior to discharge.

³³⁶ 301(h) variances are only permitted if dischargers are able to meet specific criteria, including requirements to: (1) attain or maintain water quality that allows recreational activities in and on the water; (2) attain or maintain water quality that allows protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife; (3) meet water quality standards; (4) establish a monitoring program to assess impacts; (5) provide a minimum of primary or equivalent treatment; (6) have an approved pretreatment plan and establish toxics controls; (7) provide enhanced urban area pretreatment (for POTWs serving populations over 50,000); (8) protect water supplies; and (9) prohibit variances in stressed estuaries.

³³⁷ Personal communication with Dean Higuchi, US EPA.

³³⁸ U.S. Env'tl Protection Agency, *EPA's Tentative Decision on the Renewal of CWA 301(h) Variance for Honouliuli Wastewater Treatment Plant: Fact Sheet* (2007).

³³⁹ *Id.*

pursuant to the 1995 consent decree between CCH, EPA, and DOH (see above). CCH is now proposing to renew the permit with a variance that will enable them to operate under a variety of treatment scenarios, most of which involve the discharge of primary effluent.³⁴⁰ Based on its review, EPA determined that the proposed discharge did not meet all of the criteria under 301(h) for granting a variance. Specifically, the proposed discharge would not meet water quality standards; attain or maintain water quality that allows for recreational activities in and on the water; nor attain or maintain water quality that allows protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife.

The SIWWTP treats approximately 66 million gallons per day of raw sewage from residences and businesses from the City of Honolulu, including Waikiki.³⁴¹ The plant discharges treated wastewater into Mamala Bay via the Sand Island outfall.³⁴² Currently, the SIWWTP is operating under a 1998 permit containing a 301(h) variance allowing discharge following only primary treatment. CCH is currently applying to renew this permit with the variance intact. Based on its review, EPA determined that the proposed discharge did not meet all of the criteria under 301(h) for granting a variance. Specifically, the proposed discharge would not meet water quality standards; nor would it attain or maintain water quality that allows protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife.

One option is to encourage the EPA (or support it in its decision) to deny the permit variance allowing primary treatment discharges. However, one interviewee commented that the cost of implementing secondary treatment (estimated to be on the order of \$1 billion) outweighed the potential benefits from this action—a stance taken

by the City and County of Honolulu.³⁴³ However, others including environmental organizations such as Sierra Club find secondary treatment to be a necessary step in ensuring marine water quality.³⁴⁴

2. Enforce pretreatment standards.

Publicly owned treatment works (POTWs) often receive polluted wastewater from industrial (non-domestic) users. The national pretreatment regulations, promulgated pursuant to the federal Clean Water Act, establish the responsibilities for federal, state, and local government, POTWs, and industry to implement pretreatment standards in order to control pollutants that may pass through or interfere with POTW treatment processes or contaminate sewage sludge.³⁴⁵ Unlike many other environmental regulations, the pretreatment standards are not generally enforced by state or federal authorities. Rather, any POTW with a design flow greater than 5 million gallons per day is required to develop a pretreatment program that is approved by the state. The POTW then becomes the authorized “Control Authority” that administers and enforces pretreatment requirements. To be approved, a pretreatment program must include an enforcement response plan detailing how it will investigate and respond to instances of noncompliance by industrial users.³⁴⁶

There are three types of pretreatment standards: general prohibitions, categorical standards, and local limits.³⁴⁷ General prohibitions apply to all industrial users, regardless of whether the facility is subject to a permit. Categorical pretreatment standards apply to specific categories of industrial users or specific process wastewaters. These apply regardless of whether a POTW has an approved pretreatment program or the facility has been issued a permit. Finally, local limits are promulgated by POTWs and are meant to translate the general prohibitions into site-specific needs

³⁴⁰ *Id.*

³⁴¹ U.S. Env'tl Protection Agency, *EPA's Tentative Decision on the Renewal of CWA 301(h) Variance for Sand Island Wastewater Treatment Plant: Fact Sheet* (2007).

³⁴² *Id.*

³⁴³ Gregg K. Kakesako, *EPA Denies Sand Island Exemption*, 12 Honolulu Star Bulletin (Dec. 11, 2007), <http://starbulletin.com/2007/12/11/news/story02.html>.

³⁴⁴ *Id.*

³⁴⁵ US EPA, *Introduction to the National Pretreatment Program* (1999), <http://www.epa.gov/npdes/pubs/final99.pdf>.

³⁴⁶ 40 CFR §403.8(f)(5).

³⁴⁷ 40 CFR §§403.5, 403.6, and 403.8(f).

and capacities. POTW pretreatment programs are required to promulgate local limits or explain why they are unnecessary.

There are a range of enforcement mechanisms available to Control Authorities, including:

- Informal notice to an industrial user that there is a minor violation and seeking an explanation;
- Informal meetings to encourage the industrial users to make a commitment to comply with pretreatment requirements or inform the industrial users of more stringent enforcement mechanisms that can be used if compliance is not achieved;
- Warning letter or notice of violation requesting an explanation and the measures that will be taken to achieve compliance;
- Administrative orders and compliance schedules that require industrial users to “show cause” to the Control Authority as to why formal enforcement actions should not be taken and how compliance will be achieved;
- Administrative fines that capture the partial or full economic benefit of noncompliance and deter future violations;
- Civil suits against violators. 40 CFR §403.8(f)(1)(vi) provides that Control Authorities can seek or assess civil or criminal penalties of at least \$1,000 per day for each violation. Civil suits can also seek injunctive relief.
- Criminal prosecution when there is a willing or negligent violation of pretreatment standards;
- Revocation of permit, immediately halting an actual or threatened discharge that is a threat to public health and safety, the environment, or the POTW.

In addition to these enforcement options, Section 505 of the Clean Water Act also allows citizens to file suits against any Control Authority that fails to implement its pretreatment program as required under its NPDES permit (see next section).

3. Take legal action to inspire or compel government or industry response.

The Clean Water Act enables regulatory agencies to take civil enforcement actions and/or require corrective actions to bring violators into compliance with the Act. Civil penalties up to \$25,000 per day per violation can be assessed.³⁴⁸ The regulatory authority has the authority to order a violator to cease operations until a problem is addressed, as well as to revoke or refuse renewal of the relevant permits. In cases involving negligence or knowing violations, criminal prosecution is authorized.³⁴⁹

Section 505 of the CWA provides that any citizen may commence a civil action on his own behalf against any person, including a government agency, who is alleged to be in violation of the specific requirements of the CWA or against the EPA Administrator for failure to perform a nondiscretionary duty.³⁵⁰ This “citizen suit” provision provides an important enforcement mechanism for environmental advocacy groups and other citizens that supplements state and federal actions. Citizens can seek injunctive relief, civil penalties, and reimbursement of court costs and attorneys’ fees.³⁵¹ When citizen suits are settled, the fines can be allocated towards improvement of the affected water body, or credited towards the industry’s installation of new pollution control mechanisms.³⁵²

It is important to note that there are potential issues with relying on the citizen suit provisions of the CWA as an enforcement mechanism. First, litigation is almost always a costly undertaking. Despite the fact that litigants are entitled to recover court costs and attorney’s fees, it can still be prohibitively expensive for advocacy groups and individuals. Second, the CWA defines “citizen” as “a person or persons having an interest which is or may be adversely affected.” To gain

³⁴⁸ 33 U.S.C. §1319.

³⁴⁹ *Id.*

³⁵⁰ 33 U.S.C. §1365.

³⁵¹ *Id.*

³⁵² OHIO ENVIRONMENTAL COUNCIL, WATERSHED WATCHDOG: GUIDE TO CLEAN WATER ACT CITIZEN SUITS, http://greenways.morpc.org/documents/OEC_Citizen_Suit_Guide.pdf.

the necessary standing to bring a suit under this provision, a person or group must show that: (1) it has suffered an “injury in fact” that is (a) concrete and particularized and (b) actual or imminent, rather than conjectural or hypothetical; (2) the injury is “fairly traceable” to the challenged action of the defendant; and (3) it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision.³⁵³ Jurisdiction for citizen suits will be denied for past violations. There must be a “good faith allegation of an ongoing violation.”³⁵⁴ This requirement can be satisfied by establishing that a violation was occurring when the suit was filed unless it can be shown that there is “no real likelihood of repetition” of the violation.³⁵⁵

Additionally, there is a requirement to prove that a court decision, whether providing injunctive relief or damages, can actually redress the harm brought to the person or entity bringing the citizen suit. When the violation has ceased, injunctive harm is no longer a viable option. Monetary damages that are delivered into the public coffers are unlikely to provide the required relief. As such, this requirement can be a significant barrier to gaining standing in a CWA citizen suit.

At the state level, Hawai'i has no specific statute providing for citizen suits. Hawai'i's constitutional provision guaranteeing all persons the “right to and clean and healthful environment,” which is theoretically enforceable by “any person... against any party, public or private, through appropriate legal proceedings, subject to reasonable limitations and regulation as provided by law.” However, the federal district court has

³⁵³ Friends of the Earth, Inc. v. Laidlaw Environmental Services (TOC), Inc., 528 U.S. 167, 180-81 (2000) (citing Lujan v. Defenders of Wildlife, 504 U.S. 555, 560-61 (1992)); see also Plurality Opinion (Plurality op.) at 13 (quoting Mottl v. Miyahira, 95 Hawai'i 381, 389, 23 P.3d 716, 724 (2001)); Ka Pa Akai O Ka Aina v. Land-use Comm'n, 94 Hawai'i 31, 42, 7 P.3d 1068, 1079 (2000) (quoting Citizens, 91 Hawai'i at 100, 979 P.2d at 1126).

³⁵⁴ Gwaltney of Smithfield v. Chesapeake Bay Found., 484 U.S. 49 (1987).

³⁵⁵ Chesapeake Bay Found. V. Gwaltney, 688 F. Supp. 1078 (E.D. Va. 1988), modified, 890 F.2d 690 (4th Cir. 1989), followed in Sierra Club v. Union Oil, 853 F.2d 667 (9th Cir. 1988).

held that the provision does not give individuals the right to sue.³⁵⁶

Option 4. Manage watersheds.

Taking a watershed approach to management is appealing because it allows management of an interconnected ecological environment. Presumably, by considering the entire watershed, managers will make more effective decisions that adequately protect the resource. However, managing an entire watershed, especially, as a community based approach is not without its challenges. Each watershed has a different community composition and different environmental problems. Identifying the common interests of the stakeholders in the community and rallying them to volunteer time to a particular long-term cause is a challenge. With each watershed comes a diverse and complex set of issues that must be considered including how to address nonpoint source pollution and land-use, as well as institutional challenges of multiple agencies working within the parameters of different mandates.

Opportunities for watershed and *ahupua`a* management include:

- Using the NOAA Local Action Strategy as a model for protecting reefs from land based sources of marine pollution or building of off existing LAS efforts.
- Funding for watershed partnerships by the Hawai'i Association of Watershed Partnerships. The Twentieth Legislature amended Natural Area Partnership legislation to allow funds to be expended on watershed partnership projects. These funds come from a portion of the conveyance tax, which is levied each time real estate property is bought or sold. Each of the watershed partnerships is funded for co-operative projects that would greatly benefit on-the-ground activities. Environmental assessments have been completed or are being

³⁵⁶ Stop H-3 Ass'n V. Lewis, 538 F. Supp. 149, 175 n.3 1 (D. Haw. 1982), *rev'd on other grounds*, 740 F.2d 1442 (9th Cir. 1984), *cert. denied*, 471 U.S. 1108(1985).

completed for each watershed management plan.

- Utilizing the NEP report, *Community-Based Watershed Management: Lessons from the National Estuary Program* (2005), as a resource when developing watershed management programs.³⁵⁷
- Applying for the US EPA's "Targeted Watersheds Grants" program, which provides funding to community-driven watershed projects. For example, in 2003, the Hanalei River Hui received an EPA targeted watershed grant to develop best management practices to address sediment and wastewater issues in the watershed and to conduct monitoring of the results.³⁵⁸ The West Maui watershed is a finalist for the 2007 grants program.

There are a number of resources available to citizens and government authorities to guide and assist with the development and implementation of strategic watershed management plans. The US EPA has developed a draft *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*. This Handbook includes specific guidance on how to gather relevant data, identify gaps in existing information, analyze data to characterize the watershed and pollutant sources, estimate pollutant loads, set goals and identify ways to reduce pollutant loads, identify, evaluate and select management strategies, and implementation and monitoring of the plans.³⁵⁹

The Center for Watershed Protection (CWP) is a non-governmental organization devoted to providing local governments, activists and watershed organizations technical tools for

addressing watershed issues.³⁶⁰ Among these tools is a "Rapid Watershed Planning Handbook" and an urban watershed restoration manual. CWP also works with specific watersheds to assist in planning for and implementing site-based watershed management initiatives.

One specific option for conservation at the watershed level is the establishment of riparian buffer zones. Riparian areas are ecosystems that are adjacent to or near flowing water. They are the transitional areas between aquatic and upland terrestrial ecosystems. In Hawai'i, riparian areas are under considerable threat from agricultural, industrial, and urban developments. To ameliorate the negative impacts of adjacent land-uses, buffer zones can be established around aquatic resources. At least 15 states and several local jurisdictions have adopted riparian buffer regulations that protect areas ranging from six to over 300 meters in width.³⁶¹

Buffers are vegetated zones, preferably with native species, located between aquatic resources and adjacent areas subject to anthropogenic and other impacts. These zones provide multiple water quality benefits, including the trapping of nutrients, sediments and pesticide runoff, stabilization of stream banks, storing of stormwater, habitat preservation, and human recreational and aesthetic values.³⁶² Local government interests in buffer lands often include concern for management of stormwater, avoidance of hazards from flooding, protection of water supplies, and protection of property from future hazards that may be associated with climate change. The state also has great interest from a conservation standpoint in enacting buffer zone requirements.

³⁵⁷ Available at U.S. ENVTL. PROTECTION AGENCY, COMMUNITY-BASED WATERSHED MANAGEMENT HANDBOOK, <http://www.epa.gov/owow/estuaries/neprimer/handbook.htm>

³⁵⁸ U.S. ENVTL. PROTECTION AGENCY, TARGETED WATERSHED GRANTS: HANALEI RIVER, KAUA'I, HAWAI'I, available at <http://epa.gov/region09/water/watershed/hanalei.html>.

³⁵⁹ U.S. ENVTL. PROTECTION AGENCY, HANDBOOK FOR DEVELOPING WATERSHED PLANS TO RESTORE AND PROTECT OUR WATERS, DRAFT (2005), http://www.epa.gov/owow/nps/watershed_handbook/pdf/handbook.pdf.

³⁶⁰ See CENTER FOR WATERSHED PROTECTION, <http://www.cwp.org>.

³⁶¹ ENVIRONMENTAL LAW INSTITUTE, CONSERVATION THRESHOLDS FOR LAND USE PLANNERS (2003)

³⁶² Polyakov, V., Fares A., and Ryder M.H., *Precision Riparian Buffers for the Control of Nonpoint Source Pollutant Loading into Surface Water: A Review*, 13 ENVIRONMENTAL REVIEW 129-144.

Currently, Hawai'i has no riparian buffer regulations. Such regulations could be implemented at the State level or at the local government or county level. The Environmental Law Institute and other organizations have published guidance on establishing such regulations for wetlands and other riparian zones.

V. MARINE ACTIVITIES

Hawai`i's marine environment is central to the culture, tradition, heritage, and economy of the people of Hawai`i. It is the reason that most tourists visit Hawai`i, and it provides essential life support services. This Part describes the major marine activities and describes management approaches to addressing marine activities.

Part V, Marine Activities, includes:

- A. Fisheries
- B. Protected Species and Habitats
- C. Aquaculture
- D. Invasive Species
- E. Ships and Ports
- F. Climate Change
- G. Other Ocean Industries and Impacts

A. FISHERIES

Fishing and related activities are vital to the people of Hawai`i—providing food, recreation, and jobs and supporting Hawaiian culture and traditions. In 2005 and 2006, reported landings exceeded twenty-four million pounds of fish, with more than nineteen million pounds landed on the island of O`ahu.³⁶³ The longline fishery accounts for the largest percent of the total reported catch with over seventeen million pounds of fish landed annually.³⁶⁴ Hawai`i has the largest commercial coral reef fishery in the U.S. Western Pacific region with 1.35 million pounds reported

annually.³⁶⁵ This catch includes food fishes and ornamental species. The coral reef fish landings in Hawai`i consist of approximately 80 % coastal pelagic fishes (akule or *Selar crumenophthalmus* and `opelu or *Decapterus* species) and 20% coral reef organisms; the top coral reef organisms include octopus, parrotfish, squirrelfish, surgeonfish, and goatfish.³⁶⁶

Overfishing is the primary threat to the long-term health of the fisheries and the coral reef ecosystems upon which they depend.³⁶⁷ The nature of reef fish—often slow to mature and irregular in recruitment—make them particularly prone to overfishing and depletion.

A variety of methods are used to capture marine fisheries including pole and line, longline, handline, trolling, net, and traps. In many instances, fishing cannot be easily characterized as commercial, recreational and subsistence. This is especially true of the small-scale fishing fleet. A single vessel or operator may participate in one or more activity depending on a variety of circumstances including the catch, social, and traditional events, and the ability to transport the catch to market.³⁶⁸ These distinctions, however, are important for management. For example, commercial fishing requires a license, whereas recreational and subsistence fishing do not.

Today, fisheries are managed by state and federal agencies. As with land-use, traditional fisheries

³⁶³ DATA BOOK, *supra* note 8

³⁶⁴ *Id.*; The reported catch underestimates the total catch due to a failure to report some commercial catch and a lack of reporting in the recreational and subsistence sectors. STATE OF HAWAII, DEP'T OF LAND AND NATURAL RES., DIV. OF AQUATIC RES. AND WESTERN PACIFIC FISHERY INFO. NETWORK, STATE OF HAWAII 2002 FISHERY STATISTICS (2004), http://www.pifsc.noaa.gov/wpacfin/pdf_file/h_vol19.pdf.

³⁶⁵ J. K. DeMello, *Commercial Marine Landings from Fisheries on the Coral Reef Ecosystem of the Hawaiian Archipelago*, in STATUS OF HAWAII'S COASTAL FISHERIES IN THE NEW MILLENNIUM. PROCEEDINGS OF A SYMPOSIUM SPONSORED BY THE AMERICAN FISHERIES SOCIETY, HAWAII CHAPTER 160-173 (A. Friedlander ed., 2003).

³⁶⁶ *Id.*

³⁶⁷ A.M. Friedlander, et al., *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 222-269 (J Waddell ed., 2005).

³⁶⁸ For an in depth discussion, see EDWARD W. GLAZIER, HAWAIIAN FISHERMEN (2007).

management was based on the *ahupua`a*, which extended out to the coral reef. The following section describes the major laws, policies, and institutions engaged in commercial, recreational and subsistence fishing in state and federal waters around Hawai`i.

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

National Marine Fisheries Service, NOAA

NMFS manages federal fisheries under the MSA (as reauthorized and amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act in 2006). These include domestic species found in federal waters (from three to 200 miles offshore). Several offices that make up NMFS are important for fisheries management in Hawai`i including:

- The *Office of Sustainable Fisheries* oversees the development of fishery management plans, created by the Western Pacific Regional Management Council;
- The *Office of Law and Enforcement* enforces laws and regulations under the MSA. Its work includes investigations and patrols, promoting compliance through communication and education, developing and implementing new technologies, and partnering with other federal and state agencies including the U.S. Coast Guard and the Hawai`i Division of Conservation and Resources Enforcement, NGOs and industries to advance compliance;
- NOAA's *Pacific Islands Region Office (PIRO)* works with the Western Pacific Fisheries Management Council to develop fishery management plans, as well as with the Pacific Islands Fishery Science Center and the Office of Law Enforcement. PIRO drafts and implements fishery regulations, issues permits, and implements the observer program;
- The *Pacific Islands Fishery Science Center (PIFSC)* is part of the research arm of NOAA fisheries. It collects data to assess habitats, ecosystems, fisheries stocks and to make recommendations on the efficacy of the plans and needs for changes. Its research includes science, economic, and social topics; and
- NOAA's *Pacific Services Center (PSC)*—part of its Coastal Services Center—was established in 2001. Its goal is “to promote resilient and sustainable island communities.”³⁶⁹ It facilitates partnerships among federal, state and local government and the private sector through information sharing, trainings, and developing management solutions. It has three focus areas: safe navigation, risk management, and resource management. Products developed by PSC include the Pacific Spatial Activities Database and the Hawai`i Contaminated sites Database, among others.

Western Pacific Fisheries Management Council (Wespac)

Wespac is one of eight councils in the U.S. that manages federal fisheries on a regional basis. Wespac is made up of four designated state officials including the director of Hawai`i DLNR, four designated federal officials, and eight members that represent fisheries and related interests. Wespac is responsible for the development of fishery management plans (FMPs) for the U.S. Pacific Islands including Hawai`i, Guam, American Samoa, and the Northern Marianas Islands. The FMPs are approved and implemented by NOAA Fisheries. Wespac has developed FMPs for Bottomfish and Seamount Groundfish, Coral Reef Ecosystem, Crustaceans, Pelagics, and Precious Corals as described below.

Bottomfish and Seamount Fisheries. The Bottomfish and Seamount Groundfish FMP regulates fishing for bottomfish and seamount groundfish species in the waters of the western Pacific region. The fishery is valued at approximately \$1 million annually, with half of

³⁶⁹ NOAA PACIFIC SERVICES CENTER, <http://www.csc.noaa.gov/psc/>.

the catch coming from the Northwest Hawaiian Islands.³⁷⁰ In the main Hawaiian Islands the bottomfish fishery includes 250-500 vessels.³⁷¹ To prevent further overfishing, Wespac temporarily closed the part of the fishery from May 15 to October 1, 2007, making it illegal to fish for, possess, or sell commonly caught deep-bottomfish species (known as the “Deep 7”) from the main Hawaiian Islands. The closure applied to all fishers, commercial and non-commercial. This seasonal closure reflects coordinated State-Federal regulations implemented to eliminate overfishing of these deep-water bottomfish in the main Hawaiian Islands.

Wespac recently released a draft amendment to the FMP that would require additional management measures to end overfishing of bottomfish species in the main Hawaiian Islands.³⁷² It aims to reduce fishing related mortality by twenty-four percent, with regulations that would apply in both federal waters and state waters through state cooperation. Draft regulations include:

- Permitting and reporting requirement for non-commercial fishers;
- Seasonal closure for all fishers; and
- Development of a total allowable catch that would apply to commercial and non-commercial fishers, ending bag limits for non-commercial fishers.

Coral Reef Ecosystems. Wespac recently completed a Coral Reef Ecosystem FMP to regulate fishing for coral reef associated species in federal waters of the western Pacific region. This plan is the nation’s first ecosystem-based fishery management plan.

Pelagics. The Hawaiian Islands have little coastal shelf area, and highly migratory pelagic fisheries occur in state as well as federal waters. The pelagic fishery—targeting tuna, mahi mahi,

wahoo, oceanic sharks and billfish—in Hawai‘i is mainly comprised of long-line and trolling fisheries, with the longline fishery (with 125 vessels) landing an order of magnitude more fish than the other pelagic fisheries (pole and line, troll, handline, and other gear).³⁷³ In terms of fishers and vessels, trolling is the largest fishery.³⁷⁴

Puwalu Series

In consultation with the Native Hawaiian community, Wespac sponsored a conference series in February 2007 in partnership with the Association of Hawaiian Civic Clubs (AOHCC). The goal of the series was to “increase participation of the Hawaiian community in the conservation and management of Hawai‘i’s resources through the creation of a community and cultural consultation process within the governance structure.”³⁷⁵ The puwalu series, however, has not received full support from the entire ocean community. The Wespac faced sharp criticism including allegations of unethical and illegal conduct by several environmental organizations.³⁷⁶ In June 2007, a complaint filed with the Inspector General for the Department of Commerce alleged that the Wespac engaged in lobbying by hosting and facilitating puwalu series that were organizing meetings used to influence the Hawai‘i State Legislature on certain bills in the 2007 legislative session.³⁷⁷ The allegations are currently under investigation.

³⁷⁰ W. PAC. FISHERIES MGMT. COUNCIL, BOTTOMFISH AND SEAMOUNT GROUND FISH FISHERIES OF THE WESTERN PACIFIC REGION: 2005 ANNUAL REPORT 14-15 (2006).

³⁷¹ *Id.*

³⁷² U.S. DEP’T OF COMMERCE, Fisheries in the Western Pacific; Bottomfish and Seamount Groundfish Fisheries; Management Measures for the Main Hawaiian Islands, 72 Fed. Reg. 73,308 (Dec. 27, 2007).

³⁷³ W. PAC. FISHERIES MGMT. COUNCIL, U.S. WESTERN PACIFIC FISHERIES—PAST TO PRESENT, 4.1 PELAGIC FISHERIES, http://www.wpcouncil.org/pelagic.htm#Pelagics_FMP.

³⁷⁴ W. PAC. FISHERIES MGMT. COUNCIL, PELAGIC FISHERIES OF THE WESTERN PACIFIC REGION: 2006 ANNUAL REPORT (June 2007). The number of trolling vessels operating in this fishery is reported to be 1,494 by Wespac. *Id.* at 5. EDWARD W. GLAZIER, HAWAIIAN FISHERMEN (2007), estimates more than 10,000 vessels. This disparity may represent commercial versus non-commercial vessels.

³⁷⁵ W. PAC. FISHERIES MGMT. COUNCIL. *Report on the Puwalu Series* (2007).

³⁷⁶ Christopher Pala, *Fisheries Management: Conservationists and Fishers Face Off Over Hawaii’s Marine Riches*, 317 SCIENCE 306 (2007).

³⁷⁷ Keiko Bonk, Letter of Complaint to Inspector General Johnnie E. Frazier Re: Western Pacific Regional Fishery Management Council (May 21, 2007), <http://nwhinetwork.net/media/pdf/BonkIGltr.pdf>. In the complaint, Bonk alleged that Wespac “engage[s] in a number of activities that I believe to be illegal and unethical. The most serious of these activities is using federal money to finance a legislative campaign in the State of Hawaii.” *Id.* Wespac

Recreational Fishing

The revised MSA requires the establishment of regionally-based recreational fishing registries for individuals who fish in the EEZ, for anadromous species, or on the continental shelf beyond the EEZ.³⁷⁸ The MSA defines recreational fishing as “fishing for sport or pleasure.”³⁷⁹ The Act requires that the Secretary, in consultation with the recreational fishing community, must establish a program to improve the quality and accuracy of the information generated by the Marine Recreational Fishery Statistics Survey.³⁸⁰ The Act does not apply to recreational fishing in state waters (out to three miles). However, recreational fishermen can be exempt from a federal license if the Secretary determines that there is a state program suitable for use to complete recreational fishing statistical surveys and to evaluate effects of proposed conservation and management measures.

STATE MANAGEMENT

Division of Aquatic Resources (DAR), DLNR

DAR is responsible managing, conserving, and restoring the state’s aquatic resources. It manages commercial and non-commercial (recreational and subsistence) fishing through permits for commercial fishing and bag limits for non-commercial catch. Depending on the fishery, DAR has developed regulations for one or more of the following: allowable catch or bag limits, size and/or sex of species, gear restrictions, and area restrictions. Regulated species include fish, invertebrates and algae (Table 6).

found the allegations to be without merit and continue to support the executive director, Kitty Simonds. W. PAC. FISHERIES MGMT. COUNCIL, *Press Release: Federal Management Council Recommends Management Measures for Pelagic Fisheries in the US Pacific Islands* (June 22, 2007), available at http://www.wpcouncil.org/press/2007.06.22_PressRelease_138CMPelagics.pdf.

³⁷⁸ MSA, § 401(g) (2006).
³⁷⁹ MSA, § 3(37) (2006).
³⁸⁰ MSA, § 401(g) (2006).

Table 8. Regulated Species³⁸¹	
Fish	
Ahi (HAR 13-95)	
Aholehole (HAR 13-95)	
‘Ama‘ama (striped mullet) (HAR 13-95, HRS 188-44)	
Awa (HAR 13-95)	
Moi (HAR 13-95, HAR 13-88)	
‘O‘io (HAR 13-95)	
Uhu (HAR 13-95)	
Ulua and papio (HAR 13-95, HAR 13-87)	
Weke and ‘Oama (HAR 13-95, HAR 13-88)	
Kumu (HAR 13-95)	
Moano (13-95)	
Kala (HAR 13-95)	
‘Opelu kala (HAR 13-95)	
Manini (HAR 13-95)	
Ehu (HAR 13-94)	
Onaga (HAR 13-95, HAR 13-94)	
Opakapaka (HAR 13-95, HAR 13-94)	
Uku (HAR 13-95)	
Akule and Halalu (HAR 13-95)	
‘Opelu (HAR 13-95)	
Nehu (HAR 13-95, 13-90, 188-45)	
‘Iao (HAR 13-95, 188-45)	
Invertebrates	
Ula (Spiny lobster) (HAR 13-95, HAR 13-89, HRS 188-57)	
Ula papapa (Slipper lobster) (HAR 13-95, HAR 13-89, HRS 188-57)	
Kona crab (HAR 13-95, HRS 188-57)	
Kuahonu crab (white or "haole" crab) (HAR 13-95)	
Samoan crab (HAR 13-95, HAR 13-94)	
He‘e (octopus, tako, "squid") (HAR 13-86)	
‘Opihi (HAR 13-92)	
Clams, oysters, and other shellfish (HAR 13-83, HAR 13-85)	
Stony coral (HAR 13-95)	
Pink, gold, and black corals (HAR 13-91)	
Live rocks (HAR 13-95)	
Algae	
Limu (ogo) (HAR 13-93)	

Some marine fishing and related activities require permits, licenses, or registration including the following: (1) Commercial Marine License (Resident, Non-resident); (2) Bait License; (3) Kona Crab/Lobster Closed Season Sales Licenses; (4) Bottomfish Fishing Vessel Registration; (5)

³⁸¹ Table 8, Adapted from DIVISION OF AQUATIC RESOURCES, *Regulated Species—Marine Fishes*, http://www.hawaii.gov/dlnr/dar/fish_regs/marfish.htm; and *Regulated Species—Marine Invertebrates*, http://www.hawaii.gov/dlnr/dar/fish_regs/marinverts.htm.

Aquarium Permit; (6) Special Marine Product License for marine animal or product possession and sale; (7) Aquaculture Facility License; (8) Aquaculture Dealer License; (9) Special Activity Permit; (10) Special Permit; and (11) Northwestern Hawaiian Islands Entry Permits. Commercial fishing includes charter fishing vessels. Currently the fees for a commercial fishing license are \$50 for a resident and \$200 for a non-resident. Every commercial marine licensee must furnish a monthly report to DLNR with respect to marine life taken and bait used.³⁸² Failure or refusal to submit a monthly catch report can result in revocation of the commercial marine license. Violators are also subject to fines of \$25 to \$500, and/or imprisonment of five to thirty days.

Non-commercial fishing, including recreational and subsistence fishing, does not require a license, permit, or registration with the exception of registration requirements for bottom fishing vessels; registration for lay gill net usage; and the need for a special activity permit or special permit for certain activities or fishing in some designated areas.

The Division of Conservation and Resource Enforcement (DOCARE) is the state agency responsible for compliance and enforcement of fisheries laws and regulations.

Three types of fishing—lay gill net fishing, spearfishing on scuba, and aquarium fish collecting—have been identified by several interviewees and in other assessments as having particularly high impacts on marine conservation. These are briefly described below.

Lay Gill Net Fishing. After a decade of attempts to ban lay gillnets, on March 12, 2007, Governor Linda Lingle approved amendments to Hawai'i Administrative Rules Chapter 13-75, restricting the use of lay gill nets and prohibiting their use in certain waters. DAR defines lay gill nets as “stationary gillnets used in State waters.”³⁸³ The

³⁸² HAW. REV. STAT. § 189-3.

³⁸³ STATE OF HAWAII, DEP'T OF LAND AND NATURAL RES., DIV. OF AQUATIC RES., LAY NET (GILLNET) MANAGEMENT IN HAWAII (Sept. 9, 2005), http://www.hawaii.gov/dlnr/dar/library/laynet_mgmt.htm.

new rules include requirements for lay net registration, limits on dimensions and soak times, requirements for attendance and inspection, and prohibitions on use in streams and stream mouths. Lay net use is also prohibited around the entire island of Maui, and in certain waters off O'ahu, including Kaneohe and Kailua Bays, and the south shore between Koko Head and Pearl Harbor. Net users will no longer be able to set them overnight, and net length can be no more than 125 feet. To aid enforcement, lay gill nets must be registered and marked. The nets cannot be left unattended in the water for more than thirty minutes and cannot be set for more than four hours total in a twenty-four hour period.

Spearfishing on Scuba. Several interviewees commented that spearfishing on scuba is a particularly destructive form of fishing that is in need of greater regulation. Spearfishing is currently regulated under Hawaii Administrative Rule 13-75 and Hawaii Revised Statute 188-23. The regulations allow spearfishing for all fish. Spearfishing for crustaceans is prohibited. As with other fishing methods, spearfishing is subject to the same bag limits, size restrictions, closed seasons and other restrictions that are imposed upon all fisheries.

Aquarium Fish Collecting. Concern about the impact that aquarium fishing has on the health of the marine environment dates back to the early 1970s.³⁸⁴ Currently, aquarium fish collecting is a major inshore fishery, with most fish collected on the Big Island. The fishery is worth just over \$1 million, and fishers collect more than 700,000 specimens each year.³⁸⁵ A 1999 study estimated that the catch reported by collectors may be

³⁸⁴ Brian N. Tissot, *Adaptive Management of Aquarium Fish Collecting in Hawaii*, in SPC LIVE REEF FISH INFORMATION BULLETIN #6 16 (Dec. 1999), <http://www.coralreefnetwork.com/kona/Adaptive%20Management%20of%20Aquarium%20Fish.pdf>. See also Associated Press, *Unregulated Aquarium Fishing Worries Biologists, Divers*, HAWAII NEWS (Oct. 9, 2005), at <http://www.kpua.net/news.php?id=6475>.

³⁸⁵ William J. Walsh, S.S.P. Cotton, J. Dierking, and I.D. Williams. *The Commercial Marine Aquarium Fishery in Hawaii*. in STATUS OF HAWAII'S COASTAL FISHERIES IN THE NEW MILLENNIUM: PROCEEDINGS OF A SYMPOSIUM SPONSORED BY THE AMERICAN FISHERIES SOCIETY, HAWAII CHAPTER 132-159 (A. Friedlander, ed., 2003).

underestimated by an order of magnitude.³⁸⁶ In response to growing user conflict among aquarium fishers and the dive community on the Big Island and concern about the health of the resource, the West Hawai'i Fishery Council was established as a community-based management body.³⁸⁷ The management area includes fishery replenishment areas that prohibit aquarium collection.

Hawai'i Local Action Strategy

The U.S. Coral Reef Task Force identified key threats to coral reef ecosystems. To address these threats, the Task Force called for the development of Local Action Strategies to address six threats including overfishing. The overfishing LAS for Hawai'i is in development and focuses on an integrated fishery management plan that will lead to ecosystem-based fisheries management.

Division of Conservation and Resource Enforcement (DOCARE), DLNR

DOCARE is responsible for fisheries enforcement, among other enforcement obligations.³⁸⁸

Fishery Reserves and Protected Areas

DLNR has the authority to establish fishery reserves and restricted areas including the broad authority created under Hawai'i Revised Statutes §188-53 to “establish, maintain, manage, and operate freshwater or marine fishing reserves, refuges, and public fishing areas.” This provision has been used to establish fishery management areas in state waters surrounding six of the main Hawaiian Islands.

Community-Based Subsistence Fishing Areas

Under Hawai'i Revised Statutes §188-22.6, DLNR has the authority to designate a community as a subsistence fishing area that support Native Hawaiian subsistence, culture, and religion.

³⁸⁶ Tissot, *supra* note 384 at 17.

³⁸⁷ For additional information, see Claudia A. Capitini, *Aquarium Fisheries Management in West Hawaii: A Dynamic Conflict* (Master's Thesis, 2003), <http://www.vancouver.wsu.edu/fac/tissot/Capitini%20MSThesis%202003.pdf>.

³⁸⁸ For additional comments, see Part III, Administrative, Institutional, and Procedural Considerations, Section C, Compliance and Enforcement.

Miloli'i Fishery Management Area

The Miloli'i Fishery Management Area is authorized under HRS § 188-22.7. In cooperation with the community, DLNR is to adopt management strategies and rules that “(1) Ensure long-term sustainable populations of fish and other marine species; and (2) Encourage the scientific study and understanding of subsistence fishing management.”

Ha'ena Community-Based Subsistence Fishing Area

On Kauai, the Ha'ena community based fishing area authorizes DLNR to work with the community of the *ahupua'a* of Ha'ena to establish fishing rules according to customary and traditional fishing practices.³⁸⁹

Limu Management Area

The Limu Management Area prohibits the take of limu at Ewa beach from the shoreline to 150 feet seaward, with the exception that “any person exercising Native Hawaiian gathering rights and traditional cultural practices” has authority to harvest limu.³⁹⁰

Fishery Replenishment Areas

Under Hawai'i Revised Statutes §188F, DLNR was tasked with establishing the West Hawai'i Regional Fishery Management Area on the west coast of the Big Island. Under the statute, DLNR was to designate a minimum of thirty percent of West Hawai'i coastal waters as Fish Replenishment Areas that prohibit aquarium fish collection. A subset of these areas is designated as “Fish Reserves” where no fishing of reef fish is allowed.³⁹¹ Today, the West Hawai'i Fishery Council works with DLNR to cooperatively manage these resources.

Bottomfish Restricted Fishing Areas (BRFAs)

DLNR has restricted bottomfish fishing in nineteen designated BRFAs covering approximately 354 square nautical miles of state waters in the main Hawaiian Islands as authorized under Hawai'i Revised Statutes § 187A-5. Because of continued overfishing of bottomfish

³⁸⁹ HAW. REV. STAT. § 188-22.9.

³⁹⁰ HAW. REV. STAT. § 188-22.8.

³⁹¹ HAW. REV. STAT. § 188F-6.

species, BLNR approved the temporary closure of all bottomfish fishing in state waters for the period from June through September 2007.

NONGOVERNMENTAL APPROACHES

Fair Catch Hawai'i

Together, The Nature Conservancy, Mālama Hawai'i, and SeaWeb, have launched the *Fair Catch Hawai'i* campaign to restore nearshore reefs and fishes.³⁹² To address existing threats, the campaign makes five recommendations calling for (1) responsible fishing; (2) policy change; (3) fisheries enforcement; (4) scientific monitoring; and (5) public participation and education.

“Mauka-Makai Watch” Program

Mauka-Makai Watch is a partnership among NGOs and DLNR. It has three components: (1) education and outreach about ecology, regulations, and best practices; (2) surveillance and enforcement training of community members by DOCARE; and (3) training community members to monitor human use and state of resources.

West Hawai'i Fishery Council (WHFC)

The WHFC assists DAR in the management of nearshore resources on the Big Island. It employs an executive director that helps coordinate Council actions with DAR and the community but otherwise depends upon the dedication of the volunteers who sit on the Council.

Hui Malama O Mo'omomi Traditional Fishery Management

Hui Malama O Mo'omomi was founded in 1993 as a community-based fishery management organization to manage a subsistence-based fishery on Moloka'i. It strives to teach traditional fishery management approaches to the young people in the community. Relative isolation and a small population with a conservation ethic based on Native Hawaiian traditional management is cited as a basis for success of the organization.³⁹³

³⁹² FAIR CATCH HAWAII, ABOUT US, <http://www.faircatchhawaii.org/aboutus.jsp>.

³⁹³ Kelson K. Poepoe, Paul K. Bartram, and Alan M. Friedlander, *The Use of Traditional Hawaiian Knowledge in the Contemporary Management of Marine Resources*, in

However, a recent news article suggest that not all Native Hawaiians in the community support this approach.³⁹⁴

OPTIONS FOR FISHERIES

Because of the integrated nature of the potential options for conservation of fisheries, protected species, and habitats, these are considered together following Section B.

B. PROTECTED SPECIES AND HABITATS

The state of Hawai'i documents 550 species of reef and shore fish in existence in the waters off of Hawai'i. An estimated twenty to thirty percent of fish and coral species, twenty percent of mollusks, and 18 percent of marine algae are unique to the islands.³⁹⁵ Hawai'i has over forty species of reef building corals and a diverse assemblage of associated species. Twenty-six marine mammal species move through Hawai'i's waters, two of which are listed on the Endangered Species Act. Hawai'i is home to at least forty different seabird species, two of which are endemic to Hawai'i.

Sharks species are in precipitous decline worldwide leading to their functional elimination in some regions. For example, a long-term survey along the North Carolina coast demonstrated a decline of seven great shark (large predatory sharks) species ranging from eighty-seven to ninety-nine percent.³⁹⁶ Sharks are threatened worldwide by directed fishing, including the wasteful practice of shark finning, and incidental take in other fisheries.

PUTTING FISHERS' KNOWLEDGE TO WORK: CONFERENCE PROCEEDINGS 328.

³⁹⁴ See e.g., Kate Bradshaw, *View from Mo'omomi Point; Hui Malama Wants Work, Not Conflict to be Focus*, THE MOLOKAI TIMES (Dec. 3, 2007).

³⁹⁵ SUMMARY REPORT, *supra* note 244.

³⁹⁶ Ransom A. Myers, Julia K. Baum, Travis D. Shepherd, Sean P. Powers, Charles H. Peterson, *Cascading Effects of the Loss of Apex Predatory Sharks from a Coastal Ocean*, 315 Science 1846 (2007).

The Hawai'i Comprehensive Wildlife Conservation Strategy identifies threatened and endangered species including the `akē`akē (band-rumped storm petrel), listed as endangered by the State; the short-tailed albatross (*Phoebastria albatrus*), listed as endangered by USFWS; and the Christmas shearwater (*Puffinus nativitatis*), the Tristram's storm petrel (*Oceanodroma tristrami*), and the bluegray noddy (*Procelsterna cerulean*), identified as "high concern" in the U.S. Seabird Conservation Plan for the Pacific Region.³⁹⁷

The following section describes the state and federal mechanisms for species and habitat protections including specific discussion of protections for Hawai'i's marine mammals, sea turtles, sharks, seabirds, and corals.

LAWS AND INSTITUTIONS

INTERNATIONAL MANAGEMENT

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES is an international treaty that protects over 30,000 species to varying degrees by prohibiting or limiting the trade in endangered and threatened species.³⁹⁸ Marine species protected by CITES include:

- Appendix I species: all beaked whales, almost all great whales, all sea turtles, coelacanths, dugongs, Irrawaddy River dolphin, shortnose sturgeon, six fur seal species, Totoaba, three marine dolphin species, and two porpoise species; and
- Appendix II species: all antipatharian (black coral) species, all dolphins not in Appendix I, all giant clam species, all stony coral species, basking shark, great white sharks, humphead wrasses, most sturgeon species, queen conch, seahorse,

minke whales from West Greenland, and whale sharks.³⁹⁹

International Whaling Commission

The International Whaling Commission (IWC), as originally envisioned, was a Convention to properly manage the whale stocks as a fishery resource. In 1982, the IWC established a moratorium on whaling, and with the exception of "scientific whaling" conducted by countries including Japan and Norway, this moratorium continues today.⁴⁰⁰

United Nations Food and Agriculture Organization (FAO)

In accordance with the Code of Conduct for Responsible Fisheries, FAO developed the International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries. It is a voluntary agreement that calls upon nations to adopt National Plans of Action to reduce the incidental take of seabirds in the longline fisheries. It encourages technical measures including increasing the sinking rate of baits, setting lines underwater, creating bird-scaring lines or curtains over the hooks, reducing palatability of the bait, acoustic deterrents, and modifying hooks to reduce incidental take. It also recommends operational measures including setting lines at night to reduce visibility, reduce material discharge that would attract birds to the vessel, and area and seasonal closures, among others.

FAO's International Plan of Action for the Conservation and Management of Sharks recognizes that many species of sharks are prone to overfishing because of slow maturation and limited numbers of offspring. The Plan calls upon nations to implement conservation measures including the development of a national plan.

Coral Reefs

There are no specific treaties to protect coral reefs. The International Coral Reef Initiative is an international effort to protect coral reefs. The International Coral Reef Action Network includes

³⁹⁷ CONSERVATION STRATEGY, *supra* note 2, at 3-16.

³⁹⁸ For more information, see the CITES website, <http://www.cites.org/>.

³⁹⁹ NMFS, OFFICE OF INT'L AFFAIRS, CITES,

<http://www.nmfs.noaa.gov/ia/intlagree/cites.htm#species>.

⁴⁰⁰ For more information, visit the INT'L WHALING COMM'N website at <http://www.iwcoffice.org>.

a subset of the partners involved in the Initiative that are working to develop on-the-ground conservation of coral reefs.⁴⁰¹

FEDERAL MANAGEMENT

National Marine Fisheries Service (NMFS), Office of Protected Resources

NMFS is designated as the lead agency for management of endangered marine species under the ESA and marine mammals under the MMPA. NMFS shares jurisdiction with the U.S. Fish and Wildlife Service (USFWS) for sea turtle management.

Endangered Species Act

The ESA is one of the strongest laws protecting species and their habitats.⁴⁰² Notable provisions include:

- Section 7 requires federal agencies to ensure that their actions do not jeopardize the continued existence of any threatened or endangered species or destroy or modify critical habitat;
- Section 9 making it unlawful to “take” (including harassing, harming, or killing, for example) endangered or threatened species listed under the ESA;
- Section 10 allows the incidental take of an endangered species provided that a habitat conservation plan is in place that addresses the impact and the take will not appreciably reduce the likelihood of survival or recovery of the species; and
- Section 11, in addition to authorizing NOAA or USFWS to pursue civil or criminal prosecution, it allows citizens to file a civil action against anyone in violation of the Act including the federal government.⁴⁰³

Marine species in Hawai‘i listed under the Endangered Species Act (ESA) include the

Hawaiian monk seal, four sea turtle species (green, hawksbill, leatherback, and loggerhead), and the humpback whale. The Hawaiian monk seal is the most endangered U.S. marine mammal and has been listed as endangered since 1976.⁴⁰⁴ The greatest number of Hawaiian monk seals are found on the Northwestern Hawaiian Islands but are increasingly found on the main Hawaiian Islands.⁴⁰⁵ All sea turtles are listed as endangered or threatened. They are jointly managed by NMFS at sea and USFWS on nesting beaches. The leatherback, loggerhead and olive ridley sea turtles are found in Hawai‘i’s waters, and the green and hawksbill sea turtles are found in Hawai‘i’s waters and nest on its beaches.

Marine Mammal Protection Act (MMPA)

In addition to protections under the ESA, the humpback whale and the Hawaiian monk seal are protected under the MMPA. Under the MMPA, NMFS is responsible for management of all cetaceans and pinnipeds other than the walrus. Other marine mammals are managed by USFWS. With some exceptions, it is unlawful to take marine mammals.⁴⁰⁶ The Act requires assessment of the existing stocks of marine mammals including population estimates and trends.⁴⁰⁷ It also establishes the Marine Mammal Commission.

Seabirds

NMFS has taken several steps to address seabird bycatch. In 2001, it issued a national plan of action to address seabird bycatch.⁴⁰⁸ It participates on the Interagency Seabird Working Group that includes the USFWS, the Department of State, and Regional Fishery Management Councils.

⁴⁰⁴ U.S. FISH AND WILDLIFE SERV., HAWAIIAN MONK SEAL, <http://www.fws.gov/pacificislands/wesa/monkhi.html>.

⁴⁰⁵ Jason D. Baker & Thea C. Johanos, *Abundance of the Hawaiian Monk Seal in the Main Hawaiian Islands* 116 BIOLOGICAL CONSERVATION 103 (2004).

⁴⁰⁶ 16 U.S.C. § 1371.

⁴⁰⁷ 16 U.S.C. § 1385.

⁴⁰⁸ NOAA, NAT’L MARINE FISHERIES SERV., UNITED STATES NATIONAL PLAN OF ACTION FOR REDUCING THE INCIDENTAL CATCH OF SEABIRDS IN LONGLINE FISHERIES, <http://www.fakr.noaa.gov/protectedresources/seabirds/npoa/npoa.pdf>.

⁴⁰¹ For additional information, see the INT’L CORAL REEF ACTION NETWORK website at <http://www.icran.org/icran.html>.

⁴⁰² 16 U.S.C. §§ 1531 et seq.

⁴⁰³ For additional explanation of the ESA, see NEW MEXICO CENTER FOR WILDLIFE LAW, FEDERAL WILDLIFE LAWS HANDBOOK, <http://ipl.unm.edu/cwl/fedbook/index.html>.

***Pacific Islands Fisheries Science Center,
Protected Species Division***

The Center's Protected Species Division works "to ensure long-term viability of coral reef ecosystems in the Hawaiian Archipelago."⁴⁰⁹ The Center contributes to the understanding of the population dynamics and health of protected species in the Pacific Islands including Hawai'i. Projects and programs that relate to Hawai'i's protected species and habitats include the *Marine Turtle Research Program* that monitors and researches sea turtle breeding sites, develops tools to monitor population trends, and researches the impact that bycatch has on the populations. It also conducts observer training, capacity building and education and outreach to communities in the Pacific including Hawai'i. In addition its sea turtle research, the Center conducts marine mammal research. The *Marine Mammal Research Program* researches Hawaiian monk seal and central and western Pacific cetaceans. Its monk seal goal is to enhance the recovery of the monk seal population through long-term monitoring, study of forage habitats, and monitoring health and disease. It is planning a captive care program for juvenile monk seals on Midway Atoll.⁴¹⁰ The Center's website includes a hotline to report monk seal sightings.

Marine Mammal Commission

Established under the MMPA, the Marine Mammal Commission—a national commission—oversees and provides advice on the management of marine mammals. The Commission is made up of three appointed members and is supported by a nine-member committee. It also has a staff of twelve. In fulfilling its objectives, it also has a small research program and provides funding through competitive grants for marine mammal research.⁴¹¹

⁴⁰⁹ PAC. ISLANDS FISHERIES SCIENCE CTR., CORAL REEF ECOSYSTEM DIVISION, <http://www.pifsc.noaa.gov/cred/>.

⁴¹⁰ For more information, see PAC. ISLANDS FISHERIES SCIENCE CTR., PROT. SPECIES DIV., <http://www.pifsc.noaa.gov/psd/>.

⁴¹¹ MARINE MAMMAL COMM'N, ABOUT THE MARINE MAMMAL COMM'N, <http://www.mmc.gov/about/>.

National Marine Sanctuaries Program

Thirteen National Marine Sanctuaries make up the National Marine Sanctuary Program and Hawai'i is home to one of these sanctuaries.

Hawaiian Islands Humpback Marine National Sanctuary

Managed jointly by the National Marine Sanctuaries Program and the State of Hawai'i, the Sanctuary was designated to protect humpback whales and their habitat. It also conducts long-term monitoring and engages in outreach and education. As required by the Act, the Sanctuary is managed according to a plan, which was most recently updated in 2002.

While the word "sanctuary" may connote a sense of wilderness, the Sanctuary system is quite different from the wilderness system in the terrestrial environment. Few activities are prohibited in this and other sanctuaries. In the Hawaiian Islands Sanctuary prohibitions include:

- Approaching within 100 yards of a whale;
- Operating aircraft within 1,000 feet of a whale;
- Taking a whale; and
- Possessing living or dead components of a whale.⁴¹²

The Sanctuary does not limit fishing.

Pacific Islands Regional Office (PIRO), National Marine Fisheries Service (NMFS)

For federal management, one of the chief concerns is limiting seabird bycatch associated with the longline fishery. To address this, PIRO issued guidance for complying with new longline bycatch requirements.⁴¹³ PIRO has developed additional outreach and educational documents including a side setting brochure and a fishermen's guide to

⁴¹² Management Plan at 13-14.

⁴¹³ NOAA, NAT'L MARINE FISHERIES SERV., PAC. ISLANDS REG'L OFFICE, SEABIRD COMPLIANCE GUIDE: GUIDE FOR COMPLYING WITH REGULATIONS TO REDUCE INTERACTIONS BETWEEN SEABIRDS AND HAWAII-BASED LONGLINE VESSELS (Jan. 18, 2006), <http://www.fpir.noaa.gov/SFD/pdfs/CG%20Seabird.pdf>.

Hawaii's seabirds, as well as management assessments.⁴¹⁴

United States National Plan of Action for the Conservation and Management of Sharks

In addition to describing the management framework, the National Plan calls upon fisheries managers to adopt the precautionary approach, protect vulnerable life history stages, protect vulnerable species, minimize waste, and prioritize limited resources.

Shark Finning Prohibition

NMFS plays a key role in the protection and conservation of sharks. The Shark Finning Prohibition Act prohibits the practice of shark finning. It creates a rebuttable presumption that if shark fins found onboard a vessel exceed five percent of total shark carcass weight, the vessel is in violation of the act.

Western Pacific Fisheries Management Council (Wespac)

Wespac allows the commercial harvest of some precious corals under its Precious Corals FMP. In Hawaii, the precious coral fishery includes a deep-water pink, gold, and bamboo coral fishery collected by remotely operated vehicles or submersibles and the hand-collected black coral fishery that occurs predominantly in state waters.⁴¹⁵ The black coral fishery is a small one with typically fewer than ten fishers at any given time. Still the resource in the Au`Au Channel in federal waters off the coast of Maui is declining, and in November 2007, the NOAA finalized regulations that remove previous exceptions to the size restriction for coral collection.⁴¹⁶

Sharks are managed under fishery management plans. In the Pacific, Wespac manages blue, mako, and thresher sharks under its Pelagics FMP.

⁴¹⁴ See NOAA, NAT'L MARINE FISHERIES SERV., PAC. ISLANDS REG'L OFFICE, SEABIRDS, http://www.fpir.noaa.gov/SFD/SFD_seabirds.html.

⁴¹⁵ W. PAC. FISHERIES MGMT. COUNCIL, MANAGING MARINE FISHERIES OF THE U.S. PACIFIC ISLANDS—PAST, PRESENT AND FUTURE 10-11

⁴¹⁶ NOAA, Fisheries in the Western Pacific; Precious Coral Fisheries, 72 Fed. Reg. 58,259-261 (Oct. 15, 2007), http://www.wpcouncil.org/hawaii/PreciousCorals.htm#Precious_FMP.

Often sharks are the unwanted bycatch in the pelagic longline fisheries. For example, before the prohibition on the use of squid as bait, sharks made up fifty percent of the longline catch in Hawaii.⁴¹⁷ Without squid, sharks still equal thirty-two percent of the catch. Most often, blue sharks are the species caught. Wespac recently released a guidance document, *Shark Depredation and Unwanted Bycatch in Pelagic Longline Fisheries: Industry Practices and Attitudes, and Shark Avoidance Strategies*, that examines longline practices from several fisheries worldwide including Hawaii.

US Coral Reef Task Force

Created by Executive Order 13089, the U.S. Coral Reef Task Force is co-chaired by NOAA and the DOI. It includes nineteen federal agencies or sub-agencies, as well as members of coral reef state and territories.⁴¹⁸ Its mission is to “lead, coordinate, and strengthen U.S. government actions to better preserve and protect coral reef ecosystems.” The task force provides a forum for coordinating planning and action among agencies in order to protect coral reef ecosystems.⁴¹⁹ Its work includes the development of the National Plan of Action for Coral Reef Conservation.⁴²⁰

Papahānaumokuākea Marine National Monument

Designated by President George W. Bush using his authority under the Antiquities Act, the Monument is the largest marine conservation area in the world. The Monument is to be jointly managed by the USFWS, NOAA, and the State of Hawaii as co-trustees.⁴²¹ Some bottomfishing is allowed but is in the process of

⁴¹⁷ W. PAC. FISHERIES MGMT. COUNCIL, SHARK DEPREDATION AND UNWANTED BYCATCH IN PELAGIC LONGLINE FISHERIES: INDUSTRY PRACTICES AND ATTITUDES, AND SHARK AVOIDANCE STRATEGIES (2007), http://www.wpcouncil.org/pelagic/Documents/Shark-Longline_Interactions_Report.pdf

⁴¹⁸ U.S. CORAL REEF TASK FORCE, CRTF MEMBERS, <http://www.coralreef.gov/taskforce/agencies.html>.

⁴¹⁹ U.S. CORAL REEF TASK FORCE, <http://www.coralreef.gov/index.html>.

⁴²⁰ *Id.*

⁴²¹ DEP'T OF COMMERCE AND DEP'T OF INTERIOR, Northwest Hawaiian Islands Marine National Monument, 71 Fed. Reg. 51,134 (2006), http://hawaiiireef.noaa.gov/pdfs/nwhinmn_finalregs.pdf.

being phased out. After that point, the Monument will be a no-take reserve. The 1,200 page draft management plan and EA for the Monument was recently on April 23, 2008 and will be available for review until July 8, 2008.

National MPA Center

The National MPA Center was established to implement Executive Order 13158—an order that calls upon federal agencies to develop a national system of MPAs as authorized under existing laws.⁴²² The Center has three goals:

- Develop and implement the framework for a national system of marine protected areas;
- Improve MPA stewardship and effectiveness; and
- Facilitate international, national, and regional coordination of MPA activities.⁴²³

MPA Federal Advisory Committee

The MPA Federal Advisory Committee was established in 2003 as authorized by Executive Order 13158. Its overall goal is to “To enhance effective stewardship, lasting protection, and sustainable use of the nation’s natural and cultural marine resources with due consideration of the interests of and implications for all who use and care about our marine environments.”⁴²⁴ It has developed a set of recommendations to establish and manage a national system of MPAs.⁴²⁵ The Committee recommendations include guiding principles for MPA development, recommendations for process, site nominations

⁴²² NATIONAL MARINE PROTECTED AREA CENTER, ABOUT THE NATIONAL MARINE PROTECTED AREA CENTER, http://mpa.gov/mpa_center/about_mpa_center.html; Executive Order 13158 of May 26, 2000, Marine Protected Areas.

⁴²³ *Id.*

⁴²⁴ MPA FED. ADVISORY COMM., PROTECTING AMERICA’S MARINE ENVIRONMENT: A REPORT OF THE MARINE PROTECTED AREAS FEDERAL ADVISORY COMMITTEE ON ESTABLISHING AND MANAGING A NATIONAL SYSTEM OF MARINE PROTECTED AREAS (2005),

http://mpa.gov/pdf/fac/mpafac_report_06_05.pdf [hereinafter AMERICA’S MARINE ENVIRONMENT].

⁴²⁵ NAT’L MARINE PROT. AREA CTR., MPA FEDERAL ADVISORY COMMITTEE HISTORY, http://mpa.gov/mpafac/mpafac_history.html.

approaches, implementation requirements, and stewardship and participation needs.⁴²⁶

STATE MANAGEMENT

Division of Aquatic Resources (DAR), DLNR

DAR is the lead state agency that manages Hawai`i’s threatened and endangered marine species under state and federal including sea turtles, Hawaiian monk seals, and humpback whales. According to Hawai`i Revised Statutes § 195-D, all federal listed species are also considered endangered or threatened under Hawaii’s state law. DLNR also has the authority to list other indigenous species as threatened or endangered if certain conditions are satisfied.⁴²⁷

In addition to management of threatened and endangered species, DAR participates in the management of coral reefs through the Coral Local Action Strategy, management of MLCDs and the Monument, participation in coral reef research programs, as well as implementing specific coral laws.

Hawai`i protects coral reef species under state law. It prohibits the unlawful take, break or damage of stony corals, and it is unlawful to sell or offer to sell stony corals (HAR § 13-95). Hawai`i permits some take of pink or gold coral species for scientific and educational purpose and commercial catch of pink coral 10 inches or larger (HAR § 13-91).

Division of Forestry and Wildlife (DOFAW), DLNR

DLNR’s DOFAW is responsible for management of Hawai`i’s seabirds. Two outreach approaches to management include guidance on light reduction in the fall to prevent attraction of migrating sea birds and guidance on rescuing fallen sea birds.⁴²⁸

⁴²⁶ AMERICA’S MARINE ENVIRONMENT, *supra* note 424.

⁴²⁷ HAW. REV. STAT. § 195D-4(b).

⁴²⁸ See DIV. OF FORESTRY AND WILDLIFE, SEABIRD PROTECTION AND IMPACT REDUCTION, <http://www.state.hi.us/dlnr/dofaw/fbrp/shearwaterlights.htm>.

Hawai`i State Seabird Sanctuary

Hawai`i has twenty-two species of breeding sea birds. Threats to these species include predation and habitat degradation.⁴²⁹ Hawai`i protects seabirds through education and outreach as well as the designation of the Hawaii Sea Bird Sanctuary. The Sanctuary includes approximately 40 small islands, islets and rocks located off of the main Hawaiian Islands and the Kure Atoll (part of the Northwest Hawaiian Islands), some of which are off limits to people.⁴³⁰ All are managed by DOFAW.

Shark Task Force

The Shark Task Force is a body within the Hawai`i DLNR DAR. It works to educate the public about sharks around the island. This Shark Task Force warned the public in 2003 about the dangers of swimming with dolphins after a Manoa man was bitten on his foot by a shark while swimming with a pod of dolphins.⁴³¹

Hawai`i Coral Reef Initiative Research Program (HCRI-RP)

Established in 1998 the HCRI-RP funds research and monitoring of coral reefs in order to advance effective resource management in Hawai`i.⁴³² It is jointly managed by DAR and the University of Hawai`i through a Memorandum of Understanding.

Natural Area Reserve System (NARS)

The DLNR's Division of Wildlife and Forestry manages the NARS. There are nineteen reserves on five islands that protect over 109,000 acres. Only one of these reserves—the `Ahihi-Kina`u reserve on the Island of Maui—is marine.⁴³³

⁴²⁹ THE WILDLIFE SOCIETY—HAWAII CHAPTER, SEABIRD CONSERVATION AND MANAGEMENT IN THE HAWAIIAN ISLANDS (2006), http://www.tws-west.org/hawaii/TWS2006seabird_workshop_program.pdf.

⁴³⁰ HAW. REV. STAT. § 13-125-1 et seq.

⁴³¹ Mike Gordon, *Dolphin Swim 'May not be a Good Idea,'* THE HONOLULU ADVERTISER, July 18, 2003. <http://the.honoluluadvertiser.com/article/2003/Jul/18/ln/ln08a.html> (Accessed March 20, 2007).

⁴³² HAWAII CORAL REEF INITIATIVE, ABOUT, <http://www.hawaii.edu/ssri/hcri/about/index.shtml>.

⁴³³ ENVIRONMENT HAWAII, VOLUME 10, NUMBER 5 (November 1999).

Kaho`olawe Island Reserve

The Kaho`olawe Island Reserve includes the island and its surrounding ocean waters from shore to two mile seaward. Under Hawai`i Revised Statutes § 6K-3, Kaho`olawe is reserved exclusively for:

- (1) Preservation and practice of all rights customarily and traditionally exercised by Native Hawaiians for cultural, spiritual, and subsistence purposes;
- (2) Preservation and protection of its archaeological, historical, and environmental resources;
- (3) Rehabilitation, revegetation, habitat restoration, and preservation; and
- (4) Education.

Hawai`i's Statewide Aquatic Wildlife Conservation Strategy

DLNR developed the Hawai`i's Statewide Aquatic Wildlife Conservation Strategy (State Wildlife Action Plan)⁴³⁴ as part of the requirements for receiving USFWS grants under the State Wildlife Grant Program. The State Wildlife Action Plan includes an assessment of the needs for Hawai`i's marine environment. It has a list of the Species of Greatest Conservation Need. The list includes: five freshwater fishes, twenty-three freshwater invertebrates, twenty anchialine pond-associated fauna, twenty-six marine mammals, six marine reptiles, 156 marine fishes, 1,424 marine invertebrates, two marine plants, and 112 aquatic algae.

Marine Life Conservation Districts (MLCDs)

Hawai`i has eleven designated MLCDs including the following:

- O`ahu MLCDs include: Hanauma Bay, Pupukea, and Waikiki.
- Big Island MLCDs include: Keakakekua Bay, Lapakahi, Waialea Bay, the Old Kona Airport, and Waiopae Tidepools
- Maui County MLCDs are Molokini Shoal, Honolu-Mokuleia Bay, and Manele-Hulopoe.

⁴³⁴ CONSERVATION STRATEGY, *supra* note 2

Some MLCDs are no-take reserves such as Hanauma Bay. Others allow fishing. All are open to for non-extractive activities such as snorkeling and diving.

Hawai`i State Parks

In general, fishing and collection of mollusks and crustaceans is allowed in state parks under HAR § 13-146-21 unless a separate regulation specifically restricts the activity.

NON-GOVERNMENTAL APPROACHES

NGO approaches to management of protected species and habitats include education and outreach, restoration and management support, research, advocacy, and litigation. The following table provides examples of organizations involved in these types of efforts in Hawai`i.

Table 7. NGO Approaches to Protecting Species and Habitats
Malama Kai Foundation
The Coral Reef Alliance
Maui Reef Fund
Hanalei Watershed Hui
Community Conservation Network
Hawai`i Wildlife Fund
KAHEA
Wild Dolphin Foundation
EarthJustice
Nawiliwili Bay Watershed Council
KuLana`ia Foundation
Maui Ocean Center (prev Pacific Whale Foundation)
Save our Seas
The Nature Conservancy Hawai`i (TNCH)
Coral Reef Alliance (CORAL)
Hawaiian Islands Recreational SCUBA Association (HIRSA)
Coral Reef Outreach Network (CRON)
Managing Better Together Network (MBT)
Sierra Club
Oceanic Institute
Malama Hawaii
Beach Environmental Awareness Campaign (BEACH)
Project Sea-Link
Kayak Association of the Islands
Audubon Society

OPTIONS FOR FISHERIES, PROTECTED SPECIES, AND HABITATS

The chief obstacles to effective fishery management identified in this assessment and described in further detail below include:

- Lack of effective enforcement and compliance;
- Distrust and/or concerns of mismanagement of state and federal fisheries;
- Absence of a proper regulatory structure for the management of recreational and subsistence fishers;
- Lack of effective reporting mechanisms; and
- Insufficient funding for proper fisheries management.

The Hawai`i Ocean Resources Management Plan makes the following recommendations for fisheries management:

- Ecosystem-based approaches for managing nearshore fisheries;
- Increase capacity for enforcement and voluntary compliance with rules and regulations;
- Collaborative governance mechanisms are needed to provide greater opportunities for integrated planning and public involvement;
- Comprehensive set of management measures including a reassessment of Hawai`i's marine zoning scheme to support a long-term multi-use management strategy, developing new requirements for commercial and recreational fishing, improving compliance mechanisms, and promoting stock enhancement of important reef and ocean species through hatcheries and ocean aquaculture;
- Establish and institutionalize approaches for restoring, operating, and preserving ancient Hawaiian coastal fishponds; and

- Improve enforcement capacity and compliance for existing rules and regulations⁴³⁵

Option 1. Adopt community-based management approaches.

Community-based management serves multiple purposes. By including local practitioners in the management process, local knowledge can be integrated with agency-based and academic scientific information to get a more accurate understanding of the biological, social and economic dimensions of the region. Also, several studies—both empirical and theoretical—have demonstrated that compliance with laws and regulations is largely dependent upon perceived legitimacy of the legal and regulatory system.⁴³⁶ Co-management approaches increase legitimacy by involving local communities in the process of natural resource management.

One empirical study examined the ability of 5 co-management programs in Nepal, the U.S., and Kenya to achieve goals related to equity, empowerment, conflict resolution, knowledge and awareness, biodiversity protection, and sustainable utilization.⁴³⁷ It found in many instances that the goals were not fully realized. However, in the case of Puget Sound salmon management in the state of Washington, the results demonstrated that with diverse stakeholder involvement, salmon stocks improved and conservation efforts were more coordinated.⁴³⁸ Also, co-management of salmon in Alaska and Puget Sound was found to be successful at meeting sustainable utilization objectives.⁴³⁹

⁴³⁵ HCZMP, OFFICE OF PLANNING, DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT AND TOURISM, HAWAI'I OCEAN RESOURCES MANAGEMENT PLAN (2006), <http://hawaii.gov/dbedt/czm/orm/pdf/2006ormp.pdf>

⁴³⁶ See, e.g., Aaron Hatcher et al., *Normative and Social Influences Affecting Compliance with Fishery Regulations*, 76 LAND ECONOMICS 448 (2000); see also K. Kuperan & Jon G. Sutinen, *Blue Water Crime: Deterrence, Legitimacy, and Compliance in Fisheries*, 32 L. & SOCIETY REV. 309 (1998).

⁴³⁷ Stephen R. Kellert et al., *Community Natural Resource Management: Promise, Rhetoric, and Reality*, 13 SOCIETY & NATURAL RESOURCES 705 (2000).

⁴³⁸ *Id.* at 711-712.

⁴³⁹ *Id.* at 712.

Several innovative approaches to place-based management have emerged. Of special significance to Hawai'i is the return to more traditional management styles. On land and watersheds, this has led to *ahupua`a* and *moku* management approaches. These approaches, do not, however, stop at the sea. Traditional Hawaiian management included the marine resources as part of the *ahupua`a*, and several local co-management efforts are working towards this more traditional management approach. These include subsistence fishing communities in Miloli`i, and Ha`ena.

Recommendations for *ahupua`a* or *moku* style management are tempered with the recognition that increased population and existing legal and regulatory frameworks will prevent a complete return to traditional approaches. Traditional approaches must be adopted within the context of existing legal, regulatory, and social constraints. A final challenge to the merger of traditional with modern management approaches is the need to maintain a management framework that will ensure transmittal of information regarding fisheries abundance and environmental health from local co-managers to state and federal agencies in order to make science-based decisions under federal and state law.

Some have cited that lost knowledge among Native Hawaiians poses an obstacle to traditional styles of management. Also, traditional management approaches require strong grassroots leadership that can sustain co-management over time and operate under financial constraints. Currently, while some co-management programs have been enabled through state legislation, state funding for such programs is lacking.

1. Expand subsistence fishing areas.

Hawai'i Revised Statutes Section 188-22.6 enables the expansion of community-based subsistence fishing areas that could serve as extractive reserves for Native Hawaiian subsistence, culture, and religion. Under this provision, DLNR has the authority to authorize the designation of such an area in response to proposals by the community.

While such an area is not a marine protected area in the fullest sense, such extractive reserves in other regions of the world have proven to be effective mechanisms for conservation while at the same time meeting the demand of local communities. Taking advantage of this provision would require grassroots support and effort to submit the proposal and additional required materials. Also, once designated, effective management would require voluntary commitment from the community. Another limitation of this approach is that it will only be appropriate in a limited number of areas and circumstances and will not provide protection for a full array of ecosystems as might occur under a more structured MPA network approach.

Previous case studies on community management systems find the following components to be key factors for success:

- Clearly defined resource users and resource;
- Locally relevant harvest rules;
- Broad participation in modification of rules;
- Monitoring that is linked to appropriation of the resource;
- Sanctions exist for those violating rules;
- Low cost conflict resolution mechanisms; and
- External officials recognize the rights of the community to organize and manage resources.⁴⁴⁰

2. Support the revised “Maka’I O Ke Kai” community-based marine management program.

As originally conceived, HB 1848 has been described as the “right to fish” bill. HB 1848, as introduced, would prohibit fishing restrictions unless the restrictions were created:

- “through a community-based *ahupua`a*, *moku*, or community-based subsistence management program;” and
- is reviewed under the lens of modern fisheries science as well as traditional and local fishers knowledge “that clearly demonstrates a correlation between existing fishing practices and a specific conservation problem,” among other requirements (HB 1848 §2).

It would require that any closed area regulation “cover an area that is no larger than can be supported by the best available peer-reviewed science [and] traditional Hawaiian and local fishers information.”

HB 1848 was substantially revised during the 2007 legislative session, and while it did not pass, it will be reconsidered in the 2008 legislative session. Instead of restricting state regulatory ability, it would establish a “Maka’I O Ke Kai” community-based marine management program that would provide funding to marine management initiatives that seek to restore and protect reef fish populations and coral reefs, manage nearshore reefs, apply traditional Hawaiian management approaches, monitor reef health, and provide enforcement support. There are concerns, however, about potential amendments to the bill in the 2008 legislative session.

3. Continue to support the Mauka-Makai Watch program and other public-private partnerships.

Over the years, many divisions within DLNR have instigated programs to involve the communities in resource protection and management. Until recently, these community programs lacked a coordinated effort by the Department. DLNR is now making a concerted effort to encourage communities to take a more active role in resource protection, realizing that funding will always limit DLNR’s capacity to achieve all of its goals in the absence of community support. The Mauka-Makai Watch program is one of the best examples in Hawai’i of a coordinated approach to resource protection.

⁴⁴⁰ Patricia Pinto da Silva, *From Common Property to Co-management: Lessons from Brazil’s First Maritime Extractive Reserve*, 28 MARINE POL’Y 419 (2004) (citing E. OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION (1990)).

4. Use the West Hawai'i Fishery Council as a model to apply in new areas.

The West Hawai'i Fishery Council (WHFC) is a community-based organization that strives to balance the competing needs of the aquarium fishing industry, the dive industry, and marine conservation. It is viewed as instrumental in achieving the goals and objectives of Act 306, and “appears to be a model system for the resolution of issues surrounding reef fisheries resources.”⁴⁴¹ Since the establishment of fishery replenishment areas and WHFC management, the number of yellow tang (the most commonly collected aquarium fish) has increased by 49 percent in both protected and unprotected areas.⁴⁴² Challenges for the WHFC include limited financial support. Also, interviewees have noted that the success of the Council largely derives from the strength and willingness of local actors to participate meaningfully in the Council. Inspiring the kind of dedication needed to succeed may be a challenge for this type of approach.

Option 2. Manage for ecosystem health.

1. Include environmental constituents in fishery management decision-making.

The Regional Fishery Management Council system has been widely criticized by fishers and environmental organizations alike for failing to effectively manage marine fisheries in several regions of the U.S. A 2003 report identifies the following key problems to the Councils:

- Councils are dominated by the industry that the Councils seek to regulate;
- Conflict of interest often plagues the Councils; and

- NMFS oversight has been too deferential.⁴⁴³

The Wespac faces sharp criticism including allegations of unethical and illegal conduct by several environmental organizations.⁴⁴⁴ In June 2007, environmental organizations filed a complaint with the Inspector General at the U.S. Department of Commerce against Wespac alleging that it “engage[s] in a number of activities that I believe to be illegal and unethical. The most serious of these activities is using federal money to finance a legislative campaign in the State of Hawai'i” (Bonk 2007). The complaint alleges that the puwalu series were lobbying organizing meetings used to influence the Hawai'i State Legislature on certain bills in the 2007 legislative session.

2. Implement ecosystem-based fishery management (EBFM).

In 1999, a NOAA Fisheries panel recommended that all regional fishery management councils develop a fisheries ecosystem plan for the ecosystems they manage.⁴⁴⁵ Often touted as an example of ecosystem based management, the Chesapeake Bay offers an example of the approach as it relates to fisheries. According to the Chesapeake Bay Program, EBFM is defined as “an approach to managing living resources that acknowledges relationships among species (e.g., competitive, predator, prey) and between living resources and their physical, chemical, biological, and socioeconomic environments.”⁴⁴⁶ NOAA's Chesapeake Bay Office has advanced this goal in developing the Fisheries Ecosystem Planning for Chesapeake Bay—a 463-page document that in

⁴⁴¹ STATE OF HAWAII, DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF AQUATIC RESOURCES, STATE OF HAWAII 2002 FISHERY STATISTICS (2004), available at http://www.pifsc.noaa.gov/wpacfin/pdf_file/h_vol19.pdf

⁴⁴² Anon., *Aquarium Fish Collectors 'Strip Mining' Hawaii's Coral Reefs*, CYBER DIVER News Network (Oct. 10, 2005), at <http://www.cdnn.info/news/eco/e051011.html>.

⁴⁴³ JOSH EAGLE, SARAH NEWKIRK, & BARTON H. THOMPSON JR., *TAKING STOCK OF THE REGIONAL FISHERY MANAGEMENT COUNCILS* (2003).

⁴⁴⁴ Christopher Pala, *Fisheries Management: Conservationists and Fishers Face Off Over Hawaii's Marine Riches*, 317 *SCIENCE* 306 (2007).

⁴⁴⁵ See Margaret M. McBride, *A Fisheries Ecosystem Plan for the Chesapeake Bay*, in *PROCEEDINGS OF THE 14TH BIENNIAL COASTAL ZONE CONFERENCE (2005)*, available at http://www.csc.noaa.gov/cz/2005/CZ05_Proceedings_CD/pdf%20files/McBride.pdf.

⁴⁴⁶ CHESAPEAKE BAY PROGRAM, *STRATEGIC IMPLEMENTATION PLAN: DRAFT PILLAR #3, ECOSYSTEM-BASED FISHERIES MANAGEMENT*, <http://www.chesapeakebay.net/pillar3.htm>.

addition to explaining the existing resources, also includes guidance for the development of fisheries ecosystem-based plans.⁴⁴⁷ This document could provide a useful reference for developing EBFM in Hawai'i's state and federal waters.

It should be noted that Wespac has created a Fisheries Ecosystem Plan. This plan, however, is not without its critics who view it as far from achieving EBFM objectives.⁴⁴⁸ One interviewee commented that when considering ecosystem based fisheries management, island-specific ecosystems need to be recognized (and managed separately) in addition to considering the ecosystem entire Hawaiian Archipelago as a single entity.

While fisheries scientists and management experts have been considering ecosystem approaches to management for decades, EBFM is still at the early stages of development.⁴⁴⁹ A 2005 NOAA panel discussion summarized some of the elements and challenges of EBFM. Some of the existing and needed elements of EBFM include: managing fisheries conservatively, protecting forage fish, reducing bycatch, establishing indicators of ecosystem health, explicitly recognizing societal goals, developing management mechanisms to support societal goals, including additional scientific data including productivity, food web, and spatial analysis, among others, and evaluating measures to make sure that goals are met.⁴⁵⁰

⁴⁴⁷ CHESAPEAKE BAY FISHERIES ECOSYSTEM ADVISORY PANEL (NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION CHESAPEAKE BAY OFFICE), FISHERIES ECOSYSTEM PLANNING FOR CHESAPEAKE BAY (2006).

⁴⁴⁸ See, e.g., Alan D. McNarie, *Fish Fight: Environmentalists vs. the Fishing Industry in the Northwest Hawaiian Islands*, HAWAII ISLAND JOURNAL (2006), at <http://hawaiiislandjournal.com/2006/0325a.html>. The article states: "Wespac's new proposal is couched in greener terms - touted as part of a "fishery ecosystem plan" for the entire Hawaiian archipelago. But under the veneer of eco-science, it's basically the same proposals that the agency has been pushing for years." *Id.*

⁴⁴⁹ See, e.g., Patrick Christie et al., *Assessing the Feasibility of Ecosystem-Based Fisheries Management in Tropical Contexts*, 31 MARINE POL'Y 239 (2007) (for a discussion of the many different concepts of EBFM and the lack of practical implementation guidelines)

⁴⁵⁰ PACIFIC STATES MARINE FISHERIES COMMISSION, STRENGTHENING SCIENTIFIC INPUT AND ECOSYSTEM-BASED FISHERY MANAGEMENT FOR THE PACIFIC AND NORTH PACIFIC FISHERY MANAGEMENT COUNCILS (2005),

Option 3. Protect habitats.

1. Expand or designate new marine protected areas.

Area-based management with established conservation zones is viewed by many marine scholars as the best approach to conservation of representative marine ecosystems. There is no place in the U.S. with extensive marine zoning such as that found on the Great Barrier Reef. California is developing an MPA network in state waters under the Marine Life Protection Act, and the Florida Keys National Marine Sanctuary is the best example of a multi-use marine management area with specified no-take zones in federal waters.

In Hawai'i, efforts have focused on expanding existing marine protected areas under state law. Some have called for expanding existing MLCDs and developing new marine protected areas to reduce impacts on existing areas and provide additional protection to marine resources. Under HRS §188-53, DLNR is authorized to establish fishing reserves and refuges for "preserving, protecting, conserving, and propagating ... marine life." DLNR also has broad authority to establish Marine Life Conservation Districts, "and may, if it deems necessary, declare *all* waters within any county a conservation district" (emphasis added). With that declaration comes the authority to restrict the take of any marine life and regulate anchoring and mooring (HRS §§190-3, -4.5). DLNR also has the authority to expand the natural reserve system by designating state owned lands (subject to governor approval) or acquiring new lands through give, grant or purchase including conservation easements, and by eminent domain.⁴⁵¹

Despite this broad authority, efforts to create new or expand existing conservation areas have met with great resistance from some members of the fishing community. Even increasing protection in existing MLCDs is an uphill battle, as the rejection

http://www.fakr.noaa.gov/npfmc/misc_pub/MarascoPaper705.pdf.

⁴⁵¹ HAW. REV. STAT. § 195-4.

of a 2008 bill that would prohibit all commercial activity in MLCDS demonstrates.⁴⁵²

Still, several innovative approaches to place-based management continue to be advanced with varying success. Traditional Hawaiian management included the marine resources as part of the *ahupua`a*, and several local co-management efforts are working towards this more traditional management approach. These include subsistence fishing communities in Miloli`i, and Ha`ena. HRS § 188-22.6 enables the expansion of community-based subsistence fishing areas that could serve as extractive reserves for Native Hawaiian subsistence, culture, and religion. While such an area is not a marine protected area in the fullest sense, such extractive reserves in other regions of the world have proven to be effective mechanisms for conservation while at the same time meeting the demand of local communities. The limitation of this approach is that it will only be appropriate in a limited number of areas and circumstances and will not provide protection for a full array of ecosystems as might occur under a more structured MPA network approach.

2. Develop and implement visitor guidelines for use in MLCDS.

MLCDS, especially Hanauma Bay, provide recreational opportunities for residents and visitors to Hawai`i. In addition to the aesthetic and biological values these sites provide, they are also a major economic resources for the state. However, with intensive recreational use comes damage to the resources—the concept of ‘loving a place to death.’ Developing and implementing visitor guidelines can help facilitate compliance with laws and regulations that may be unknown or the rationale behind them poorly understood.

The State of Hawai`i and the Hawai`i Institute of Marine Biology conducted a study of human use in four Marine Protected Areas (MPAs). This study also found that despite high visitor numbers, diving and snorkeling activities have only minor

impacts in Hawai`i. This study also suggested that boat-based snorkeling and diving tours with pre-dive briefings led to reduced impacts. The report concludes that mandatory pre-diving briefings should be required for tours entering MPAs.⁴⁵³

3. Enforce existing laws in MLCDS and national sanctuaries.

A major challenge to existing place based management areas is the lack of effective enforcement. As described previously, interviewees cite challenges including lack of funding, understaffing, and low morale, which accompanies the complex challenges of enforcing laws and regulations a massive marine environment. Technological tools such as VMS can help enforce conservation areas for commercial fishing (or recreational vessels).

4. Consider developing island-specific approaches to habitat protection.

Several interviewees have noted that laws and regulations should not be prescribed in a ‘one-size-fits-all’ manner—noting that ecosystems and human dimensions are unique on each island. One interviewee recommended the need for island-specific fishery laws and regulations. On the flip side, interviewees have also pointed out that the varying rules among the MLCDS makes enforcing the laws more difficult. With limited staff and budget, this may exacerbate compliance and enforcement challenges.

5. Launch campaign to find common ground among marine protected area stakeholders.

Place-based management, especially the concept of MPAs, is a polarizing issue in Hawai`i. Supporters of MPAs feel that MPAs are the key to effective conservation and preservation of Hawai`i’s marine environment. Those that oppose MPAs worry that expanding protected areas will take place without proper consideration of fishers’ livelihoods and any conservation gains gained by

⁴⁵² See Hawaii House Blog, *Legislature 2008—Day 16*, noting that HB3389 was deferred indefinitely, available at <http://hawaiihouseblog.blogspot.com/2008/02/legislature-2008-day-16.html>.

⁴⁵³ NOAA Report to Congress: *Improving the Use of Marine Protected Areas* http://www.coris.noaa.gov/activities/reportcongress2005/chap5_mpas.pdf (Last viewed April 24, 2007).

this approach are outweighed by the impacts on fishers. Until common ground is found among fishers and the conservation community, many feel that the expansion of existing MPAs or the creation of new MPAs will not occur.

6. Expand public education about the marine environment.

Some interviewees commented that objective education and decentralized discussions are needed to help marine conservation advocates and fishers find common ground for the long-term protection of Hawai'i's marine living resources through place-based management. Ideas for education included the development of a Hawai'i magazine dedicated to dissemination of objective marine and coastal information that would target both residents and visitors.

Option 4. Improve compliance with and enforcement of fisheries laws and regulations.

Without effective compliance with and enforcement of laws and regulations, fisheries management cannot succeed. Enforcement is limited by the vastness of the ocean realm, financial and human capacity, and technological solutions. A 2003 USCG listening session on compliance and enforcement in Pacific fisheries in Honolulu identified the following needs, among others, for the Pacific Islands:

- Presence at dock so at-sea enforcement can focus on fisheries and note safety;
- Increase knowledge of USCG about local fisheries and regulations;
- Ability to converse in many languages; and
- Improved relationships among USCG personnel and fishers.

Solutions to non-compliance should focus on reducing or sidestepping enforcement barriers and advancing non-enforcement mechanisms to achieve compliance including the use of incentives and facilitative approaches.

1. Expand reporting requirements.

The Department of Aquatic Resources collects data on the reported catch in Hawai'i waters. Currently, only commercial fishers are required to report their catch in monthly catch reports. This means that illegal commercial operators and recreational and subsistence fishers do not report their catch. Hawai'i has a recreational survey program that collects non-commercial catch data through phone and dockside interviewing. While there is no effective mechanism to measure unreported catch, estimates of the percent of total catch actually reported ranges from 10 % to more than 99% depending on the fishery.⁴⁵⁴

Some states have reporting requirements for recreational fishers. For example, Virginia law requires recreational fishers using certain types of gear to provide annual reports of species and weights harvested, location, days fished, and amount of gear used.⁴⁵⁵ In Mississippi, recreational fishers are required to furnish landing information by request, and charter boat captains must complete questionnaires for each trip.⁴⁵⁶

2. Require vessel monitoring systems.

Vessel monitoring systems (VMS) can provide managers with real time information about the location of fishing vessels, and based on vessel movement can determine in some cases if vessels are engaged in fishing (rather than transiting through a closed area). This is a particularly effective tool for ensuring fishers do not violate area closures. An operational VMS is required for all vessels operating in the Hawai'i's longline

⁴⁵⁴ DIVISION OF AQUATIC RESOURCES AND WESTERN PACIFIC FISHERY INFORMATION NETWORK, STATE OF HAWAII 2002 FISHERY STATISTICS (2004),

http://www.pifsc.noaa.gov/wpacfin/pdf_file/h_vol19.pdf; see also D. Zeller et al., *What About Recreational Catch?*

Potential Impact on Stock Assessment for Hawaii's Bottomfish Fisheries, 91 FISHERIES RESEARCH 88 (2008).

⁴⁵⁵ Virginia Marine Resources Comm'n, 4 Virginia Admin Code 20-670-50,

<http://www.mrc.state.va.us/Regulations/FR670.shtm>.

⁴⁵⁶ Mississippi Dept of Marine Resources, Part 9, Rules and Regulations for Statistical Reporting and Confidentiality of Statistical Data for Marine Fisheries in the State of Mississippi, Chapter 13-100,

<http://www.dmr.state.ms.us/ordinances/TITLE-22-PART-09.pdf>.

fishery.⁴⁵⁷ Also, in declaring the Northwestern Hawaiian Islands Marine National Monument, President Bush required that the remaining permitted fishing vessels carry operational VMS onboard.⁴⁵⁸

As part of its national strategic plan, the USCG expects domestic fisheries to be reduced through vessel buy-back programs or limited entry schemes, among other things.⁴⁵⁹ Obstacles to expansion of the VMS program include the cost of purchase, installation, and maintenance. The VMS unit costs approximately \$2,000, which is a substantial sum especially for small scale fishers (commercial or non-commercial) who may be making little to no profit. NMFS, however, is increasingly seeing VMS as an important enforcement tool as it costs substantially less than Coast Guard at-sea patrols, and the fiscal year 2006 budget included \$4.5 million to pay for VMS units on fishing vessels in the U.S.⁴⁶⁰

3. Reduce fishing capacity.

Overcapacity—commonly described as too many boats chasing too few fish—contributes to overfishing and is linked to illegal, unregulated, and unreported fishing.⁴⁶¹ For a discussion of fishing capacity reduction, see Option 6.

⁴⁵⁷ See, e.g., PACIFIC ISLANDS REGIONAL OFFICE, FISHING PERMITS,

http://www.fpir.noaa.gov/SFD/SFD_permits_2.html.

⁴⁵⁸ Presidential Proclamation, Establishment of the Northwestern Hawaiian Islands Marine National Monument (June 15, 2006), <http://www.whitehouse.gov/news/releases/2006/06/20060615-18.html>.

⁴⁵⁹ USCG, *Ocean Guardian*, *supra* note 86 at 4.

⁴⁶⁰ Anon., *NMFS Has \$4.5M for Fishermen's VMS Setup Costs*, 33 COMMERCIAL FISHERIES NEWS (Jan. 2006), http://www.fish-news.com/cfn/editorial/editorial_1_06/NMFS_VMS_setup.html.

⁴⁶¹ See e.g., United Nations Food and Agriculture Organization, *Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity* (2004), <ftp://ftp.fao.org/fi/DOCUMENT/tc-iuu-cap/2004/default.htm>.

4. Require or expand observer coverage.

Observer coverage on vessels can serve two purposes: (1) observers can collect scientific data on the catch and bycatch, which aids in scientific-based fisheries management; and (2) observers can ensure that fishery laws and regulations are followed. In some U.S. regions, such as the Northeast, observers are only used to collect scientific data and not to assist in enforcement. In other fisheries, such as those in the North Pacific, observers are an essential part of the enforcement regime. Cost and vessel size, however, limits the utility of observer programs. For instance, it would be difficult and impractical to implement an observer program for Hawai'i's small-scale fishing fleet.

5. Create catch share programs or limit entry to fishery.

Catch share programs—including individual transferable quotas, individual fishing quotas, and limited entry permit systems—may increase compliance with mandatory catch limits. For example, a recent study of U.S. fisheries found that reported in fisheries that moved to catch share programs, catch limit overages were significantly reduced.⁴⁶² In theory, catch share programs increase compliance because a fisher with a permit that can be sold, leased, or traded, has an economic reason for ensuring that the resource is managed sustainably. If the fishery collapses, the permit loses its value.

Another challenge in Hawai'i is that for a fee of \$50 (\$200 for non-residents), fishers can avoid recreational bag limits and obtain an annual commercial fishery permit.⁴⁶³ Without a cap on the number of commercial permits issued combined with open access fisheries, anyone can avoid the recreational limits for a relatively small fee.

⁴⁶² ENVIRONMENTAL DEFENSE, SUSTAINING AMERICA'S FISHERIES AND FISHING COMMUNITIES: AN EVALUATION OF INCENTIVE-BASED MANAGEMENT (2007); REDSTONE STRATEGY GROUP, LLC AND ENVIRONMENTAL DEFENSE, *ASSESSING THE POTENTIAL FOR LAPPS IN U.S. FISHERIES* (2007).

⁴⁶³ Zeller et al., *supra* note 454 at 89.

Option 5. Expand regulation of non-commercial fishing.

There are large recreational and subsistence fisheries in Hawai'i. DAR estimates that 20-25% of residents engage in recreational or subsistence fishing. For example, more than 10,000 small scale fishing vessels troll for pelagic species in Hawai'i's nearshore environment.⁴⁶⁴ A query of the Marine Recreational Fisheries Statistics Survey reveals that recreational fishers (including charter boats) caught an estimated 5.16 million fish in 2006.⁴⁶⁵

One challenge with regulating fisheries in Hawai'i is that it is difficult to lump fishers in any one category—especially the nearshore small boat fishers. As one author describes it, small-boat fishers have “highly varied, mixed, often overlapping, and situation-based motives relating to economic return, subsistence, enjoyment, competition, and self-identification as fishermen.”⁴⁶⁶

Failure to regulate these non-commercial fishers means that data on non-commercial fishing is almost nonexistent. Since 2001, however, DAR has collected recreational data using the Hawai'i Marine Recreational Fishing Survey. It also limits the ability of the state and federal government to collect necessary funds to pay for management and conservation of the resources (see Section 1(A) Funding for additional information).

1. Require non-commercial fishing licenses, permits, or registration.

Currently, only commercial fishers are required to obtain a license to fish in Hawai'i state waters. However, recent changes to federal and state

fishery regulations that require registration of non-commercial fishers in some fisheries may signal a willingness to expand regulation of non-commercial fishers.

Licensing, permitting, or registration can support effective fisheries management in three ways. First, it provides a mechanism to document the numbers of recreational fishers and subsistence fishers in Hawai'i's waters, giving scientists a greater understanding of the human impact on fisheries resources. Second, licensing can support enforcement actions by helping to document existing fishers. Finally, licensing provides a way to collect rent for use of the resource to fund state management programs. Also, state and federal agencies can apply conditions to permits that can help in management of the resource such as data gathering and reporting requirements.

Amendments to the Magnuson-Stevens Fishery Conservation and Management Act may require recreational fishing registries for those fishing in the EEZ, for anadromous species, or on the continental shelf beyond the EEZ.⁴⁶⁷ It also may provide the impetus needed for the state government to expand its oversight of recreational fishing in Hawai'i.

DAR recently issued regulations that require all lay gill net fishers to register their gill nets, and each net must have four identification tags.⁴⁶⁸ Proposed amendments to the Bottomfish and Seamount Fisheries FMP would require a “non-commercial” permitting and reporting requirements for take of “Deep 7” species, whether in state or federal waters.⁴⁶⁹ This approach could be adopted for other fisheries under federal or state jurisdiction.

⁴⁶⁴ EDWARD W. GLAZIER, HAWAIIAN FISHERMEN 22 (2007)

⁴⁶⁵ NAT'L MARINE FISHERIES SERVICE, RECREATIONAL FISHERY STATISTICS CATCH SNAPSHOT QUERY, <http://www.st.nmfs.noaa.gov/st1/recreational/queries/catch/snapshot.html>. Query parameters were as follows: From (2006), To (2006), Wave (Annual), Geographical Area (Hawaii), Type of Fishing (All modes combined), Fishing Area (All modes combined), Type of Catch (Total Catch (Type A + B1 + B2)), Information (numbers of fish), Output form (Table).

⁴⁶⁶ *Id.* at 23.

⁴⁶⁷ MSA § 401(g) (as amended, 2006).

⁴⁶⁸ Jan TenBruggencate, *Gill Net Fishers Get New Rules*, HONOLULU ADVERTISER, at <http://the.honoluluadvertiser.com/article/2007/Mar/08/ln/FP703080362.html> (March 8, 2007).

⁴⁶⁹ Department of Commerce, *Fisheries in the Western Pacific; Bottomfish and Seamount Groundfish Fisheries; Management Measures for the Main Hawaiian Islands*, 72 Fed. Reg. 73308 (Dec. 27, 2007)

2. *Limit spearfishing on scuba.*

Several interviewees commented that spearfishing on scuba was a particularly destructive recreational fishing practice because it allowed spearfishers to stay underwater for long periods of time and collect many fish. Other areas of the Pacific have responded to similar concerns by banning the practice. For example, American Samoa banned spearfishing on scuba in 2001.⁴⁷⁰ In 2003, Samoa prohibited all spearfishing on scuba except for scientific collection.⁴⁷¹

Option 6. Reduce fishing capacity.

Overcapacity—commonly described as too many boats chasing too few fish—contributes to overfishing and is linked to non-compliance.⁴⁷² In Hawai'i a large number of small-scale vessels operate in state and federal waters. While this assessment has not included research on the levels of overcapacity in Hawai'i fisheries, some reviewed publications indicate that overcapacity is a challenge and that some fishers may continue to fish because of the need to pay the expensive costs of vessel ownership.⁴⁷³

Reducing fishing capacity can be achieved by a variety of approaches including limiting access to the fishery through licensing or other means or implementing a buyback program that removes vessels from the fishery. Limited access or catch share programs is described previously in Option 4.

1. *Implement a vessel and/or gear buyback program.*

Reducing fleet size as a mechanism to halt overfishing has the advantage of achieving both a

⁴⁷⁰ Nat'l Marine Fisheries Service, NOAA, *Species of Concern: Humphead Wrasse* (Cheilinus undulatus), http://www.nmfs.noaa.gov/pr/pdfs/species/humpheadwrasse_detailed.pdf.

⁴⁷¹ *Id.*

⁴⁷² See e.g., United Nations Food and Agriculture Organization, *Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity* (2004), available at <ftp://ftp.fao.org/fi/DOCUMENT/tc-iuu-cap/2004/default.htm>.

⁴⁷³ See, e.g., GLAZIER, *supra* note 464.

healthy fishery and a reduction of economic waste.⁴⁷⁴ A buyback program can achieve this by purchasing the excess fleet through public funds or by providing low interest loans to decommission vessels.⁴⁷⁵ The federal government has contributed substantial money to vessel, gear, and permit buyback programs in the U.S., spending \$140 million from 1995 to 2000.⁴⁷⁶

Cost is an obvious challenge to implementation of a buyback program. A 2000 GAO report identifies three additional challenges to the effectiveness of buyback programs in the U.S. that need to be addressed through proper management strategies and regulations:

- Those that were part of the buyback may move to another nearby fishery, causing overcapacity and overfishing or exacerbating these conditions.
- Following the buyback program, other fishers enter the fishery and increase capacity.
- Those remaining in the fishery expand capacity through technological changes and upgrades on existing vessels or through the purchase of new vessels or gear.⁴⁷⁷

The creation of catch share programs (see Option 4) to accompany the vessel buyback programs may help overcome these challenges.⁴⁷⁸

Option 7. Protect threatened and endangered species.

Threatened and endangered marine species should remain a priority for marine conservation. From a species perspective, once lost, they are gone forever, and with the removal of species there is a potential for permanent alteration of ecosystem

⁴⁷⁴ See, e.g., John B. Walden, James E. Kirkley, and Andrew W. Kitts, *A Limited Economic Assessment of the Northeast Groundfish Fishery Buyout Program*, 79 LAND ECONOMICS 426 (2003).

⁴⁷⁵ *Id.*

⁴⁷⁶ U.S. General Accounting Office, *Commercial Fisheries: Entry of Fishermen Limits Benefits of Buyback Programs* (June 2000).

⁴⁷⁷ *Id.*

⁴⁷⁸ *Id.*

structure. From a legal perspective, the Endangered Species Act is one of the strongest environmental laws available for conservation. For example, it contains a citizen suit provision, which states that “any person may commence a civil suit on his own behalf.”⁴⁷⁹ This includes civil suits to stop any person from violating the act; compel the government to apply prohibitions in the Act; and against the government for failure to list endangered species or designate critical habitat.⁴⁸⁰

1. Identify and list endangered and threatened marine species and designate critical habitat.

Under the federal Endangered Species Act, NMFS has the authority to list a species as threatened or endangered.⁴⁸¹ NGOs or individuals can also petition the federal government to list or reclassify a threatened or endangered species or to revise critical habitat.⁴⁸² Under the Hawai‘i endangered species act, DLNR can make a determination that an indigenous species is endangered or threatened.⁴⁸³ Also, DLNR, “upon the petition of three interested persons who have presented to the department substantial evidence that warrants review, shall conduct a review of any listed or unlisted indigenous species proposed to be removed from or added to the lists published.”⁴⁸⁴ Whether by petition or agency-driven, the process is a public one that makes use of the best available scientific and commercial data and considering ongoing conservation efforts.⁴⁸⁵

If the numbers of marine species listed is any indication of the difficulty to listing, it may be a high hurdle and difficult undertaking to succeed in expanding the ESA list for marine species. Of the

1,880 species listed under the ESA, only 60 are marine or anadromous. The listed marine species include 20 marine mammals species, 33 marine fish species (most of which are commercially targeted species), and three marine invertebrates (2 Caribbean coral species and the white abalone along the California coast).

The revision of critical habitat may be needed to provide adequate protection of Hawaiian monk seals as their population expands in the main Hawaiian Islands (see next). Also, climate change may drive some species toward extinction—a problem that has led to the listing of two coral species in the Atlantic and the current NMFS determination of whether or not to list the polar bear and ring seals in the Arctic as threatened or endangered.

2. Take action to protect Hawaiian monk seals and their habitat in state waters and on the beaches of the main Hawaiian Islands.

The Hawaiian monk seal is the most endangered U.S. marine mammal. Approximately 1,200 animals are thought to exist today—declining from 1,400 in the late 1990s.⁴⁸⁶ Most monk seals are found in the Northwest Hawaiian Islands. However, since the 1990s, seals increasingly have been found in the main Hawaiian Islands.⁴⁸⁷ A 2004 study found the greatest number of monk seals in the main Hawaiian Islands in and around Ni‘ihau and Kaua‘i. Since 1966, seal pup births have occurred on the main Hawaiian Islands, as well. In 2000, five pups were recorded on Ni‘ihau.⁴⁸⁸ Terrestrial habitat requirements include sandy beaches that are used as haul-out areas for pupping and nursing, among other things.⁴⁸⁹ Monk seals forage on benthic animals, and a lack of food

⁴⁷⁹ ESA, § 11.

⁴⁸⁰ SARAH MATSUMOTO, CARA PIKE, & TOM TURNER, CITIZENS’ GUIDE TO THE ENDANGERED SPECIES ACT 42-43 (2003), http://www.earthjustice.org/library/reports/Citizens_Guide_ESA.pdf.

⁴⁸¹ ESA, § 4.

⁴⁸² *Id.*

⁴⁸³ HAW. REV. STAT. § 195D-4.

⁴⁸⁴ HAW. REV. STAT. § 195D-4.

⁴⁸⁵ For additional information, see NAT’L MARINE FISHERIES SERVICE, OFFICE OF PROTECTED RESOURCES, LISTING UNDER THE ENDANGERED SPECIES ACT (ESA), <http://www.nmfs.noaa.gov/pr/listing/>.

⁴⁸⁶ See, e.g., NAT’L MARINE FISHERIES SERVICE, *RECOVERY PLAN FOR THE HAWAIIAN MONK SEAL (MONACHUS SCHAUINSLANDI): REVISION* [Hereinafter RECOVERY PLAN] (Aug 2007), available at <http://www.nmfs.noaa.gov/pr/pdfs/recovery/hawaiianmonkseal.pdf>.

⁴⁸⁷ Jason D. Baker & Thea C. Johanos, *Abundance of the Hawaiian Monk Seal in the Main Hawaiian Islands* 116 BIOLOGICAL CONSERVATION 103 (2004).

⁴⁸⁸ *Id.*

⁴⁸⁹ RECOVERY PLAN, *supra* note 486

is thought to be one of the limiting factors for population growth.⁴⁹⁰

The presence of adult and young Hawaiian monk seals on the main Hawaiian Islands could present an opportunity to target important haul out sites and feeding grounds for marine protection. For example, the Hawai'i Conservation Council recently submitted an *amicus* brief to the Hawai'i Intermediate Court of Appeals in support of the plaintiffs, Keep the North Shore Country et al., who are suing the City and County of Honolulu to require a supplemental EIS for the further development of the Turtle Bay Resort.⁴⁹¹ In support of a new EIS, the brief points out that the previous EIS did not even mention Hawaiian monk seals.⁴⁹² It argues that a supplemental EIS is now needed because of the increase in Hawaiian monk seals on the beaches of the main Hawaiian Island, including increases on the beaches near the proposed project since 2001.⁴⁹³

One interviewee recommended using the Hawaiian monk seal as a key indicator species or target for broader ecosystem-based management objectives. This concept is one that has been discussed in other U.S. regions that are contemplating how best to implement marine ecosystem-based management, including Puget Sound where endangered orcas and salmon are underlying factors in the development of the EBM program, the Puget Sound Partnership. In order to mitigate for activities that may affect endangered species habitats, the ESA requires recovery plans and habitat conservation plans.⁴⁹⁴ Such plans could form the basis of an EBM program in Hawai'i.

C. AQUACULTURE

Native Hawaiians have had a long tradition of rearing species in fishponds (*loko i`a*) ranging

from freshwater ponds to saltwater ponds (*loko kuapa*) and fish trapping ponds (*loko `umeiki*).⁴⁹⁵ Modern aquaculture began in the 1960's, and there are more than one hundred aquaculture farms in operation in Hawai'i today. Before Europeans arrived in Hawai'i in 1778, approximately 400 fishponds produced approximately 900,000 kg of fish annually.⁴⁹⁶ However, by 1985 only seven ponds were operational.⁴⁹⁷ Several efforts are underway to revitalize fishpond practices in Hawai'i, especially on the island of Moloka'i where fishpond restoration is part of the island's overall objective to become an aquaculture leader.⁴⁹⁸

Aquaculture is a growing industry worldwide. It is also an expanding enterprise in Hawai'i, where the value of the commercial aquaculture production sector increased by ten percent from 2002 to 2003 (\$25.2 to \$27.7 million).⁴⁹⁹ Hawai'i's commercial aquaculture programs rear freshwater and marine species including algae, shellfish, finfish, and other species such as aquarium plants and animals.⁵⁰⁰ Algae, including microalgae and *ogo* seaweed, are the most valuable aquaculture species. Marine aquaculture species include *moi* (Pacific threadfin fish) being commercial reared in offshore cages, abalone, shrimp, lobster, giant clam, Japanese flounder, the catadromous milkfish, mullet, seahorses, marine algae, clams, and oysters.⁵⁰¹ Several pilot projects are underway to develop marine aquarium fish, *kahala* (amberjack), and *papio* (blue trevally). Research is underway for aquaculture of deepwater snappers, grouper species, halibut, jacks, live rock,

⁴⁹⁵ Barry A. Coasta-Pierce, *Aquaculture in Ancient Hawaii*, 37 *BIO SCIENCE* 320, 325 (1987).

⁴⁹⁶ OCEANIC INSTITUTE, AQUACULTURE IN HAWAII, http://www.oceanicinstitute.org/_oldsite/aboutus/aquahawaii.html.

⁴⁹⁷ *Id.*

⁴⁹⁸ MOLOKA'I ENTERPRISE COMMUNITY, PROJECTS: FISHPONDS/AQUACULTURE, <http://www.Moloka'iee.org/projects/fishpond.htm>.

⁴⁹⁹ U.S. DEP'T OF AGRIC., AQUACULTURE DEVELOPMENT PROGRAM, AQUACULTURE IN HAWAII: OUTLOOK FOR THE NEXT DECADE, <http://www.hawaiiaquaculture.org/resources.html>.

⁵⁰⁰ *Id.*

⁵⁰¹ U.S. DEP'T OF AGRIC., AQUACULTURE DEVELOPMENT PROGRAM, AQUACULTURE PRODUCTS GROWN IN HAWAII, <http://www.hawaiiaquaculture.org/products.html>

⁴⁹⁰ *Id.*

⁴⁹¹ Brief of *Amicus Curiae* Conservation Council for Hawai'i in Support of Plaintiffs-Appellants (2008), available at <http://keepthenorthshorecountry.org/Documents/Amicus%20-%20CCH.pdf>.

⁴⁹² *Id.* at 3.

⁴⁹³ *Id.* at 8.

⁴⁹⁴ ESA § 10.

marine aquarium fish and invertebrates, and sablefish.⁵⁰²

The State of Hawai'i supports the development of aquaculture in state waters and has two experimental offshore aquaculture facilities in place. In 1999, Hawai'i passed Act 176, which allows long-term leasing of the state's ocean waters for aquaculture. Hawai'i allows aquaculture only of native species. Hawai'i is currently identifying potential offshore aquaculture sites suitable for development and will enter these sites into a GIS map.⁵⁰³

A recent Marine Aquaculture Task Force released a report that examined the opportunities for and risks related to aquaculture in the United States.⁵⁰⁴ Potential harmful effects of aquaculture include water pollution, introduction of non-native (potentially invasive) species, genetic effects on wild fish by escapees, disease, and potential user conflict.⁵⁰⁵ Community concerns for offshore aquaculture in Hawai'i include: pollution, multiple use conflicts, danger to marine mammals through entanglement, attraction of dangerous sharks to the area, and spoilage of the ocean viewscape.⁵⁰⁶

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

Native Hawaiian Fishponds

Traditional Native Hawaiian fishponds are a cultural resource, in addition to being a food and possibly economic resource. Kaloko-Honokohau on Hawai'i is a National Historic Park under management of the National Park Service (NPS). Created in 1978, the park includes the Kaloko and Aimakapa fishponds and the Aiopio fishtrap. These are managed as historic sites and not

actively working fishponds. However, NPS is currently rebuilding the Kaloko fishpond wall in an effort to return it to a functioning pond.⁵⁰⁷ Support for this project comes from a "Save America's Treasures" grant and additional community and government support.⁵⁰⁸

In order to develop or restore a fishpond in Hawai'i, a federal permit under CWA Section 404 and Section 401 water quality certification is required, in addition to state and county permits. Also, the project must be consistent with the HICZMP. In addition to the federal permitting requirements, the federal government plays a supporting role in fishpond development and restoration. For example, EPA, Region 9 is assisting with Project Loko I'a on Moloka'i—a grassroots project to restore ancient fishponds. More than \$1.4 million in federal support has gone to fishpond restoration and aquaculture revitalization in Hawai'i.⁵⁰⁹

Open Ocean Aquaculture in State and Federal Waters

Hawai'i Offshore Aquaculture Research Project (HOARP) is a federally funded project raising *moi* in submerged offshore cages. As of 2001, the project had produced and sold 115,148 pounds of *moi*. The National Sea Grant Program launched a research initiative in marine aquaculture in 1999, making approximately \$5 million a year available for marine aquaculture research with open ocean aquaculture being a priority research area.⁵¹⁰ Those wishing to develop marine aquaculture facilities in state or federal waters must receive a permit from USACE that determines how and where cages can be anchored.

⁵⁰² *Id.*

⁵⁰³ U.S. DEP'T OF AGRIC., AQUACULTURE DEVELOPMENT PROGRAM, RESOURCES FOR HAWAII'S AQUACULTURE INDUSTRY, <http://www.hawaii-aquaculture.org/resources.html> [hereinafter AQUACULTURE RESOURCES].

⁵⁰⁴ MARINE AQUACULTURE TASK FORCE, SUSTAINABLE MARINE AQUACULTURE: FULFILLING THE PROMISE; MANAGING THE RISKS (2007).

⁵⁰⁵ *Id.* at 1.

⁵⁰⁶ AQUACULTURE RESOURCES, *supra* note 503

⁵⁰⁷ NPS, *The Spirit of Kaloko: Building in the Shadow of the Past*

⁵⁰⁸ *Id.*

⁵⁰⁹ U.S. ENV'T PROT. AGENCY, PROJECT LOKO I'A: RESTORING HAWAII'S TRADITIONAL FISH PONDS, <http://www.epa.gov/region09/water/lokoia.html> [hereinafter PROJECT LOKO I'A].

⁵¹⁰ STATE OF HAWAII, DEP'T OF LAND AND NATURAL RES. & DEP'T OF AGRIC., FOURTH REPORT TO THE LEGISLATURE, STATE OF HAWAII, 3002 REGULAR SESSION: IMPLEMENTATION OF CHAPTER 190D, HAWAII REVISED STATUTES, OCEAN AND SUBMERGED LANDS LEASING 8 (Dec. 2002) [hereinafter FOURTH REPORT].

STATE MANAGEMENT

Native Hawaiian Fishponds

Efforts, especially on Moloka`i, are underway to restore Native Hawaiian fishponds in order to create a sustainable food source and preserve an important piece of Native Hawaiian practices.⁵¹¹ Those wishing to develop or restore fishponds must obtain state and county permits including a CDUP from Land Division, DLNR, potentially a shoreline management area permit, a shoreline setback variance from the county, a grading, grubbing and stockpiling permit from the county, and potentially a building permit from the county.⁵¹² If the fishpond is on public lands, an additional fishpond lease would be required from the BLNR. Fishpond restoration, repair, or use is exempt from state environmental impact requirements as long as the project is not adjacent to a sandy beach, stocks only native species, does not operate as an intensive system, does not use bulk chemicals, allows coastal access *mauka* of the fishpond and *makai* of the walls, and is not used for water recreational purposes except traditional activities.⁵¹³

Open Ocean Aquaculture in State Waters

The Aquaculture Development Program (ADP), Department of Agriculture supports aquaculture development in Hawai`i. It provides program funding to support reducing aquaculture farm risks, lowering production costs, and increasing production yields. ADP serves as a liaison between commercial aquaculture interests and the regulatory programs.⁵¹⁴ The BLNR is responsible for deciding whether to issue a submerged lands lease and conservation district use permit for aquaculture development in state waters. The Land Division of DLNR is responsible for determining environmentally acceptable uses of conservation district lands and conditions for granting a CDUP in state waters. The Land

Division also issues and administers the aquaculture submerged lands lease in state waters.

NON-GOVERNMENTAL APPROACHES

Native Hawaiian Fishponds

Pacific America Foundation collaborated with EPA to help restore and protect fishponds on Moloka`i through Project Loko I`a and to create on the ground capacity for future fishpond restoration and management.⁵¹⁵ The `Ao`ao O Na Loko I`a O Maui (Maui Fishpond Association) is working to restore the Ko`ie`ie fishpond on Maui.⁵¹⁶ Construction to rebuild the fishpond wall began in September 2005. Paepae O He`eia is a non-profit organization that works with the landowner, Kamehameha Schools, to manage and maintain the He`eia fishpond on O`ahu.⁵¹⁷ Paepae O He`eia has a volunteer program, Kū Hou Kuapā, that works to maintain and restore the fishpond's wall and remove invasive mangroves. The Waikalua Loko Fishpond Preservation Society was created in 1995 to manage and implement a plan to preserve the Waikalua Loko fishpond on O`ahu, educate the community about modern and traditional fishpond practices and serve as an educational resource for others. Work includes removal of invasive species, restoration of the fishponds, researching the fishpond's history and community outreach, among other activities.

Open Ocean Aquaculture in State Waters

The Oceanic Institute is a research and development organization that works to develop and promote the sustainable use of ocean resources. It works with communities, industry, academia, and government to develop sustainable marine aquaculture.⁵¹⁸ Black Pearls Incorporated is one of two companies to undertake the state leasing process. It has been approved for a 75 acre lease for black pearl oysters off the coast of the Honolulu International Airport. Cates

⁵¹¹ PROJECT LOKO I`A, *supra* note 509

⁵¹² For a description of permit requirements, see JOSEPH FARBER, U.S. ENV'T PROT. AGENCY, APPENDIX B: GUIDE TO PERMIT REQUIREMENTS AND PROCEDURES FOR HAWAIIAN FISHPOND RESTORATION 2-10 (2005), <http://www.epa.gov/region09/water/lokoia/permit-guide05.pdf>.

⁵¹³ HAW. REV. STAT. § 183B-2

⁵¹⁴ FOURTH REPORT, *supra* note 510, at 24.

⁵¹⁵ U.S. ENV'T PROT. AGENCY, RESOLVING WATER QUALITY AND PERMITTING ISSUES FOR NATIVE HAWAIIAN FISHPOND: PROJECT LOKO I`A FINAL REPORT, (Sept. 1999 – Aug. 2003), <http://www.epa.gov/region09/water/lokoia.html>.

⁵¹⁶ See MAUI FISH POND, <http://www.mauifishpond.com>.

⁵¹⁷ See PAEPAE O HE`EIA, FRIENDS OF HE`EIA FISHPOND, <http://www.paepaeoheieia.org>.

⁵¹⁸ See OCEANIC INSTITUTE, <http://www.oceanicinstitute.org/>.

International, Inc. was the first company in the U.S. to operate an open ocean aquaculture facility and the first to obtain a submerged lands lease for aquaculture in 2002.⁵¹⁹ The fifteen-year lease is twenty-eight acres and two miles off of Ewa Beach on O'ahu. Kona Blue is a private facility developing open ocean aquaculture targeting mahi-mahi, deep-water snapper, *kahala*, and grouper.⁵²⁰ In 2002, it received a \$1.5 federal grant to develop a live feed system for fish larvae. It currently has a ninety acre, twenty-year lease for *kahala*. The University of Hawai'i has received money from the National Sea Grant Office and federal funds from the Coastal Zone Management Program to assess and map potential offshore aquaculture sites.⁵²¹ The University is also involved in research related to new species aquaculture. Other facilities interested in offshore aquaculture development include the Ahi Nui Tuna Farming Company proposing a 216 acre facility 4.5 miles off of West Hawai'i.

OPTIONS FOR AQUACULTURE

Option 1. Encourage adoption of Marine Aquaculture Task Force recommendations.

Aquaculture is currently a relatively minor activity in Hawai'i's marine environment. However, with decreasing wild caught fish, increasing consumption, and the development of federal and state frameworks to enable development, this is likely to be a growing industry—both for traditional fishponds and modern facilities. To ensure that aquaculture is developed in a sustainable manner, conservation approaches should encourage adoption of the governance recommendations made in the Marine Aquaculture Task Force Report. These include specific recommendations for Congress and NOAA; however, some of these recommendations could apply at the state level as well:

- Assign NOAA a leading role in planning, siting, developing, and regulating aquaculture in federal waters;

- Develop a program that is precautionary, science-based, socially and economically compatible with communities, transparent, and participatory;
- Evaluate environmental risk before permitting;
- Consult with all affected agencies in federal and state government;
- Ensure environmental standards are in place before permitting and tie these standards to management, compliance, and permitting;
- Require operators to develop and comply with operating plan;
- Create liability for damage for federal aquaculture facilities;
- Provide incentives for research and development; and
- Incorporate aquaculture management into a comprehensive management regime.⁵²²

D. INVASIVE SPECIES

Seven million tourists visit Hawai'i annually, raising the daily population by approximately 170,000 people per day.⁵²³ With the influx and movement of people and goods come unwanted travelers—invasive species—that can threaten the existence of native flora and fauna. Ballast water, released from ships as they load cargo or taken up as cargo is unloaded, provides a major vector for the transport of marine species. Also, sedentary species can attach to hulls, anchors and other gear as another means of transport from native to foreign waters. Not only are invasive species introduced from the mainland and other countries, invasive populations can also be transferred among Hawai'i's islands. While inter-island movement of people and goods helps link island communities, the potential spread of invasive species among the islands has led to concerns about increased travel among the islands—a

⁵¹⁹FOURTH REPORT, *supra* note 510 at 6-7.

⁵²⁰*Id.* at 15.

⁵²¹*Id.* at 12-13.

⁵²²MARINE AQUACULTURE TASK FORCE *supra* note 504 at 4-5.

⁵²³CONSERVATION STRATEGY, *supra* note 2, at 3-1.

concern that is at the core of the recent inter-island Super Ferry dispute.

In addition to accidental introductions, some species are intentionally introduced. For example, rosy wolfsnail was deliberately introduced as a predator to control the giant African snail in 1955. It now preys upon native snails in mountain forests including endangered species.⁵²⁴ Pet and aquarium species owners sometimes release unwanted pets into the wild—at times with devastating consequences. *Caulerpa taxifolia*, is a popular saltwater aquarium macroalgae that has spread over vast areas in the Mediterranean (but not yet in Hawai‘i). European rabbits established a feral population at Haleakala National Park on Maui after a pet owner released six animals.⁵²⁵

USGS maintains a list of non-native species identified in the U.S., of which only some will become or are invasive. In Hawai‘i, non-native marine species on this list include 23 species of polychaete worms, six pycogonids (sea spiders), one coral, four anemones, one soft coral, 24 hydroids, three jellyfish, 15 amphipods, five barnacles, one copepod, 12 crabs, eight isopods, eight shrimp, one tanaid, 17 bryozoans, 35 fish, 31 bivalves, 14 gastropods, one nudibranch, 25 sponges, and 25 tunicates.

Not only do marine invasive species adversely impact native marine flora and fauna, potentially driving some species to extinction, terrestrial species can also cause damage to the marine environment. For example, feral goats and pigs damage upland terrain increasing erosion and runoff, which ultimately deposits sediments in the ocean. Also, species such as introduced mangroves exist at the interface of the terrestrial and marine environment. Mangroves change sedimentation patterns, nutrient influx, and nearshore habitat. In addition to biodiversity and habitat damage, invasive species can inflict massive economic damage to valuable resources.

The Hawai‘i Legislature recognized the devastating impacts that invasive species have on

Hawai‘i’s environment and economy when it created the Hawai‘i Invasive Species Council. In creating the Council, the Legislature stated, “that the silent invasion of Hawai‘i by insects, disease-bearing organisms, snakes, weeds, and other pests is *the single greatest threat* to Hawai‘i’s economy and natural environment and to the health and lifestyle of Hawai‘i’s people.”⁵²⁶

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

Animal Plant and Health Inspection Service (APHIS), USDA

APHIS has the authority to regulate plants, plant products, biological control organisms, noxious weeds and plant pests under the Plant Protection Act.⁵²⁷ Largely APHIS focuses on those invasive species that affect agriculture, although the law gives them the authority to act in natural areas as well. APHIS maintains a plant importation station in Honolulu, Hawai‘i. A field station of APHIS’ National Wildlife Research Center at Hilo, Hawai‘i, focuses on terrestrial agricultural pests including rodents and frogs.

Federal Noxious Weed List

USDA requires a permit for the movement of species on the federal Noxious Weed List. Of the almost one hundred species on the list, only one marine species—the invasive algae, *Caulerpa taxifolia*—is listed.

U.S. Fish and Wildlife Service (USFWS)

The USFWS has authority under the Lacey Act to prohibit importation of species listed as “injurious.” It prohibits both international and domestic (state-to-state) importation.

U.S. Coast Guard (USCG)

USCG is the lead agency in addressing ballast water. Under the National Invasive Species Act, USCG develops guidelines and regulations to prevent aquatic nuisance species introductions through ballast water.

⁵²⁴ GEORGE W. COX, ALIEN SPECIES IN NORTH AMERICA AND HAWAII: IMPACTS ON NATURAL ECOSYSTEMS 182 (1999).

⁵²⁵ *Id.* at 173.

⁵²⁶ Senate Bills 1505, 2003; emphasis added.

⁵²⁷ 7 U.S.C. § 7701 et seq.

Environmental Protection Agency (EPA)

While many view ballast water as a point source to be regulated by EPA under the Clean Water Act, EPA has chosen not to regulate ballast water.⁵²⁸ However, a Northern District of California court decision in 2005 (*Northwest Environmental Advocates v EPA*) vacated this regulation stating that “the EPA regulation is plainly contrary to the congressional intent embodied in the [CWA].” EPA is currently developing regulations as a result of this court decision.

Aquatic Nuisance Species Task Force (ANSTF)

ANSTF is an inter-agency task force established according to the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. Among other things, it provides funding for states to develop invasive species management plans and build aquatic invasive species programs. Hawai‘i is part of the Western Regional Panel on Aquatic Nuisance Species.

STATE MANAGEMENT***Aquatic Invasive Species Advisory Group***

Comprised of members from federal and state agencies and other organizations, the Advisory Group helps prioritize aquatic invasive species management, including marine invasive species.

Aquatic Invasive Species Response Team

Led by DAR and often in partnership with other agencies, universities, and organizations, the Team, conducts hull fouling surveys, undertakes control activities, and maps the distribution of invasive algae statewide.

Coordinating Group for Alien Pest Species (CGAPS)

CGAPS is a multi-agency coordinating body that conducts outreach and raises awareness about invasive species. Its work includes coordinated marine algae clean-up events to remove the invasive algae, *Gracilaria salicoria*, on Waikiki Beach.

Hawaiian Ecosystems at Risk (HEAR), Biological Resources Division, USGS

HEAR is a project that provides technology, methods, and other information to decision-makers, managers, and the public about effective management of invasive species in Hawai‘i. It maintains a website with several databases and links to other resources.⁵²⁹ HEAR works in partnership with federal and state agencies, as well as non-governmental organizations.

Invasive Species Committees for Island-Based Rapid Response

Invasive species committees are voluntary partnerships that work to prevent, eradicate, and control priority invasive species that threaten intact public and private conservation lands. These committees, however, are primarily terrestrial in focus.

Division of Aquatic Resources (DAR), DLNR

DAR is the main agency addressing aquatic invasive species in Hawai‘i. It leads the Aquatic Invasive Species Response Team, helped to develop the Aquatic Invasive Species Management Plan, and assists the Aquatic Invasive Species Advisory Group.

In October 2007, DAR adopted new regulations to manage ballast water from ships in an effort to curb one major source of marine invasive species. The regulations require all vessels carrying ballast water that have traveled outside of Hawai‘i’s EEZ to have a ballast water management plan, conduct ballast water exchange outside of state waters unless it has another suitable treatment method or is excluded in limited circumstances, and satisfy ballast water reporting requirements.⁵³⁰

Hawai‘i Invasive Species Council

Created by Executive Order 2002-03 in 2002 and supported by the legislature in 2003 by Senate Bill 1505, the Hawai‘i Invasive Species Council to foster and organize coordinated approaches to invasive species management. The Council was established as a temporary council to help with

⁵²⁹ HAWAIIAN ECOSYSTEMS AT RISK, HOMEPAGE, <http://www.hear.org>.

⁵³⁰ HAW ADMIN. RULES § 13-76-1 et seq. (2007); *see also* DIV OF AQUATIC RESOURCES, DLNR, BALLAST WATER RULES, <http://hawaii.gov/dlnr/dar/ballast.htm>.

⁵²⁸ 40 C.F.R. § 122.3(a) (2006).

policy level direction, coordination and planning. Senate Bill 1505 calls upon the Council to “create and implement a plan that includes the prevention, early detection, rapid response, control, enforcement, and education of the public.”

NON-GOVERNMENTAL APPROACHES

Sierra Club—Hawai‘i Chapter

Several of Sierra Club’s strategic goals in Hawai‘i relate to preventing the introduction, establishment and expansion of invasive species. These goals include:

- Invasive species control in protected areas;
- “Prevent continued introduction and spread of alien species in Hawai‘i by improving and integrating laws, regulations, and enforcement practices that control alien species;” and
- Recruit and train volunteers to help eliminate invasive species.⁵³¹

OPTIONS FOR INVASIVE SPECIES

Three general approaches can be taken to manage invasive species: prevention, control, and eradication. Because there are no reliable methods for predicting which non-native species will become invasive, and once an invasive species establishes itself it is often difficult to impossible to eradicate, “early detection and rapid response” is the favored management approach.

Option 1. Adopt early detection/rapid response strategies.

Early detection and rapid response (EDRR) strategies recognize that even with extensive monitoring and control of imported goods, inspection of ships, ballast water controls, and other mechanisms to prevent introductions of non-native species, no system can detect all potential

⁵³¹ SIERRA CLUB—HAWAII CHAPTER, MISSION STATEMENT, <http://www.hi.sierraclub.org/info/Mission-statement.html>.

invaders. Therefore, EDRR, as its name implies, calls for a two-tiered approach: (1) having a system in place to quickly detect would be invaders before they have the opportunity to establish a population and spread; and (2) once detected, having a mechanism to quickly respond and remove the invaders. The National Invasive Species Council makes several recommendations for a successful EDRR program.⁵³² The twelve early detection system components are: (1) active detection networks organizations with detection responsibility; (2) passive detection networks to provide additional support; (3) research to monitor, model and understand invasions; (4) training for volunteers and professions; (5) stakeholder approval; (6) voucher specimens; (7) verification of invasive populations; (8) data made accessible and widely available; (9) integrated detection system; (10) syndromic surveillance that may indicate the presence of an invader; (11) communication; and (12) mechanisms to detect biological shifts in distributions.

The Council divides the second approach—rapid response—into two parts: (a) rapid assessment; and (b) rapid response. For rapid assessment, the Council recommends: (1) a preliminary risk assessment for high priority species; (2) rapid risk assessment for newly detected species; and (3) consistent data definitions and inter-operable formats. For rapid response, the Council recommends: (1) support for planning; (2) standing teams ready to respond; (3) previous training of eradication and control methods; (4) rapid response manuals; (5) development of schedules of action based on the specific invasion conditions; (6) incident command system; (7) dynamic rapid response plans; (8) stakeholder input; (9) adequate flexible and available funding for response; (10) cooperation with non-affected areas; (11) understand and follow relevant laws; (12) incorporate concepts of “closest available forces” and “total mobility”; and (13) public outreach about response efforts.

⁵³² National Invasive Species Council, *General Guidelines for the Establishment and Evaluation of Invasive Species Early Detection and Rapid Response Systems* (2003), <http://www.invasivespeciesinfo.gov/docs/council/GuidelineCommunication.doc>.

The State of Washington has drafted an aquatic invasive species EDRR plan that could help inform EDRR for Hawai'i's marine environment.⁵³³ As appendices to the plan, the State intends to include a list of relevant state, tribal, and federal policy and law; and unwanted invader list (for known invasive species); an on-call expert identification list; risk assessment methodology, and a list of relevant response and management plans.

Option 2. Implement ballast water measures

Ballast water is a leading vector for invasive species. In the Great Lakes, for example, approximately one new invasive species enters the lakes each year and the main source of the invaders is believed to be ballast water. In 2007, Hawai'i developed regulations requiring ballast water exchange, ballast water reporting, and ballast water management plans. Efforts are underway at the federal level to create new federal law pertaining to ballast water management that if passed could preempt state law. Until such measures pass, however, Hawaii should move forward with implementing its ballast water program. Also, while the ballast water reporting and exchange regulations exempt crude oil vessels traveling between U.S. ports and all Department of Defense or USCG vessels, Hawai'i should encourage these vessels to voluntarily adopt the ballast water exchange requirements.

E. PORTS, HARBORS, AND VESSELS

COMMERCIAL SHIPPING

The recent oil spill from a container ship in San Francisco Bay highlights the need for adequate vessel safety for container ships as well as oil tankers that historically have been the focus of environmental concern. Container ships and oil

tankers transport goods to and from Hawai'i and among Hawai'i's islands. Four major shipping companies operate in Hawai'i: Matson Navigation Company, Sealand, NYK and Polynesia, Micronesia and Orient.⁵³⁴ Matson Navigation Company and Young Brothers transport most of the inter-island shipments.⁵³⁵ All container cargo arrives first in Honolulu before being moved to other destinations in Hawai'i and the Western Pacific.⁵³⁶ The major oil providers, Tesaro and Chevron, moor tankers offshore of Barbers Point.⁵³⁷

The SuperFerry—a commercial shipper of people, vehicle and goods—has begun operation in Hawaii but faces several environmental hurdles. It was built to travel among the Hawaiian Islands to offer an alternative to air travel. Environmental advocates cite the following concerns about the SuperFerry:

- Ship strikes of humpback whales when traveling through HIIHWNMS;
- Transport of terrestrial invasive species with a much greater capacity for movement of goods, people, and vehicles;
- Transport of marine invasive species on hulls;
- Increased pressure on already full ports;
- Increased traffic on less populated islands leading to increases in land based degradation; and
- Expansion of the O'ahu-based small scale fishing fleet that will be able to move vessels by Ferry around the Islands.

Advocates for the Super Ferry note that the Ferry has the capacity to connect islands in new way, decrease travel expenses related to car rentals, and enable people able to move goods and products among the islands.

In addition to marine impacts from vessels operating in Hawai'i's waters, the land based structures—namely ports and harbors—that enable

⁵³³ WASHINGTON STATE AQUATIC NUISANCE SPECIES COMMITTEE, DRAFT: EARLY DETECTION AND RAPID RESPONSE PLAN FOR AQUATIC INVASIVE SPECIES IN WASHINGTON STATE (2003), http://www.psp.wa.gov/publications/our_work/protect_habitat/ans/main_ans/EDRR.pdf.

⁵³⁴ U.S. COAST GUARD, SECTOR HONOLULU FACT BOOK: FREIGHT AND CARGO FACT SHEET (2006).

⁵³⁵ *Id.*

⁵³⁶ *Id.*

⁵³⁷ *Id.*

movement of people and goods also impact the marine environment. Construction of marinas can cause increased sedimentation from dredging, while day-to-day operation can contribute to pollution from improper disposal of oils and paint residues, and pollution from fueling.⁵³⁸

CRUISE SHIPS

Hawaii's cruise ship industry is a large and growing economic contributor in Hawaii. Fifty seven ships (both Hawaii-based and out of state) made 131 tours of the islands in 2002, and 47 ships made 125 tours in 2003. Norwegian Cruise Lines is the primary cruise line in Hawaii, and its ships comprised half of all tours in 2003.⁵³⁹ A state-conducted cruise industry impact study for 2002 and 2003 found that the cruise industry's direct economic impact in Hawaii in 2002 was \$261 million.⁵⁴⁰ This figure grew to \$268.7 million in 2003. Each cruise passenger brought approximately \$156/day into Hawaii's economy between 2002 and 2003, with larger expenditures expected in subsequent years. Out of state visitors add the most to Hawaii's economy. Cruise line spending, shipping agent spending, port entry, dockage, miscellaneous expenses, passenger fees, and spending on operations and administration in the state also contribute significant amounts to Hawaii's economy. It is an important source of new jobs for the state: 4,547 in 2002 and 4,582 in 2003. The state and counties collected \$38.2 million in taxes from the industry in 2003, up from \$37.4 in 2002.

The cruise industry has significant impacts on Hawaii's marine environment due to the nature of the industry and the large scale of operations.⁵⁴¹ Cruise ships produce thousands of gallons of wastewater and tons of garbage each day. Treated

⁵³⁸ UNITED NATIONS ENV'T PROGRAMME. CORAL REEFS – AN ECOSYSTEM UNDER THREAT (Mar. 2002), <http://www.uneptie.org/pc/tourism/sensitive/coral-threats.htm>.

⁵³⁹ STATE OF HAWAII DEP'T OF BUS., ECON.DEV. & TOURISM, RESEARCH AND ECONOMIC ANALYSIS DIV., HAWAII CRUISE INDUSTRY IMPACT STUDY (2002-03), <http://www.hawaii.gov/dbedt/info/visitor-stats/econ-impact/cruise-impact.pdf>.

⁵⁴⁰ *Id.*

⁵⁴¹ *But see* NORTHWEST CRUISESHIP ASS'N, *CRUISING FOR THE FACTS – CRUISE INDUSTRY MYTHS & FACTS* (2007), <http://hawaii.nwcruiseship.org/group.cfm?menuId=70> [hereinafter NORTHWEST CRUISESHIP ASS'N].

sewage discharged into the marine environment can contain high levels of fecal coliform, ammonia, copper, nickel, zinc, and nutrients.⁵⁴² Other impacts include garbage generation, oily bilge water release, ballast water and transport of invasive species, and air pollutants.⁵⁴³ Increasing occurrence of collisions between humpback whales and vessels are also cause for concern. Seven collisions have occurred between 1998 and 2004.⁵⁴⁴

TOUR BOATS

Boat tours, whale watching, day cruises, and submarine trips are popular tourist activities throughout the state of Hawaii. Tour boats range from small six-person rafts, to submarines, to large dinner cruise boats. According to a 2005 study, over thirty percent of all visitors to Hawaii participate in tour boat activities.⁵⁴⁵ The tour boat industry has grown dramatically – 300% from 1983 to 2003.

Hawaii's tour boat industry contributes approximately \$200 million in revenue every year and employs over 2,000 people. Most tour boat companies are small businesses and create much needed employment for residents of the Hawaiian Islands. Whale watching is a particularly popular activity for tour boats in the months November-April. The whale watching industry's estimated total value in Hawaii is approximately \$9-11 million.⁵⁴⁶ The tour boat industry exists to allow

⁵⁴² KAHEA—THE HAWAIIAN-ENVIRONMENTAL ALLIANCE, CRUISE SHIPS OCEAN ISSUES, <http://www.kahea.org/ocean/>.

⁵⁴³ *Id.*

⁵⁴⁴ NOAA, NAT'L MARINE SANCTUARIES, HAWAIIAN ISLANDS HUMPBACK WHALE NMS – VESSEL AVOIDANCE WORKSHOP, (2004), http://hawaiihumpbackwhale.noaa.gov/special_offerings/sp_off/VCAW_terms.html.

⁵⁴⁵ Percent participation is 15.2 in O'ahu; 35.2 in Maui; 28.5 in Kaua'i; 2.3 in the Hilo side of the Big Island; 21.5 in the Kona side of the Big Island; 18.7 in Moloka'i and 21.0 in Lana'i. STATE OF HAWAII, DEP'T OF BUS., ECON. DEV. & TOURISM, RESEARCH AND ECON. ANALYSIS DIV., 2005 VISITOR SATISFACTION AND ACTIVITY REPORT 64, Table 5.1. (2005) <http://www.hawaii.gov/dbedt/info/visitor-stats/vsat/2005-vsat-final.pdf>.

⁵⁴⁶ Dan Utech, *Valuing Hawaii's Humpback Whales: The Economic Impact of Humpbacks on Hawaii's Ocean Tour Boat Industry*, MARINE SANCTUARIES CONSERVATION SERIES MSD-00-2; US DEPARTMENT OF COMMERCE, NOAA, NOS, OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT, MARINE SANCTUARIES DIVISION THE ECONOMIC

customers the opportunity to view Hawai'i's ocean ecosystem. Day-use moorings make coral reef tours possible.

Hawai'i's tour boat industry is fuel intensive, with whale watching vessels using the most fuel. In 2003, the tour boat industry spent over \$4 million on fuel. Tourism is not generally a source of petroleum hydrocarbon pollution, other than on a small scale when oil or fuel spills from recreational vessels and marinas occur. Boats may cause damage to reefs due to anchoring or intentional or unintentional grounding. Negative impacts from marina construction and operation are also important considerations.

LAWS AND INSTITUTIONS

INTERNATIONAL MANAGEMENT⁵⁴⁷

International law is especially important in regulating the activities of shipping vessels. The International Maritime Organization (IMO) is the lead international organization tasked with developing treaties and protocols that address safety of life at sea, marine pollution from ships, ship structural standards, and shipping traffic laws. The USCG implements IMO agreements related to the use of anti-fouling paints, ballast water regulations, and vessel monitoring.

The International Convention for the Prevention of Pollution from Ships (MARPOL) relates to the release of oil, hazardous substances, and garbage into the marine environment. MARPOL Annex I addresses oil pollution and places requirements on new oil tankers, Annex II governs noxious liquids carried in bulk, Annex III governs packaged

CONTRIBUTION OF WHALE WATCHING, PERSPECTIVES FROM TWO NATIONAL SANCTUARIES (July 2000).

⁵⁴⁷ The following information provided on international and federal management of cruise ships summarizes information found in EPA's 2000 report, *Cruise Ship White Paper*, prepared in response to a petition from the Bluewater Network to assess and control discharges where necessary. U.S. ENV'T PROT. AGENCY, CRUISE SHIP WATER DISCHARGES, http://www.epa.gov/owow/oceans/cruise_ships/; U.S. ENV'T PROT. AGENCY, CRUISE SHIP WHITE PAPER (2000), http://www.epa.gov/owow/oceans/cruise_ships/white_paper.pdf [hereinafter CRUISE SHIP WATER DISCHARGES & WHITE PAPER].

harmful substances, Annex IV addresses the control of sewage and other "grey water," Annex V addresses garbage (which includes plastics, metal, glass, galley wastes and other materials) and Annex VI addresses vessel air emissions.

FEDERAL MANAGEMENT

Resource Conservation and Recovery Act (RCRA)

RCRA imposes management requirements on generators or transporters of hazardous waste. Cruise ships use chemicals for cleaning, painting, dry cleaning, beauty parlors, and photography labs, and may be subject to RCRA requirements.⁵⁴⁸

Marine Protection, Research and Sanctuaries Act (MPRSA)

MPRSA (also called the Ocean Dumping Act) prohibits (1) the transportation of any material from the United States for the purpose of disposal without a permit; and (2) the transportation of any material by U.S. flagged vessels, U.S. departments, agencies, or instrumentalities for the purpose of dumping it into ocean waters without a permit.⁵⁴⁹ The MSRPA prohibits any person from dumping, without a permit, any material transported from a location outside the United States into the territorial seas or contiguous zone, to the extent it may affect the territorial seas or the territory of the United States.

EPA is responsible for issuing permits that regulate the disposal of materials at sea, and the Corps of Engineers is responsible for issuing permits for disposal of dredged material. EPA has civil judicial, criminal, and administrative enforcement authority for violations of the MSRPA's dumping prohibitions.⁵⁵⁰ Citizen suits may be brought under MPRSA section 105(g).

Under MPRSA, the ocean dumping of sewage sludge and industrial waste is prohibited. In addition, no radiological, chemical, and biological warfare agents; high-level radioactive waste; or

⁵⁴⁸ *Id.*

⁵⁴⁹ 33 U.S.C. § 1401 et seq.

⁵⁵⁰ MPRSA § 105(a) and (b)

medical waste may be disposed of in ocean waters. States may adopt and enforce requirements for ocean-dumping activities that occur in their jurisdictional waters

The Shore Protection Act (SPA)

The SPA was enacted as a result of inadequate waste handling procedures by vessels transporting waste on U.S. coastal waters.⁵⁵¹ Under this Act, EPA develops regulations that govern the handling of waste, and the Department of Transportation issues permits and enforces regulations. The Act outlines waste handling practices for vessels and waste transfer stations.⁵⁵²

Act to Prevent Pollution from Ships (APPS)

The APPS implements MARPOL provisions and applies to all US flagged ships.⁵⁵³ It establishes ship discharge reporting, monitoring equipment, and record keeping requirements. Vessels must keep Oil Record Books for all discharges, disposal, and transfers of oil.⁵⁵⁴ The Marine Plastic Pollution Research and Control Act of 1987 amends the APPS and prohibits the discharge of all plastics into the water and restricts the discharges within certain limits of shore.

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)

CERCLA imposes civil liability for damages to natural resources and pollution clean-up costs for unpermitted discharges of hazardous pollutants other than oil into the environment.

Oil Pollution Act of 1990 (OPA)

OPA prohibits the unpermitted discharge of oil into or upon U.S. waters.⁵⁵⁵ Within twelve miles of shore, OPA's regulations prohibit the discharge of oil unless it is passed through an oil-water separator and does not cause a visible sheen or exceed 15 parts per million.⁵⁵⁶ Beyond twelve miles, oil or an oily mixture may be discharged while proceeding en route if the oil content of the

effluent without dilution is less than 100 parts per million.

Clean Water Act (CWA)

The CWA establishes effluent standards for on-board marine sanitation devices and procedures for the designation of "no-discharge zones" for vessel sewage. The USCG has primary enforcement authority, and states may also enforce federal standards.⁵⁵⁷ Under CWA, most vessels are considered point sources for the purpose of the NPDES permit program.

US Coast Guard (USCG)

The USCG is responsible for maritime safety and security, mobility of maritime commerce, national defense and protection of national resources.⁵⁵⁸ The USCG regulates discharges from vessels including ballast water. It enforces the laws on all domestic and international vessels that operate or call on U.S. ports while in U.S. waters. The USCG is responsible for ensuring compliance with hazardous materials regulations and has a Container Inspection Program to achieve this goal.⁵⁵⁹ Under CERCLA and the Oil Pollution Act, the USCG responds to marine oil and hazardous material spills and is responsible for overseeing clean up.

The USCG conducts vessel inspections of passenger vessels, submersibles, tankers, freight ships, oil spill recovery vessels, research vessels, and training ships. It conducts routine and random inspections to ensure compliance, as well as satellite tracking and aerial surveillance. The Coast Guard inspects all cruise ships operating in the U.S. on a quarterly basis. A GAO report found in-depth environmental compliance reviews by the USCG were lacking, because (1) the USCG focuses its cruise ship efforts on other priorities including ship; and (2) passenger safety as well as time, staff and resource limitations.⁵⁶⁰

⁵⁵¹ 33 U.S.C. §§ 2601 et seq.

⁵⁵² CRUISE SHIP WATER DISCHARGES & WHITE PAPER, *supra* note 547.

⁵⁵³ 33 U.S.C. §§ 1901 et seq.

⁵⁵⁴ *Id.*

⁵⁵⁵ 33 U.S.C. §§ 2701 et seq.

⁵⁵⁶ 33 C.F.R. § 151.10.

⁵⁵⁷ 33 U.S.C. § 1332(k) (1996).

⁵⁵⁸ U.S. COAST GUARD, MISSIONS, <http://www.uscg.mil/top/missions/>.

⁵⁵⁹ U.S. COAST GUARD, SECTOR HONOLULU FACT BOOK: FREIGHT AND CARGO FACT SHEET (2006).

⁵⁶⁰ CRUISE SHIP WATER DISCHARGES & WHITE PAPER, *supra* note 547

Vessels with six or fewer passengers do not need to be inspected. These include many tourism boats that take small parties out for parasailing, sport fishing, sail and canoe rides, and whale watching and scuba/snorkel boats.⁵⁶¹

Marine Debris Program

NOAA's Marine Debris Program has partnered with Norwegian Cruise Lines for an education and outreach pilot project that includes a marine debris display and educational materials on each ship in the Hawaiian Islands. The program seeks to "inform crew and passengers of marine debris issues, causes, and potential solutions."⁵⁶²

Port State Control Program

The USCG operates the Program to "identify and eliminate substandard foreign merchant ships from U.S. waters" and to ensure that foreign flagged vessels comply with U.S. and international regulations.⁵⁶³

Clean Marinas Program

The Clean Marinas Program is a voluntary, incentive based program that encourages states and nongovernmental actors to reduce nonpoint sources of pollution from marinas.⁵⁶⁴ There is no one source of funding for the Clean Marinas Program—the effort is supported through CZMA Section 306 program implementation grants, CZMA Section 306A low-cost construction grants, CZMA Section 309 program enhancement grants, CWA Section 319 nonpoint source pollution grants, Clean Water State Revolving Funds, pollution prevention grants from EPA, Clean Vessel Act program grants from USFWS, and nongovernmental grants such as those awarded by BoatUS and Project AWARE.⁵⁶⁵ The programs vary from state to state, but all programs offer information, guidance, and technical assistance to

marina operators, local governments, and recreational boaters on BMPs that can be used to prevent or reduce pollution.⁵⁶⁶ Hawaii does not currently have a state Clean Marinas Program.

OCMI Designated Areas

OCMI designated areas which overlap with state pilotage waters⁵⁶⁷ restrict vessel traffic in Hawaii's major ports to those vessels with pilots who are licensed to operate in areas that require a higher level of care and training.⁵⁶⁸

STATE MANAGEMENT

Hawaii Department of Transportation-Harbors Division (HDOT-H)

The HDOT-H administers Hawaii's commercial ports, including the ports of Honolulu, Kalaeloa Barbers Point, and Kewalo Basin on O'ahu; Port Allen and Nawiliwili on Kaua'i; Kahului on Maui; Hilo and Kawaihae on Hawaii; Kaunakakai on Moloka'i; and Kaunapali on Lanai.⁵⁶⁹ The harbor system is funded by imposing rates, rentals, fees and charges for use of the harbor and does not rely on Hawaii's general fund for support.

Department of Land and Natural Resources, Division of Boating and Recreation (DOBAR)

DOBAR is responsible for the regulation of Hawaii's small boat harbors. The DOBAR program is wholly self-supported by user fees, vessel registration fees, marine fuel taxes, and boating property rental income.⁵⁷⁰ DOBAR issues permits for moorings, commercial use, filming, and ocean water events. DOBAR develops the Ocean Recreation Management Plan and is responsible for rule-making to implement boating

⁵⁶¹ U.S. COAST GUARD, SECTOR HONOLULU FACT BOOK, UNINSPECTED VESSEL FACT SHEET (2006).

⁵⁶² NOAA, MARINE DEBRIS PROGRAM, MARINE DEBRIS OUTREACH FOR HAWAII CRUISE LINES, http://marinedebris.noaa.gov/about/hawaii_cruiseline.html.

⁵⁶³ U.S. COAST GUARD, SECTOR HONOLULU FACT BOOK, FOREIGN VESSEL FACT SHEET (2006).

⁵⁶⁴ NOAA, CLEANING UP MARINAS: THE CLEAN MARINA PROGRAM, <http://www.coastalmanagement.noaa.gov/marinas.html>.

⁵⁶⁵ NOAA, FUNDING OPPORTUNITIES, <http://coastalmanagement.noaa.gov/initiatives/funding.html>.

⁵⁶⁶ NOAA, CLEANING UP MARINAS: THE CLEAN MARINA PROGRAM, <http://www.coastalmanagement.noaa.gov/marinas.html>.

⁵⁶⁷ HAW. ADMIN. R. 462A-17

⁵⁶⁸ U.S. COAST GUARD, SECTOR HONOLULU FACT BOOK, HAWAII PILOTAGE FACT SHEET (2007) (OCMI is Officer in Charge, Marine Inspection).

⁵⁶⁹ STATE OF HAWAII, DEP'T OF TRANSP., HARBORS DIV., ABOUT THE HARBORS DIVISION, <http://www.hawaii.gov/dot/harbors/about.htm>.

⁵⁷⁰ STATE OF HAWAII, DEP'T OF LAND AND NATURAL RES., DIV. OF BOATING AND OCEAN RECREATION, HOMEPAGE, <http://www.hawaii.gov/dlnr/dbor/>.

laws (including user fee rates).⁵⁷¹ It also is responsible for coordinating enforcement with DOCARE, vessel registration, addressing user conflict, anchoring or mooring, placement or sinking vessels or objects, pollution prevention, restricted area designation and use, protected species/ecosystem impact coordination, navigational aids and education.⁵⁷²

Superferry Ruling

The Hawai'i Superferry plans to create an inter-island ferry service between O'ahu, Maui, Kauai, and Hawai'i, which has led to considerable resistance from some environmentalists and concerned citizens. It is currently running between O'ahu and Maui. However, in order to accommodate the Superferry traffic, improvements are needed at Kahului Harbor on Maui. The DOT determined that the harbor improvements were exempt from the HEPA review requirements. In August 2007, the Hawaii Supreme Court held that an EA is required before proceeding with improvements.⁵⁷³

Memorandum of Understanding

Hawai'i has a memorandum of understanding with the cruise line industries to protect state waters from cruise ship pollution.⁵⁷⁴ The agreement, signed in October 2002, exceeds state and federal laws requirements. According to the MOU, cruise ships are allowed to dump untreated sewage into the ocean four miles from shore.⁵⁷⁵ Sewage treated with either a chemical process using chlorine or a biological process can be dumped anywhere in the ocean beyond one mile at six knots speed. Cruise ships are also asked to control emissions from incineration and engines while in port.

The members of the agreement include Norwegian Cruise Line (Hawai'i's largest cruise operator), Carnival Cruise Lines, Celebrity Cruises, Crystal

Cruises, Holland America Line, Princess Cruises, Radisson Seven Seas Cruises, Royal Caribbean International, Seabourn Cruises and World Explorer Cruises.⁵⁷⁶ The MOU is a voluntary agreement with no mechanism for enforcement or requirement for compliance. No fees are levied against the cruise lines, and there are no penalties for violations under the MOU.

Department of Health, Clean Water Branch Environmental Management Division

The CWB is in charge of water quality monitoring in state waters and assists in monitoring pollution from cruise ships by accompanying the USCG in its inspections of cruise ships.⁵⁷⁷

State Legislation

Hawai'i's legislators have been active in promoting bills which seek to hold the cruise industry to higher standards of accountability. Senator J. Kalani English (D-East Maui-Moloka'i) introduced 20 bills in 2002 seeking to regulate the cruise industry.⁵⁷⁸ For example, a 2005 bill entitled *Relating to Cruise Ships* (HB0422) prohibits discharge of untreated sewage from a commercial passenger vessel into the marine waters of the State. It also establishes provisions relating to prohibited air emissions and prohibits waste incinerator operation while a vessel is in port.

NON-GOVERNMENTAL APPROACHES

Private Harbor Facilities

Private harbor facilities exist on three islands. O'ahu has the largest number including: the Hawai'i Yacht Club, the Iroquois Yacht Club (military), the Kaneohe Yacht Club, the Keehi marine Center, the Ko Olina Marina, the La Mariana Sailing Club, the Makani Kai Marina, the Outdoor Recreation-Hickam Harbor Pearl Yacht Club (military), the Rainbow Bay Marina in Pearl Harbor (military), and the Waikiki Yacht Club. Maui private facilities include the Lahaina Yacht

⁵⁷¹ *Id.*

⁵⁷² *Id.*

⁵⁷³ *Sierra Club v. Dep't of Trans. Hawai'i*, Civ. No. 27407 (Aug 31, 2007).

⁵⁷⁴ Russ Lynch, *Cruise Ship Pollution Targeted*, STAR BULLETIN (Oct. 18, 2003), <http://starbulletin.com/2003/10/18/business/story1.html>; see also Chris Wells, *Cruising for a Bruising: Why Washington Needs Laws to Protect its Waters from Cruise Ship Dumping* 20-21. (2005).

⁵⁷⁵ *Id.*

⁵⁷⁶ *Id.*

⁵⁷⁷ Anon., *Water Monitoring: Protecting the Aquatic Environment*, <http://hawaii.gov/lrb/rpts04/watermonfs.html>.

⁵⁷⁸ Lynch, *supra* note 574.

Club. The Big Island has one private harbor, the Gentry's Kona Marina.

Hawai'i Ocean Safety Team (HOST)

The mission of HOST is “to promote stewardship of Hawai'i's waters and enhance ocean safety.” It is a non-profit organization that seeks to provide a forum for government and industry to solve maritime problems including promoting and enhancing a pollution-free environment.⁵⁷⁹ The advisory board includes members from ocean recreation, domestic shipping, fishing, shore facilities, labor and private harbors. Several USCG employees (current and former) act as advisors to the organization. It has developed several Safe Operating Practices (SOPs)

Local Tour Boat Operators

According to a 2003 report, statewide 472 boats operate in the commercial tour boat and charter fishing boat trades.⁵⁸⁰ There are approximately 419 tour boat and charter fishing boat permit holders in the State Department of Boating and Ocean Recreation (DOBOR) and 65 in the Department Transportation Harbors Division Harbors. *Alantis* operates passenger submarines around the islands of O'ahu, Maui, and Hawai'i. From 1988-2006, the passenger submarines carried over 3.6 million people on more than 168,000 dives.⁵⁸¹ A 2003 study found that “[t]he tour boat industry is capital intensive and operates on thin profit margins. It is particularly vulnerable to abrupt changes in state policy that could impact day-to-day operations.”⁵⁸²

⁵⁷⁹ HAWAII OCEAN SAFETY TEAM, HOMEPAGE, <http://hothawaii.org/>.

⁵⁸⁰ At least four permits are for kayaks and eight of the vessels moored at Manele Small Boat Harbor on Lana'i are also moored at Lahaina. MICHAEL MARKRICH, MARKRICH RESEARCH, THE HAWAII BOAT INDUSTRY 2003 – A SURVEY AND ECONOMIC DESCRIPTION (2003) http://www.hawaii.gov/dbedt/czm/maczac/pdf/tour_boat_industry_27.pdf [hereinafter MARKRICH RESEARCH]. See this study for an island by island breakdown of businesses.

⁵⁸¹ USCG, Sector Honolulu Fact Book, Passenger Submarine Fact Sheet (2006).

⁵⁸² Michael Markrich, Markrich Research. *The Hawaii Boat Industry 2003 – A Survey and Economic Description*. http://www.hawaii.gov/dbedt/czm/maczac/pdf/tour_boat_industry_27.pdf (Last viewed April 18, 2007).

Kahea

Kahea is a network of environmental and citizens' group advocates. Its mission is “to improve the quality of life for Hawai'i's people and future generations through the revitalization and protection of Hawai'i's unique natural and cultural resources.”⁵⁸³ One of its program areas focuses on cruise ship pollution. It advocates for stronger legislation governing cruise ships and calls for support of the federal bill, the Clean Cruise Ship Act. It educates legislators on the industry's effects on the environment and has recently published a paper on cruise ship impacts in Hawai'i.

Bluewater Network

Bluewater Network, a division of Friends of the Earth, is a research and advocacy organization dedicated to studying and reducing environmental impacts from vessels and watercraft such as cruise ships. It is actively attempting to hold cruise lines accountable for pollution and waste generated. On March 17, 2000, the organization petitioned the EPA to assess and take regulatory action to reduce cruise ship pollution.⁵⁸⁴ The petition called specifically for an investigation of wastewater, oil and solid waste discharges from cruise ships, and the implementation of policy or regulatory changes if necessary to assure that these discharges do not threaten the marine environment. In response to the petition, EPA agreed to study cruise ship discharges and waste management approaches and published a paper on these issues.

Oceana

Oceana is a non-profit international advocacy organization “dedicated to protecting and restoring the world's oceans through policy advocacy, science, law and public education.” Oceana campaigns for greater environmental regulation of cruise ships.

Other Environmental Organizations

Other organizations that are involved in cruise ship pollution prevention in Hawai'i and other

⁵⁸³ KAHEA, ABOUT US, http://www.kahea.org/about_us.php

⁵⁸⁴ Petition available at http://www.epa.gov/owow/oceans/cruise_ships/disch_assess.html.

regions include the Campaign to Safeguard America’s Waters, The Ocean Conservancy, Reef Relief, Lighthouse Foundation, and Surfrider Foundation

Northwest Cruise Ship Association (NWCA)

NWCA is a non-profit group representing cruise lines in the Pacific Northwest, including Hawai‘i. It supports economic and environmental studies and engages in government relations.⁵⁸⁵

Cruise Lines International Association (CLIA)

CLIA and the International Council of Cruise Lines (ICCL) merged in 2006. It “exists to promote all measures that foster a safe, secure and healthy cruise ship environment, educate, train its travel agent members, and promote and explain the value, desirability and affordability of the cruise vacation experience.”⁵⁸⁶ CLIA’s members agree to adhere to a uniform set of standards regarding environmental pollution and disposal of graywater and waste.

OPTIONS FOR PORTS, HARBORS, AND VESSELS

Option 1. Create enforceable discharge requirements for cruise ships and other vessels.

Under Hawai‘i’s Memorandum of Understanding, cruise ships can dump sewage four miles from shore. Some environmentalists have voiced concern about the closeness to islands citing strong currents and little monitoring.⁵⁸⁷ There have been several violations of the MOU between 2003 and 2004. Royal Caribbean admitted 10 separate incidents of discharging gray water and untreated sewage off the shore of Moloka‘i in a protected fishing area. Princess Cruises was implicated in three violations of graywater discharge, and Holland America admitted to

⁵⁸⁵ Northwest Cruise Ship Association. 2007. “Cruising for the Facts – Cruise Industry Myths & Facts.”

<http://hawaii.nwcruiseship.org/group.cfm?menuId=70>

⁵⁸⁶ CRUISE LINES INT’L ASS’N, WELCOME: CRUISE INDUSTRY POLICIES & RESOURCES,

<http://www.cruising.org/industry/tech-intro.cfm>

⁵⁸⁷ *Id.*

“errors in reporting discharges of wastewater.”⁵⁸⁸

In March 2005, the MOU was again reportedly violated by Norwegian Cruise Line.

One option to strengthen compliance with the MOU would be to create a state law that codifies the MOU and enable enforcement of its provisions. Actions to limit cruise ship discharges in nearshore and protected marine environments are increasing. In 2004, California passed a law that prohibits discharging sewage or gray water within three miles of the coast.⁵⁸⁹ In 2008, the National Marine Sanctuaries Program issued a proposed rule to limit discharges of sewage and gray water in the West Coast sanctuaries.⁵⁹⁰

Option 2. Enhance small boat harbor facilities.

1. Identify additional funding to enhance facilities and support maintenance and repairs.

Small boat harbors are managed under DOBAR in DLNR—separately from Hawai‘i’s large ports. This means that funding for small boat harbors comes exclusively from the fees, fuel taxes, and rental income. They do not share revenues with the larger, more lucrative ports.

2. Develop a Hawai‘i Clean Marina Program.

Twenty-two states and one territory have developed Clean Marinas Programs.⁵⁹¹ Many states have Clean Marina programs that allow marinas to fly a Clean Marina flag or display its logo if the marina adopts the state’s best management practices.⁵⁹² This approach provides the marinas with an incentive to reduce nonpoint source pollution.

⁵⁸⁸ Kelly Yamanouchi, *Cruise Lines Admit Pollution Violations*, HONOLULU ADVERTISER (Dec. 12, 2003).

⁵⁸⁹ Bluewater Network, *Press Release: Cruise Ship Dumping and Trash Burning Banned in California* (Sept. 24, 2004).

⁵⁹⁰ NOAA, Office of National Marine Sanctuaries Regulations, Proposed Rule, 73 Fed. Reg. 16224 (Mar. 27, 2008).

⁵⁹¹ NOAA, Other Organizations Working with Clean Marina Programs,

<http://coastalmanagement.noaa.gov/initiatives/links.html>

⁵⁹² See, e.g., EPA, Innovative State Programs: Statewide Clean Marina Programs—BMPs, Recognition, and Outreach Help Protect Coastal Resources,

http://www.epa.gov/owow/wtr1/NPS/Section319III/innov_marina.htm

Hawaii does not currently have a Clean Marinas Program. Hawai'i should consider the development of a Clean Marina Program to support its small boat harbors. In addition to potential funding from federal and outside sources, NOAA provides technical support and guidance. As a funding source, the Clean Marinas Program is limited. For example, it provided \$645,000 to ten states in 2004.

F. CLIMATE CHANGE

Climate change will undoubtedly alter marine ecosystems in Hawai'i through sea level rise, increasing temperatures, changing ocean acidity, and potential shifts in precipitation patterns. Rising ocean temperatures caused by climate change can result in coral bleaching—a phenomenon that is exacerbated when corals face other stressors. In 1996, extensive bleaching occurred on several Hawaiian Islands, including Kanohe Bay on O'ahu. In September 2002, bleaching was also seen in the Northwest Hawaiian Islands of Midway, Kure, Pearl, and Hermes Atolls. In some parts of these reefs, mortality rates between fifty and seventy percent were reported.⁵⁹³

Oceans absorb one-third of the total carbon dioxide emissions released into the atmosphere, an amount equaling 22 million tons of carbon dioxide everyday.⁵⁹⁴ The presence of this level of carbon dioxide has significantly increased ocean acidity. A lower ocean pH interferes with the ability of corals and other calcifying marine organisms to make their skeletons or shells from calcium carbonate minerals. Yates and Halley (2006) examined carbon dioxide's impact on rates of calcification and dissolution in Molokai Reef and

found the average threshold for carbon dioxide of Molokai Reef to be 654 parts per million (ppm).⁵⁹⁵ Furthermore, the authors found that the level of carbon dioxide in Molokai Reef seawater exceeded the threshold concentration approximately eighteen percent of the time.⁵⁹⁶

Two overarching approaches exist to address climate change: mitigation and adaptation. Mitigation includes reducing greenhouse gas emissions and maintaining or developing carbon sinks to decrease the rate of climate change. Climate adaptation recognizes that no matter what mitigation occurs, climate change is and will continue to happen; therefore, it is imperative for an island state such as Hawaii to make changes in laws, policies, and institutions that will help the state prepare for these inevitable changes.

LAWS AND INSTITUTIONS

FEDERAL MANAGEMENT

No single agency oversees climate change regulations. Under existing federal law several agencies have the authority to address climate change under various laws.

U.S. Global Change Research Program

Created by the Global Change Research Act of 1990, the interagency Program “supports research on the interactions of natural and human-induced changes in the global environment and their implications for society.”⁵⁹⁷

Environmental Protection Agency

In 2007, the Supreme Court ruled that the EPA has the authority to regulate greenhouse gases as pollutants under the Clean Air Act.⁵⁹⁸ However, EPA has yet to undertake this task. It is also possible for EPA to regulate carbon dioxide as a

⁵⁹³WORLD WILDLIFE FEDERATION, TESTIMONY FOR U.S. SENATE COMM. ON COMMERCE, SCIENCE AND TRANSP. ON THE IMPACTS OF CLIMATE CHANGE (Mar. 3, 2004), http://www.panda.org/about_wwf/what_we_do/marine/news/on_the_ground/index.cfm?uNewsID=13073

⁵⁹⁴U.S. GEOLOGICAL SURVEY, DISCOVERING THE EFFECTS OF CO₂ LEVELS ON MARINE LIFE AND GLOBAL CLIMATE (Jan./Feb. 2007), <http://soundwaves.usgs.gov/2007/01/> [hereinafter DISCOVERING THE EFFECTS]

⁵⁹⁵ Threshold is defined as “the amount of carbon dioxide that needs to be present before the rate at which sediments dissolve exceeds the rate at which calcifying marine organisms produce skeletons or shells.”

⁵⁹⁶DISCOVERING THE EFFECTS, *supra* note 594

⁵⁹⁷ U.S. GLOBAL CHANGE RESEARCH PROGRAM, ABOUT THE U.S. GLOBAL CHANGE RESEARCH PROGRAM, <http://www.usgcrp.gov/usgcrp/about/default.htm>.

⁵⁹⁸ Massachusetts v EPA, 127 S. Ct. 1438 (2007).

pollutant under the Clean Water Act, as encouraged by the Center for Biological Diversity.

Climate Program Office, NOAA

NOAA's Climate Program Office conducts climate research and develops regional decision support. Its work includes a program for Climate Change Data and Detection.

STATE MANAGEMENT

Hawai'i Climate Change Action Plan

In order to address the impacts of climate change, the Hawai'i Department of Business and Economic Development, Tourism's Energy, Resources, and Technology Division, and the Clean Air Branch of the Department of Health created a Hawai'i Climate Change Action Plan in November 1998. While this plan was an important step towards acknowledging the potential dangers of climate change, the plan does not "set specific goals, [but is instead] intended to be a catalyst for discussions by Hawai'i's people about their involvement in future efforts to reduce emissions and to adapt to climate change."⁵⁹⁹ The plan strives to develop consensus amongst Hawaiian people on the state's future greenhouse gas emissions goals and to formulate future goals that can be managed locally and that take into account Hawai'i's unique attributes.

Climate Change and Marine Disease Local Action Strategy

The Climate Change and Marine Disease LAS was developed by DAR in collaboration with the Climate Change and Marine Disease Steering Committee. The Strategy is available in draft form at this time. The goal of the LAS is "[t]o understand and manage impacts to reef ecosystems from climate change and marine disease for increased resistance and resilience."⁶⁰⁰ Its

objectives include research, education and outreach, rapid-response planning for bleaching events, long-term management strategies, and monitoring. As of 2006, no objective were fully funded, and most objectives including long-term management strategies were unfunded.⁶⁰¹

DBEDT was reorganized in 2008 to create an Energy Resources Division.⁶⁰² This Division addresses Hawai'i's energy policy, leads the Clean Energy Initiative, and examines renewable energy, among other things.⁶⁰³

Legislative Actions

Hawai'i recently took specific steps towards adopting long-term greenhouse gas emission reduction targets. In May 2007, the state approved legislation establishing a 10-member task force that will draft a regulatory program. The overall goal of this regulatory program will be to reduce emissions to 1990 levels by 2020. The program requires emission reporting and monitoring to begin by 2012, followed by emission reductions in years to follow.⁶⁰⁴

In addition, the Hawai'i State government has adopted new energy laws that encourage the use of renewable energies and renewable fuels. In June 2006, Governor Linda Lingle signed SB 2957, legislation that raises the income tax credit for certain renewable energy technologies, makes this tax credit permanent, establishes a pilot financing mechanism for the purchase of residential solar hot water heater systems, provides incentives to support the production of biodiesel and cellulosic ethanol, and establishes the Hawai'i Renewable Hydrogen Program. SB2957 is part of Governor Lingle's larger "Energy for Tomorrow" Plan, which includes HB 2175, SB3185, and HB 2848. HB 2175 appropriates 5 million dollars for solar

⁵⁹⁹STATE OF HAWAII, DEP'T OF BUS., ECON. TOURISM AND DEV. & DEP'T OF HEALTH, HAWAII CLIMATE CHANGE ACTION PLAN (Nov. 1998), <http://www.hawaii.gov/dbedt/info/energy/publications/ccap.pdf>.

⁶⁰⁰DAR ET AL., HAWAII'S CLIMATE CHANGE AND MARINE DISEASE LOCAL ACTION STRATEGY (DRAFT: JULY 2006), http://www.hawaii.edu/himb/downloads/CCMD_LAS_906_complete.pdf

⁶⁰¹ *Id.* at 12-14.

⁶⁰² Governor Linda Lingle, State of the State Address (Jan. 22, 2008), <http://hawaii.gov/gov/leg/2008-session/state-of-the-state/STATE%20OF%20THE%20STATE%20ADDRESS%202008.pdf>.

⁶⁰³ DBEDT, ENERGY, <http://hawaii.gov/dbedt/info/energy>.

⁶⁰⁴Van Ness Feldman, Attorneys at Law, Climate Change Policy Update (July 2-6, 2007), <http://www.coal.org/file.asp?F=Climate+Change+Policy+Update+Week+of+July+2+2007.pdf&N=Climate+Change+Policy+Update+Week+of+July+2+2007.pdf&C=news>.

power systems in public schools, encourages new green buildings by giving them application priority for construction permits, sets green building standards for state buildings, and requires 20 percent of the state's new vehicles to be hybrids or alternative fuel vehicles. SB 3185 establishes a public benefits fund for energy efficiency programs and authorizes the state's Public Utility Commission to set penalties for failing to meet the state Renewable Portfolio Standard. HB 2848 appropriates 200,000 dollars to reconvene the Hawaii Energy Policy Forum. The Hawaii Energy Policy Forum would be in charge of developing an action plan, a timeline, recommendations, and benchmarks to meet the state's energy self-sufficiency goals.⁶⁰⁵

NON-GOVERNMENTAL ORGANIZATIONS

Center for Biological Diversity

The Center for Biological Diversity has petitioned several states, including Hawaii, to list waters as impaired for pH under the Clean Water Act, in an effort to encourage state TMDL programs to manage carbon dioxide as a pollutant that causes ocean acidification.⁶⁰⁶

OPTIONS FOR CLIMATE CHANGE

Option 1. Incorporate climate change considerations in management actions.

1. Consider climate change in analysis of environmental impacts under NEPA and HEPA.

This option is described under Options for Environmental Assessments and Impact Statements.

⁶⁰⁵ PEW CTR. ON GLOBAL CLIMATE CHANGE, LATE 2006 STATES NEWS, http://www.pewclimate.org/what_s_being_done/in_the_states/late_2006_news.cfm

⁶⁰⁶ Laura Fandino, *Petitions Seek to Use Clean Water Act's TMDL Process to Address Climate Change Impacts*, ENVIRONMENTAL NEWS (Sept. 12, 2007), <http://www.martenlaw.com/news/?20070912-tmdl-process>.

2. Consider climate change affects during ESA listing decisions and consultation analysis.

The U.S. District Court for the Eastern District of California has held that NOAA and USFWS must analyze available climate change information during Section 7 consultations under the ESA. Under Section 7, federal agencies are required to consult with NOAA or USFWS to determine if their actions will jeopardize the continued existence of an endangered species or its critical habitat. While this case is not binding on the Hawaii district court, barring appeal or direction from Congress, the agencies will likely analyze climate change impacts in their decisions in all regions. Also, USFWS is considering whether to list several Arctic species including polar bears and ringed seals due to climate change impacts. Under state law, state agencies could take a similar approach and consider the effects of climate change on the ability for species to survive.

Option 2. Adapt to sea level rise and flooding in the coastal zone.

The 2007 Intergovernmental Panel on Climate Change Report identifies several climate change adaptation strategies.⁶⁰⁷ In the coastal zone it identifies the following options: relocation, seawalls and storm surge barriers, dune reinforcement, land acquisition and creation of marshlands/wetlands as buffers, and protection of existing natural barriers.⁶⁰⁸ Options including land acquisition, protection of existing natural barriers, and relocation may also align with marine conservation objectives as mechanisms to reduce pollution and erosion.

1. Develop setback rules that consider climate change.

Creating setback lines that account for climate change predictions will not only protect property and reduce costs associated with sea level rise, it should also reduce damage to the marine environment caused nearshore development.

⁶⁰⁷ IPCC, CLIMATE CHANGE 2007: SYNTHESIS REPORT: SUMMARY FOR POLICYMAKERS (2007), http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf.

⁶⁰⁸ *Id.* at 15

Setback lines—the distance from shore that a structure can be built—are set by the county governments. In Honolulu County, the setback line is “40 feet inland from the certified shoreline.”⁶⁰⁹ The County of Maui has taken a more conservative approach with a shoreline setback assessment that considers the average lot depth and the annual erosion hazard rate.⁶¹⁰ However, the annual erosion hazard rate is determined based on past erosion and not future predictions of erosion. An annual erosion hazard rate that incorporates climate change predictions could be one way to adapt to sea level rise.

G. OTHER OCEAN CHALLENGES

EMERGING INDUSTRIES

Other ocean industries, including ocean thermal energy conversion and desalination, exist on the Big Island and currently play a minor role overall in impacts on the marine environment. However, expansion of these industries should warrant additional consideration for marine conservation.

Thermal Energy

The sun continually warms the ocean’s surface, creating a temperature difference between shallow and deep waters. Ocean thermal energy conversion (OTEC) is a method for generating electricity that uses this temperature difference to run a heat engine. As heat flows from a reservoir of warm water to a reservoir of cold water, the engine extracts some of the heat in the form of work. In this way, OTEC converts solar energy into electrical power.

In 1974, the Hawai‘i State Legislature created the Natural Energy Laboratory of Hawai‘i (NELH) at Keahole Point on the Kona Coast of Hawai‘i to support research on OTEC and related technologies. The Hawai‘i State Legislature created the Hawai‘i Ocean Science and

⁶⁰⁹ Revised Ordinances of Honolulu, § 23-1.4.

⁶¹⁰ County of Maui, Shoreline Setback Areas, <http://www.co.maui.hi.us/departments/Planning/czmp/ssa.htm>

Technology (HOST) Park on an adjacent area of land in 1985 in order to accommodate the expansion of NELH. In 1990, NELH and HOST Park became one agency, now named the National Energy Laboratory of Hawai‘i Authority (NELHA).⁶¹¹

In June 2006, Ocean Engineering and Energy Systems, a private engineering company based in Honolulu, announced its intention to construct a new facility at NELHA by 2008 that will have a net production of 800 kilowatts.⁶¹² OTEC technology not only holds the potential to create the hydrogen necessary to power vehicles, but cold water drawn from the ocean depths can also be used in air conditioning and industrial cooling systems as a cost-effective replacement for traditional coolants.

Desalination

Desalination is a water purification process that converts salt water into fresh, drinking water. Desalination can be carried out in a variety of ways, including through reverse osmosis and nanofiltration. Given increasing water scarcity in many areas, desalination offers the opportunity to diversify future water supplies.

The National Energy Laboratory of Hawai‘i Authority (NELHA) at Keahole Point on the Kona Coast of Hawai‘i has many commercial “tenants” who use their facilities for the desalination of deep-sea water.⁶¹³ While Hawai‘i Deep Marine Inc. was the first company to use the desalination process to manufacture bottled drinking water, many other businesses such as Enazmin USA, Hawai‘i Deep Ocean Water, Koyo USA, Savers Holdings, and Deep Seawater International now also utilize NELHA facilities for similar purposes. The purified water was initially shipped and sold in Asia, but by the end of 2003 Hawai‘i Deep Marine Inc. registered itself as a municipal water

⁶¹¹ NATURAL ENERGY LABORATORY OF HAWAII AUTHORITY, ABOUT NELHA—NELHA HISTORY, <http://www.nelha.org/about/history.html>

⁶¹² Rod Thompson, *Facilities on the Big Isle to Tap Sea for Energy*, 11 HONOLULU STAR BULLETIN (June 3, 2006), <http://starbulletin.com/2006/06/03/news/story02.html>.

⁶¹³ NATURAL ENERGY LABORATORY OF HAWAII AUTHORITY, NELHA TENANTS, <http://www.nelha.org/tenants/authorizedbottlers.html>.

source with the State Department of Health, enabling the company to sell bottled water in America.⁶¹⁴

In addition, in 2003, the Honolulu Board of Water Supply commissioned the services of Oceanit, a science and engineering companies, to construct a desalination facility in Kapolei. The Honolulu Board of Water Supply commissioned the construction of this facility in order to address the water demands of the O`ahu communities of Ewa and Wai`anae.⁶¹⁵

The University of Hawai`i at Manoa has conducted research on wind-powered reverse osmosis desalination since 1997 through a joint effort with the Water Resources Research Center (WRRC) and Hawai`i Institute of Marine Biology. Their research is an offshoot of an investigation originally started by the WRRC, and the prototype of their system is constructed on Coconut Island off the windward coast of O`ahu.⁶¹⁶

MARINE DEBRIS

Eighty percent of the marine debris found on beaches and in waters originates from land-based activities. It poses a large threat to sea birds, sea turtles, fish, and marine mammals that either become entangled in or mistakenly ingest the debris. Floating plastics can constrict animals' movements or inhibit proper digestion. They can also damage coral reefs by smothering animals.⁶¹⁷

In 2005, Senators Daniel Inouye (D-Hawai`i) and Ted Stevens (R-Alaska) co-sponsored Marine Debris Research and Reduction Act, which was enacted as the Marine Debris Research, Prevention, and Reduction Act in 2006.⁶¹⁸ This

legislation created a marine debris program within NOAA and established mechanisms for interagency coordination, among other things.⁶¹⁹ It authorizes NOAA to offer grants to states, local governments, and tribes to conduct research and regulate marine debris, and grants for academic institutions, NGOs and the private sector working on identification and removal of marine debris.⁶²⁰ NOAA's Marine Debris Program has four main strategies: (1) source identification, monitoring, research and information transfer; (2) reduction through removal; (3) prevention, including education and outreach; and (4) emergency response. One of the Marine Debris Program projects focuses on the removal of marine debris from the Northwestern Hawaiian Islands. Through this project, more than 560 tons of derelict nets have been removed. As of 2006, targeted efforts have focused on high-density areas of derelict fishing gear present.⁶²¹

The state of Hawai`i manages marine debris through two agencies. The Solid and Hazardous Waste Branch of the Hawai`i DOH established the Pollution Prevention and Waste Minimization Program in order to help businesses reduce waste generation and recycle wastes that cannot be reduced.⁶²² In addition, the OCCL in DLNR protects beaches from pollution.⁶²³

The Ocean Conservancy coordinates the National Marine Debris Monitoring Program (NMDMP), a project funded by the U.S. Environmental

⁶¹⁴ Bobby Command, *Keahole Seawater Sold in Asia*, WEST HAWAII TODAY (June 24, 2003), <http://www.westhawaii.com/articles/2003/06/24/news/news1.prt>.

⁶¹⁵ OCEANIT, SERVICES: DESALINATION PLANT DESIGN, http://www.oceanit.com/index.php?option=com_content&task=view&id=101&Itemid=133.

⁶¹⁶ WATER RESOURCES RESEARCH CENTER, DESALINATION OF BRACKISH WATER WITH WIND-POWERED REVERSE OSMOSIS, www.wrcc.hawaii.edu/research/project_liu/desalination.html.

⁶¹⁷ U.S. ENVTL. PROTECTION AGENCY, MARINE DEBRIS ABATEMENT: TRASH IN OUR OCEANS—YOU CAN BE PART OF THE SOLUTION, <http://www.epa.gov/owow/oceans/debris/>.

⁶¹⁸ Pub. L. 109-449.

⁶¹⁹ Legislative Summary: The Marine Debris Research and Reduction Act (S. 362),

<http://commerce.senate.gov/pdf/SUMMARY%20-%20Marine%20Debris.pdf>

⁶²⁰ Nat'l Sea Grant Law Center, *Announcement of Legislative Development, January 2007: Marine Debris Research, Prevention, and Reduction Act Signed into Law*, MASGLP 07-007-01 (2007),

<http://www.olemiss.edu/orgs/SGLC/National/Marine%20Debris%20Fact%20Sheet.pdf>.

⁶²¹ NAT'L OCEANIC & ATMOSPHERIC ADMIN, MARINE DEBRIS PROGRAM: ABOUT THE PROGRAM, <http://marinedebris.noaa.gov/about/welcome.html>.

⁶²² STATE OF HAWAII, DEP'T OF HEALTH, SOLID & HAZARDOUS WASTE BRANCH, POLLUTION PREVENTION PROGRAM. <http://www.hawaii.gov/health/environmental/waste/p2wastem/in/index.html>.

⁶²³ STATE OF HAWAII, DEP'T OF OF LAND & NATURAL RESOURCES, OFFICE OF CONSERVATION & COASTAL LANDS, <http://www.hawaii.gov/dlnr/occl/>.

Protection Agency (EPA) that uses a scientific protocol to standardize marine debris collection. Hawai'i is one of the monitoring sites to determine the amount and type of marine debris reaching U.S. beaches.⁶²⁴ The Ocean Conservancy leads the International Coastal Cleanup (ICC), a volunteer coastal and underwater cleanup effort.⁶²⁵ The Hawai'i Wildlife Fund, a non-profit organization dedicated to the preservation of Hawai'i's wildlife, also organizes community shoreline cleanups on the Big Island. The Fund's work throughout the past 4 years has resulted in the removal of 90 tons of debris over 9 miles of coastline.⁶²⁶

⁶²⁴ State of California Water Resources Control Board, Div'n of Water Quality, *Ocean Conservancy's National marine Debris Monitoring Program*, in THE CLEAN WATER TEAM GUIDANCE COMPENDIUM FOR WATERSHED MONITORING AND ASSESSMENT (2002)

www.swrcb.ca.gov/nps/docs/cwtguidance/4313nmdmp_protocol.doc.

⁶²⁵ U.S. ENVTL. PROTECTION AGENCY, MORE INFORMATION ON MARINE DEBRIS ABATEMENT: SOURCES OF MARINE DEBRIS, <http://www.epa.gov/owow/oceans/debris/moreinfo.html>.

⁶²⁶ HAWAII WILDLIFE FUND, HWF PROJECTS, <http://wildhawaii.org/projects.html>.

VI. SUMMARY OF OPTIONS

This Part, Summary of Options, summarizes the many options for marine conservation described throughout this Baseline Assessment. The legal, policy, and institutional tools and approaches provided in this Assessment are meant to present a wide range of potential and existing options for creating and sustaining a healthy marine environment in Hawai'i. The options take into account the existing opportunities for and obstacles to marine conservation identified in the subsequent sections of the report. As such, they incorporate recommendations from existing state-level plans and reports, as well as those identified in the interviews conducted by ELI. Additionally, these options include information about programs, plans, and approaches used in other regions of the U.S. that might be applied or adapted for use in Hawai'i. This list is not meant to be comprehensive. In developing these options, the authors strove to highlight a variety of approaches to address the various challenges that exist in the terrestrial and marine environment.

Choosing the best options for marine conservation in Hawai'i will require a detailed analysis and understanding of the biological, social, and economic challenges that must be addressed to ensure a healthy and sustainable marine environment. Also, as advanced in this Assessment, marine conservation should be undertaken in collaboration with Hawai'i's many diverse ocean constituents.

INTEGRATED MANAGEMENT

Option 1. Take advantage of existing laws and regulations to integrate management across institutions.

1. Use the Coastal Zone Management Program to implement ecosystem-based management of the marine environment.
2. Extend the focus of watershed partnerships to include the nearshore marine environment.

3. Make use of federal integrated management programs as the basis for EBM.

Option 2. Develop new marine EBM programs through soft-law and grassroots approaches.

1. Develop EBM using grassroots approaches.
2. Adopt memoranda of understanding (MOUs) and other soft-law agreements among agencies to facilitate integrated management approaches.

Option 3. Mandate integrated ocean management.

ENVIRONMENTAL ASSESSMENTS AND IMPACT STATEMENTS

Option 1. Conduct a meaningful assessment of cumulative impacts.

Option 2. Consider climate change impacts in EA and EIS.

COMPLIANCE AND ENFORCEMENT

Option 1. Increase incentives to achieve compliance.

Option 2. Increase facilitative approaches to achieve compliance.

1. Educate the judiciary, agencies, NGOs and citizens, and industry.
2. Adopt co-management approaches to increase legitimacy of laws and regulations.

Option 3. Increase actions to compel compliance.

1. Use legal authority to enforce existing law and penalize violators with penalties that reflect the extent of the damage to the resources and are substantial enough to deter illegal behavior.

Option 4. Increase funding and capacity for compliance measures and enforcement.

1. Increase funding and hire additional staff to conduct enforcement activities.
2. Dedicate personnel to natural resource enforcement.

PUBLIC PARTICIPATION

Option 1. Provide timely and accurate information to stakeholders.

Option 2. Expand efforts that empower stakeholders.

Option 3. Participate in Management Decisions.

LICENSING, FEES, AND FINANCING

Option 1. Seek additional funding from resource users.

1. Mandate additional fees for recreational activities such as diving and access to state coastal parks and reserves.
2. Mandate increased cruise ship port fees.
3. Mandate increased fees for resource extraction.
5. Divert, increase, or create taxes to support marine conservation.
4. Seek additional voluntary support.

LAND-USE

Option 1. Preserve buffer zones and coastal areas to prevent land-based sources of marine pollution.

1. Acquire land or conservation easements that protect riparian and coastal lands.
2. Continue to protect and restore existing coastal parks and protected areas.
3. Utilize mitigation funds and natural resource damage settlements to protect coastal ecosystems.
4. Identify and designate those coastal areas that are critical habitat for endangered species.
5. Petition to list anchialine pool species as threatened or endangered under federal or state law and designate critical habitat.

6. Utilize existing coastal and marine public areas to educate the public about how best to utilize all marine resources to achieve sustainability and conservation objectives.

Option 2. Prohibit or limit damaging activities.

1. Consider marine impacts, including cumulative impacts, when making land-based permitting decisions.
2. Take legal action to ensure land-use decisions conform to Hawai'i and federal environmental laws.
3. Advance sustainable coastal development.

Option 3. Plan for marine conservation.

1. Consider marine conservation objectives explicitly in land-use plans.
2. Develop nature friendly ordinances.
3. Adopt coastal Smart Growth approaches.

Option 4. Incorporate Native Hawaiian Approaches and Traditions.

FRESHWATER

Option 1. Set standards appropriate for biodiversity.

Option 2. Control nonpoint sources of pollution.

1. Implement goals outlined in the DOH Implementation Plan for Polluted Runoff Control.
2. Use state law to regulate nonpoint source pollution.

Option 3. Limit discharge of minimally-treated and untreated sewage into the marine environment.

1. Deny permit variances for Hawai'i's publicly owned treatment works (POTWs).
2. Enforce pretreatment standards.
3. Take legal action to inspire or compel government or industry response.

Option 4. Manage watersheds.

FISHERIES, PROTECTED SPECIES, AND HABITATS

Option 1. Adopt community-based management approaches.

1. *Expand subsistence fishing areas.*
2. *Support the revised "Maka'I O Ke Kai" community-based marine management program.*
3. *Continue to support the Mauka-Makai Watch program and other public-private partnerships.*
4. *Use the West Hawai'i Fishery Council as a model to apply in new areas.*

Option 2. Manage for ecosystem health.

1. *Include environmental constituents in fishery management decision-making.*
2. *Implement ecosystem-based fishery management (EBFM).*

Option 3. Protect habitats.

1. *Expand or designate new marine protected areas.*
2. *Develop and implement visitor guidelines for use in MLCDs.*
3. *Enforce existing laws in MLCD and national sanctuaries.*
4. *Consider developing island-specific approaches to habitat protection.*
5. *Launch campaign to find common ground among marine protected area stakeholders.*
6. *Expand public education about the marine environment.*

Option 4. Improve compliance with and enforcement of fisheries laws and regulations.

1. *Expand reporting requirements.*
2. *Require vessel monitoring systems.*
3. *Reduce fishing capacity.*
4. *Require or expand observer coverage.*
5. *Create catch share programs or limit entry to fishery.*

Option 5. Expand regulation of non-commercial fishing.

1. *Require non-commercial fishing licenses, permits, or registration.*
2. *Limit spearfishing on scuba.*

Option 6. Reduce fishing capacity.

1. *Implement a vessel and/or gear buyback program.*

Option 7. Protect threatened and endangered species.

1. *Identify and list endangered and threatened marine species and designate critical habitat.*
2. *Take action to protect Hawaiian monk seals and their habitat in state waters and on the beaches of the main Hawaiian Islands.*

AQUACULTURE

Option 1. Encourage adoption of marine aquaculture task force recommendations.

INVASIVE SPECIES

Option 1. Adopt early detection/rapid response strategies.

Option 2. Implement ballast water measures.

PORTS, HARBORS, AND VESSELS

Option 1. Create enforceable discharge requirements for cruise ships and other vessels.

Option 2. Enhance small boat harbor facilities.

1. *Identify additional funding to enhance facilities and support maintenance and repairs.*
2. *Develop a Hawai'i Clean Marina Program.*

CLIMATE CHANGE

Option 1. Incorporate climate change considerations in management actions.

1. *Consider climate change in analysis of environmental impacts under NEPA and HEPA.*
2. *Consider climate change affects during ESA listing decisions and consultation analysis.*

Option 2. Adapt to sea level rise and flooding in the coastal zone.

1. *Develop setback rules that consider climate change.*

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Environmental Law Institute
2000 L St NW, Suite 620
Washington DC, 20036
Telephone: (202) 939-3800
Fax: (202) 939-3868
www.eli.org